Submittal Catalog

For

Lee's Summit Joint Operations Facility
2 N.E. Tudor Road
Lee's Summit, MO 64086

Cheetah-XI, FK-5-1-12 Clean Agent Fire Suppression System

04/30/2025

Prepared by:

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DATA SHEET

CHEETAH® Xi INTELLIGENT SUPPRESSION CONTROL PANEL

The Cheetah Xi is a state-of-the-art true intelligent digital peer-to-peer modular suppression control system. It is ideal for all life safety and property protection applications, and is intended for both commercial and industrial use. It is designed with extensive programmability that allows the almost instantaneous relay of information and the ability to perform process management tasks with ease including HVAC shutdowns, Emergency Voice Evacuation, damper control, door closure, elevator recall, security, and CCTV/Building Management Awareness.

This cost-effective panel comes standard with two Signaling Line Circuits (SLC) that support 254 devices each. This is expandable to four loops and a total panel capacity of 1016 devices, with any mix and match of sensors and modules. The Cheetah Xi utilizes extreme intelligence via its Eclipse® based sensors including photoelectric, photoelectric with heat, ionization, photoelectric duct, and heat detectors. It also utilizes Eclipse based modules such as the monitor, mini-monitor, relay, intelligent pull station, releasing and control modules. With Cheetah Xi, every device communicates as a peer on the signaling line circuit. These peers not only communicate up-to-the-second information to the control panel, but also communicate with each other. Each device is capable of generating accurate and highly detailed information. Conventional suppression alarm systems give a general idea of the fire's location, while the Cheetah Xi's intelligent sensors indicate precisely which device is in an alarm state. This intelligence provides incredible speed with response times as little as one-quarter second between manual pull station and notification appliance. It's flexibility allows you to attach the intelligent devices that are required for your specific application.

APPROVALS:

- UL Listed
- FM Approved
- CSFM
- City of New York
- City of Denver
- OSHPD OSP-0077-10

The System is programmed with either the Windows based field configuration software C-LINX™ or through a comprehensive password protected front-panel keypad programming option. This option allows you to quickly update and adapt to any future requirements or changes in the system such as changes in occupancy or remodeling. The sophisticated control panel circuitry coupled with the software allows you to read specific information and sensitivity levels of the different eclipse devices. The sensors also compensate for any changes due to age, contamination, or other environmental factors.

D.1.10.01-4, August, 2021

OPERATION

The Cheetah Xi Control system operates on a “Zone and State” relationship. In this design, all input and output devices must be assigned to at least one zone (253 are available), each zone defining an area to be protected. Input devices can be assigned up to four zones (one zone is typical) and output devices may be assigned up to 254 zones.

These devices use the SLC signaling line circuits to exchange status information with other devices as well as with the control panel. When an input is activated, it is configured to cause its associated zone to enter into an operational state. Any detection device will cause the associated zone to enter into an alarm state. The output devices are configured to activate to protect and evaluate the endangered zone. This system is completely modular, allowing you the flexibility to design a system that is just right for your application. The illustration below shows a typical configuration of a Cheetah Xi system.

STANDARD FEATURES

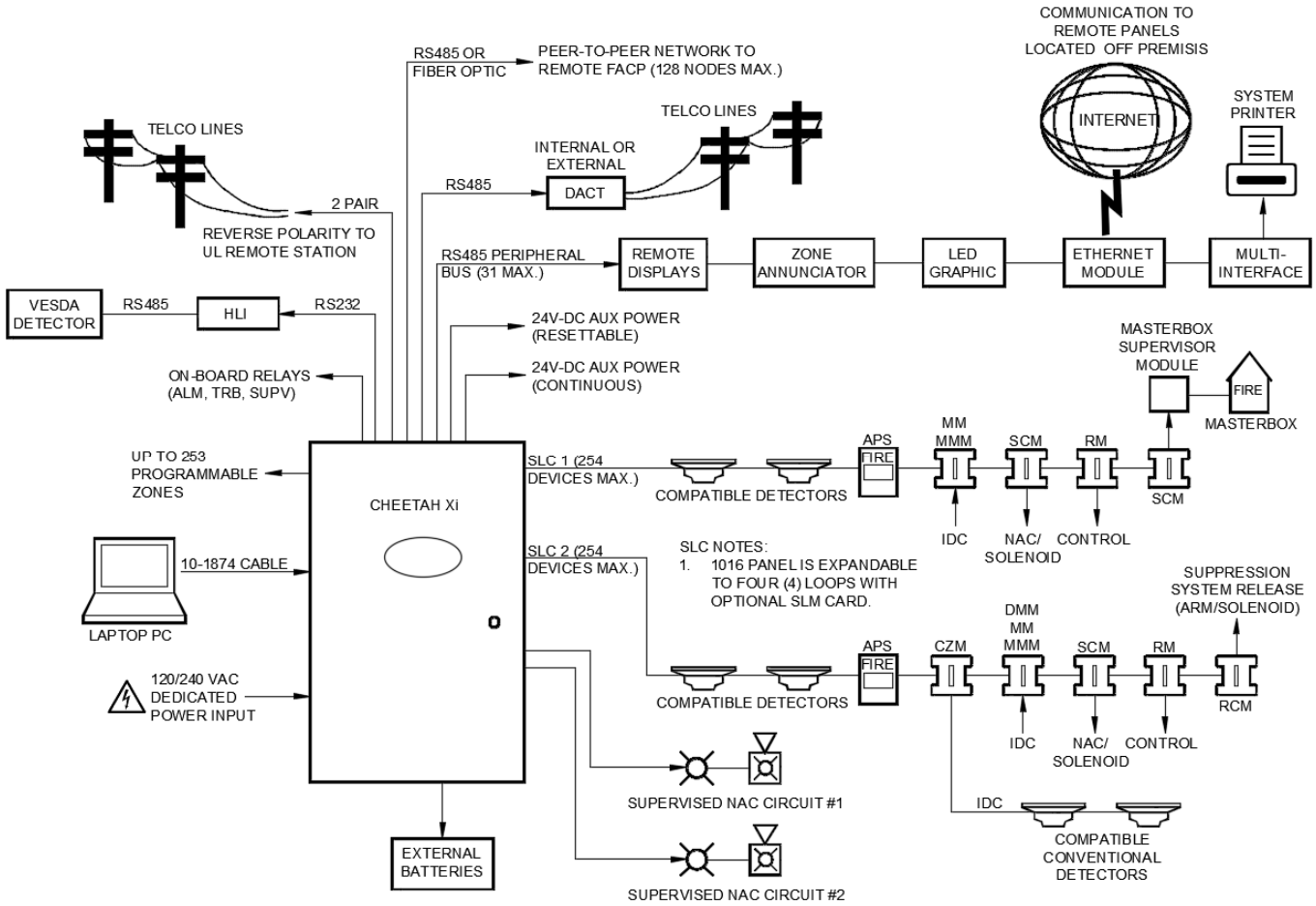
- All Cheetah Xi panels come standard with a controller, transformer and enclosure
- 254 user defined zones
- 80 character, backlit LCD display
- Real time clock
- 3200 event history buffer
- Critical process monitoring
- One-person walktest capability
- Disable by zone, device or circuit
- Drill function at panel and remote
- Provides solenoid releasing operation
- Alarm verification
- Easy to add/remove devices
- Diagnostic menus
- Removable terminal blocks for field wiring
- Local piezo with distinct event tones
- 10 Status LEDs to easily identify system status
- Optional point ID DACT Module available
- Supports up to 31 peripheral devices

PANEL ORDERING

P/N 10-068-**C**-**P**-**L**

C (enclosure color): **R** = red **G** = Grey
P (transformer): **1** = 120V **2** = 240V
L (Lexan cover): **L** suffix indicates Lexan installed over display opening.

SYSTEM DIAGRAM



SPECIFICATIONS

ENCLOSURE	
CONSTRUCTION	18 gauge carbon steel enclosure with removable outer door
FINISH	Baked on paint finish, red or grey
DIMENSIONS	23.6” H x 14.35” W x 4” D (back box dimensions)
MOUNTING	Flush or surface mount
BATTERY CAPACITY	Can house up to 18AH batteries in the enclosure back box
POWER	
ALARM CURRENT	6 amps, expandable to 12 amps with SPS
STANDBY CURRENT	2 amps, expandable to 4 amps with SPS
AC INPUT	120VAC @ 60Hz or 240VAC @ 50/60Hz
AUXILIARY POWER OUTPUTS	Two 24VDC outputs rated 2A, expandable to 5 circuits with SPS
RESETTABLE AUX POWER OUTPUT	One 24VDC output rated 2A,
BATTERY CAPACITY	Supports up to 75AH batteries, expandable to 150AH with SPS
CONTROLLER CURRENT DRAW	275mA @ 24VDC in standby and alarm mode

RELAYS	
ON BOARD RELAYS	Three, form-C (SPDT) relay contacts
RATING	DC operation: 2A @ 30VDC (pf = .35) AC operation: 0.5A @ 120VAC (pf = .35)
OPERATION	Relays 1 and 2 are configurable. Relay 3 is defaulted to Trouble operation
VESDA	
HIGH LEVEL INTERFACE	RS232 port for connection to VESDA HLI (P/N 68-023 or 68-517)
	Intelligently links Xtralis VESDA detectors to the Cheetah Xi. VESDA detectors do not occupy SLC addresses.
DACT	
DIGITAL ALARM COMMUNICATOR TRANSMITTER	Point ID communication
	DACT card can be mounted inside the panel or external mounted
PERIPHERAL BUS	
BUS	RS485 port for connection to compatible peripheral devices, 31 maximum
RS485 WIRING	Belden 9841 or equal 4,000 ft (1219m) maximum wire length 110Ω maximum wire impedance 0.05µf maximum wire capacitance 100Ω termination resistor on last device
SIGNALING LINE CIRCUITS	
DEVICE ADDRESSING	Use Infrared (IR) tool or panel addressing feature
NUMBER OF LOOPS	Two, NFPA Class A or Class B loops, expandable to four with SLM
DEVICES PER LOOP	254 devices per loop, system maximum 1016 devices with SLM
LOOP RESISTANCE	70 ohms maximum
LOOP CAPACITANCE	60µf maximum
LOOP DISTANCE	12,000 ft. maximum (panel to last device)
LOOP FUNCTIONS	True peer-to-peer digital protocol
	Auto-learn function
	Automatic day/night sensitivity adjustment
	Automatic holiday sensitivity adjustment
	Acclimate operation for sensors
	IR tool can be used to read device sensitivity levels or perform remote test
	Devices contain multi-color LED for indication of device status
	Sensors can provide early warning, pre-alarm detection
	Sensors can participate in device summing feature (up to eight sensors)
NAC CIRCUITS	
STYLE	Class B or Class A
OUTPUT RATING	Continuous, regulated 24 VDC @ 2A maximum
SYNCHRONIZATION	Supports Gentex or System Sensor Protocols
PROGRAMMING AND CONFIGURATION	
SOFTWARE	C-LINX panel configuration and diagnostics software
DEVICE CONFIGURATION	Hand-Held IR Configuration Tool (P/N 55-051). Communicates bi-directionally with any Cheetah Xi device to facilitate: addressing of devices, reading sensitivity levels, service dates, device type, loop and address, manufacture date, initiate walk test of any sensor or module, and access any hard-to-reach sensor or module (such as duct detector) through any other device on loop.

OPTIONAL MODULES

PART NUMBER	DESCRIPTION	DATA SHEET
The modules interface directly with the Cheetah Xi controller to expand its operational capabilities.		
10-2474-P	Supplemental Power Supply (SPS). Install to add up to 2A external standby power and 6A alarm power (4 A standby/12A alarm total) to the Cheetah Xi system. Supports charging up to 75Ah of additional standby battery.	D.1.12.01
10-2473	Supplemental Loop Module (SLM). Install to add two more SLC loops to the Cheetah Xi system. Loop specifications and wiring for SLM are the same as the main controller.	D.1.13.01
10-2528	Point ID Digital Alarm Communicator Transmitter (DACT). Install to provide an interface with a Central Station monitoring system. The DACT provides 5 contact zones of connection or point ID transmission capability via intelligent serial interface connection with the Cheetah Xi.	D.1.18.01
10-2204	CRM4 Relay Module. Install to provide four additional relays for control and monitoring functions. The Cheetah Xi board supports up to two CRM4 modules. Each relay is independently programmable.	D.1.14.01
10-2254	Reverse Polarity Module (RPM). Install to provide for UL Remote Station supervision (Direct leased line connection).	D.1.15.01
10-2482	RS485 Network Module. Install to network up to 128 panels maximum using RS485 cable. Enables the systems 254 zones to be shared from panel-to-panel.	D.1.17.01
10-2624	Fiber Optic Network Module. Install to network up to 128 panels maximum using Fiber Optic cable. Enables the systems 254 zones to be shared from panel-to-panel.	D.1.21.01

OPTIONAL PERIPHERAL BUS DEVICES

PART NUMBER	DESCRIPTION	DATA SHEET
The following devices connect to the Cheetah Xi panels RS485 peripheral bus (31 devices maximum).		
10-2646	Fourteen Button Remote Display Unit (RDU14). The RDU14 is equipped with a 80 character, backlit display that duplicates information provided by the control panel. The RDU14 is equipped with six buttons (Enter, Escape, +/-, left/right arrow) used for navigation through events, as well as configuration of the device. Additionally it has eight programmable buttons configured for things such as reset, silence, acknowledge, drill, or process.	P.1.108.01
10-2631	Ten Button Remote Display Unit (RDU10). The RDU10 is equipped with a 80 character, backlit display that duplicates information provided by the control panel. The RDU10 is equipped with six buttons (Enter, Escape, +/-, left/right arrow) used for navigation through events, as well as configuration of the device. Additionally it has four dedicated buttons that perform the following functions: drill, silence, acknowledge, and reset.	P.1.107.01
10-2630	Two Button Remote Display Unit (RDU2). The RDU2 provides remote annunciation of Fike's intelligent control panels. The RDU2 is equipped with an 80 character, backlit display that duplicates information provided on the main control panel.	P.1.103.01
10-2667	Twenty-Zone Annunciator. The annunciator can provide remote annunciation for up to twenty zones at a location remote from the control panel. The module provides a tabular display that incorporates 20 red alarm and 20 yellow trouble/supervisory LEDs. Each LED is programmable and can provide visual indication of alarm, trouble/supervisory conditions for zones or individual points.	P.1.118.01
10-2627	Ethernet Module. The module allows remote monitoring of the Cheetah Xi panel via Ethernet/IP.	D.1.22.01
10-2583	Multi-Interface Module (MIM). The primary function of the MIM is to provide a printer interface for the Cheetah Xi. It allows specific event and point information to be communicated from the panel to the printer. It is compatible with either a Epson FX-890 or equivalent IEEE 1284 standard printer or for UL required applications the Keltron 90 series UL listed fire alarm printer.	P.1.85.01

ADRESSABLE SENSORS AND MODULES

PART NUMBER	DESCRIPTION	DATA SHEET
These devices interface directly with the Cheetah Xi controllers SLC loops.		
63-1052	Photoelectric Smoke Sensor Non-Isolator Version	P.1.88.01
63-1058	Photoelectric Smoke Sensor Isolator Version	P.1.88.01
63-1053	Photo/Heat Combination Sensor Non-Isolator Version	P.1.89.01
63-1059	Photo/Heat Combination Sensor Isolator Version	P.1.89.01
60-1039	Thermal Sensor Non-Isolator Version	P.1.90.01
60-1040	Thermal Sensor Isolator Version	P.1.90.01
67-033	Ion Sensor Non-Isolator Version	P.1.91.01
67-034	Ion Sensor Isolator Version	P.1.91.01
63-1057	Duct Sensor Non-Isolator Version	P.106.01
63-1062	Duct Sensor Isolator Version	P.106.01
63-1056	Duct Housing	P.106.01
63-1054	6” Sensor Base Non-Isolator Version	P.1.98.01
63-1060	6” Sensor Base Isolator Version	P.1.98.01
63-1055	4” Sensor Base Non-Isolator Version	P.1.99.01
63-1061	4” Sensor Base Isolator Version	P.1.99.01
63-1064	Sounder Base	P.101.01
63-1063	Relay Base	P.101.01
55-045	Mini-Monitor Module Non-Isolator Version	P.1.93.01
55-050	Mini-Monitor Module Isolator Version	P.1.93.01
55-041	4” Monitor Module Non-Isolator Version	P.1.92.01
55-046	4” Monitor Module Isolator Version	P.1.92.01
20-1063	Intelligent Pull Station Non-Isolator Version (Fire)	P.1.65.01
20-1064	Intelligent Pull Station Isolator Version (Fire)	P.1.65.01
20-1343	Intelligent Pull Station Non-Isolator Version (Agent)	P.1.104.01
55-042	Supervised Control Module Non-Isolator Version	P.1.94.01
55-047	Supervised Control Module Isolator Version	P.1.94.01
10-2360	Series Solenoid Diode/Resistor (Needed for solenoids)	P.1.232.01
10-2413	Masterbox Interface	
55-043	Relay Module Non-Isolator Version	P.1.95.01
55-048	Relay Module Isolator Version	P.1.95.01
55-052	Release Control Module Non-Isolator Version	P.1.95.01
55-053	Release Control Module Isolator Version	P.1.95.01
10-1832	ARM III Agent Release Module	C.1.04.01
10-2748	Impulse Release Module (IR)	IV.1.15.01

DTK-DF120S1

120VAC Surge Protective Device

Visual, audible, smart. **DITEK's DTK-DF120S1** sets a new standard for 120VAC power surge protection. Its patented design provides maximum critical load protection by minimizing AC supply voltage spikes and isolating incoming surges that originate from lightning or other sources. Each DF Series module features an LED health status indicator that flashes and sounds an audible alarm when protection has been compromised; and the wall-mountable enclosure includes dry contacts for remote notification when service is required.

Product Features

- Protects 120VAC single phase critical loads
- Audible alarm sounds when protection is compromised or module is removed
- Push-button delay included to silence audible alarm for 24 hours
- Rapid-Replacement modules for ease of installation
- Form C dry contacts for remote notification when service is required
- UL1283 EMI/RFI noise filtering ensures clean power for connected equipment
- Separate LED indicators for system power, ground presence and protection status
- Accepts both flexible and rigid conduit
- No additional enclosure required

Applications

- Fire Alarm Panels and Control Panels
- Electronic Fueling Equipment and Tank Monitors
- POS Devices and Lottery Machines
- Home Automation Systems

Accessories

- Replacement Module, p/n DTK-DF120M

Technical Specifications

Voltage Configuration:	120VAC Single Φ (2W + G)
MCOV:	150V
Protection Modes:	L-G, L-N, N-G
Voltage Protection Rating:	600V L-G, 700V L-N 1200V N-G
Surge Current Rating:	50,000A
Max. Continuous Current:	20A
SCCR:	10,000A
Nominal Discharge Current Rating (I_n):	10kA
Operating Frequency:	50/60Hz
EMI/RFI Filtering Attenuation:	Up to 35dB, 100kHz – 100MHz
Audible Alarm dB Level:	80dB @ 1' (MAX)

Mechanical Specifications

Connection Method:	Mechanical lugs, 12 AWG max ¾" NPT pre-drilled holes In/Out
Housing:	ABS
Operating Temperature:	-4°F – 140°F (-20°C – 60°C)
Maximum Humidity:	95% non-condensing
Dimensions:	6.6" L x 5.4" W x 2.6" H (168 mm x 137 mm x 66 mm)
Weight:	15.5 oz (0.44 kg)

Quality Standards & Approvals

Certifications:	UL1449 5th Edition, UL1283 CSA C22.2 No. 269.2-17
SPD Type:	Type 2
Warranty:	10 Year Limited Warranty

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POWER PS SONIC
TRUSTED BATTERY SOLUTIONS

PS SERIES

General Purpose | Emergency Lighting | Medical | Fire & Security

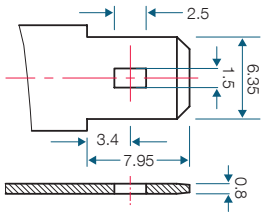
PS-12180

12V 18.0 AH @ 20-hr.
12V 17.1 AH @ 10-hr.

Rechargeable Sealed Lead Acid Battery
PS – General Purpose Series

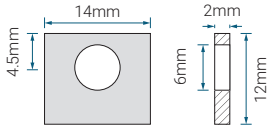
TERMINALS: (mm)

F2: Quick disconnect tabs, 0.250" x 0.032" – Mate with AMP. INC FASTON "250" series



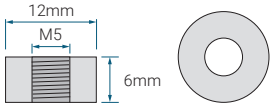
Torque – Not Applicable

NB2: Tin plated brass post with 'Nut & Bolt' fasteners



Torque: 3.9~5.4 Nxm

T12: Threaded insert with 5mm stud fastener



Torque: 2.0~3.0 Nxm

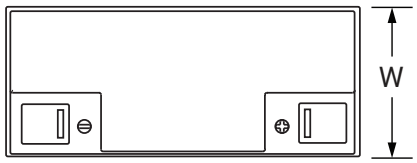
FEATURES

- 5 year design life
- Absorbent Glass Mat (AGM) technology for superior performance
- Valve regulated, maintenance free spill proof construction
- Power/volume ratio yielding excellent energy density
- Rugged vibration and impact resistant ABS case and cover
- Gas recombination technology

APPROVALS

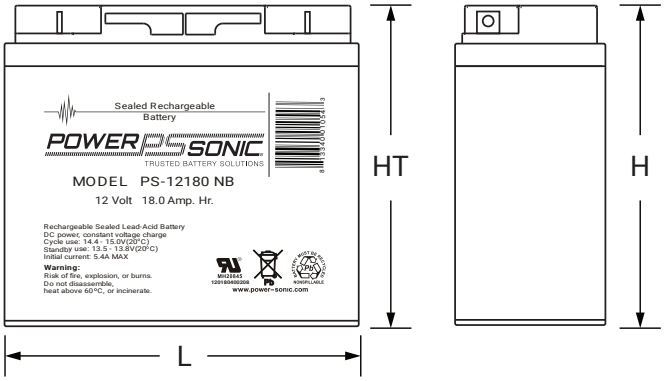
- Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified
- U.L. recognized
- ISO9001:2015 – Quality management systems

DIMENSIONS: inch (mm)



L: 7.13 (181)
W: 3.00 (76)
H: 6.59 (167)
HT: 6.59 (167)

Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.



PERFORMANCE SPECIFICATIONS

Nominal Voltage	12 volts (6 cells)
Nominal Capacity	
20-hr. (900mA to 10.50 volts)	18.00 AH
10-hr. (1.71A to 10.50 volts)	17.10 AH
5-hr. (3.06A to 10.20 volts)	15.30 AH
1-hr. (11.5A to 9.60 volts)	11.50 AH
Approximate Weight	12.32 lbs. (5.6 kg)
Internal Resistance (approx.)	10.5 milliohms
Max Short-Duration Discharge Current (5 Sec.)	270.0 amperes
Shelf Life (% of nominal capacity at 68°F (20°C)	
1 Month	92%
3 Month	90%
6 Month	80%
Operating Temperature Range	
Charge	5°F (-15°C) to 122°F (50°C)
Discharge	5°F (-15°C) to 104°F (40°C)
Case	ABS Plastic
Power Sonic Chargers	PSC-122000A-C PSC-122000-PC PSC-124000-PC PSC-124000A-C

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POWER PS SONIC
TRUSTED BATTERY SOLUTIONS

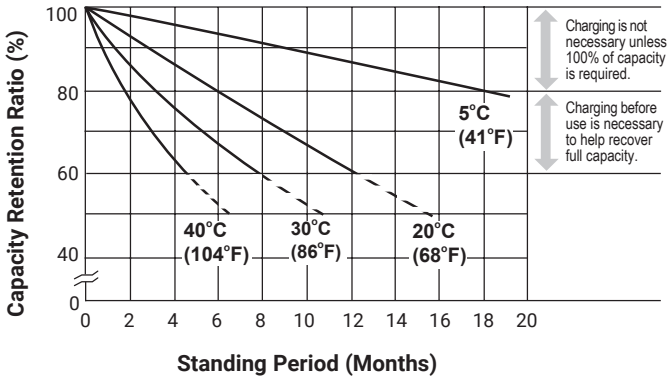
PS SERIES

PS-12180

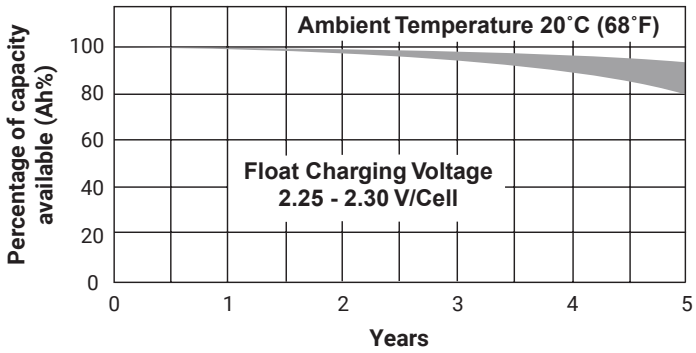
12V 18.0 AH @ 20-hr.
12V 17.1 AH @ 10-hr.

Rechargeable Sealed Lead Acid Battery
PS – General Purpose Series

SHELF LIFE & STORAGE



LIFE CHARACTERISTICS IN STAND-BY USE



CHARGING

Cycle Applications: Apply constant voltage charge at 2.35v/c – 2.45v/c (14.1 – 14.7v for 12v Monobloc) at 20°C. Initial charging current should be set at less than 0.25C Amps. Switch to float charge to avoid overcharging.

"Float" or "Stand-By" Service: Apply constant voltage charge of 2.25v/c – 2.30v/c (13.5 to 13.8 volts for 12v Monobloc at 20°C. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition.

Temperature Compensation: Charging Voltage for both Cyclic and Standby applications should be regulated in relation to ambient temperature. As temperature rises charging voltage should be reduced to prevent overcharge and increased as temperature falls to avoid undercharge.

For further charging information including temperature compensation factors, see Power Sonic Technical Manual/ Power Sonic Charger specifications.

APPLICATIONS

- General purpose
- Emergency lighting
- Medical
- Fire and security

CHARGERS

Power Sonic offers a wide range of chargers suitable for batteries with a variety of capacities.

Please refer to our website for more information on our switch mode and transformer type chargers.

Please contact our technical department for advice if you have difficulty in locating a suitable charger.

FURTHER INFORMATION

Please refer to our website **www.power-sonic.com** for a complete range of useful downloads, such as product catalogs, material safety data sheets (MSDS), ISO certification, etc.

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DATA SHEET

INTELLIGENT PHOTOELECTRIC DETECTOR

DESCRIPTION

The Intelligent Photoelectric, spot-type smoke detectors, P/N 63-1052 & 63-1058, have sensing chambers that utilize the light scattering principle to detect smoke. The sensing chamber employs features that minimize the effect of settled dust on performance. The detector is designed with tri-color LEDs to indicate detector status. A remote LED annunciator, P/N 02-3868, is available as an accessory. It can be configured to follow the detector LED operation or be independently controlled. The isolator version, P/N 63-1058, provides complete short circuit isolation for NFPA 72, Class X wiring if used with an isolator base.

The detector is compatible with Fike's CyberCat® and Cheetah® Xi intelligent control panels. Its operating parameters are configured using the panel's programming software and are stored within non-volatile RAM in the detector. This on-board intelligence allows each detector to communicate its status directly to other devices connected to the panel. This peer-to-peer digital protocol results in less information that needs to be sent between the detector and the host control panel, resulting in faster, more reliable communication.

APPROVALS:

- UL - S911
- FM
- MEA - 7-05-E
- CSFM - 7272-2010:0100

SPECIFICATIONS

Normal Operating Voltage:	15 to 30 VDC
Standby Current:	481µA max. @ 24 VDC (continuous broadcasts)
Alarm Current:	2 mA max. @ 24 VDC (LEDs on)
Humidity Range:	10% to 93% Relative Humidity, non-condensing
Temperature Range:	32°F to 120°F (0°C to 49°C)
Height:	2.1 inches (51 mm) installed in 63-1054 Base
Diameter:	6.1 inches (155 mm) installed in 63-1054 Base 4.1 inches (104 mm) installed in 63-1055 Base
Weight:	5.2 oz. (147 g)
Detector Spacing:	In compliance with NFPA 72
Velocity Range:	4000 FPM (1219 m/min.)

ORDERING INFORMATION

Fike P/N	Mfg. Model	Description
63-1052	63-1052	Photoelectric Smoke Detector - Non-Isolator
63-1058	63-1058	Photoelectric Smoke Detector - Isolator
Mounting Bases		
63-1054	EBF	6" Flanged Mounting Base - Non-Isolator
63-1060	EBFI	6" Flanged Mounting Base - Isolator
63-1055	EB	4" Flangeless Mounting Base - Non-Isolator
63-1061	EBI	4" Flangeless Mounting Base - Isolator
63-1063	EBR	Relay Base
63-1064	EBS	Sounder Base
Accessories		
20-1085	F110	Retrofit Flange
02-3868	RA100Z	Remote LED Annunciator
20-1087	XR2B	Detector Removal Tool
02-4986	XP-4	Extension for 20-1087 (5–15 ft)
20-1089	BCK-200B	Black Detector Kit (10 pack)
55-051	EA-CT	IR Tool

Form No. P.1.88.01-4

704 SW 10th Street • P.O. Box 610 • Blue Springs, Missouri 64013-0610 U.S.A.
Phone: 816•229•3405 • www.fike.com

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Form No. P.1.88.01-4, March 2014. This document shall not be used for installation purposes. Please refer to installation instructions applicable for each product.

DATA SHEET

PLUG-IN DETECTOR BASE SIX INCH

DESCRIPTION

The Six Inch Flanged Detector Bases, P/N 63-1054/63-1060, are designed for use with any of Fike's intelligent CyberCat®/Cheetah® Xi plug-in detectors. The base is approximately 2 inches (5.08 cm) larger than the detector head. The base mounts directly to a 3 ½ inch and 4 inch octagon boxes, 4 inch square boxes (with or without plaster ring) and single gang boxes. The base provides terminals for connection of an optional remote LED annunciator, P/N 02-3868. The isolator version, P/N 63-1060, provides complete short circuit isolation for NFPA 72, Class X wiring.

SPECIFICATIONS

Diameter: 6.1" (155 mm);
Wire Gauge: 12 to 18 AWG (0.9 to 3.25 mm^2)

APPROVALS:

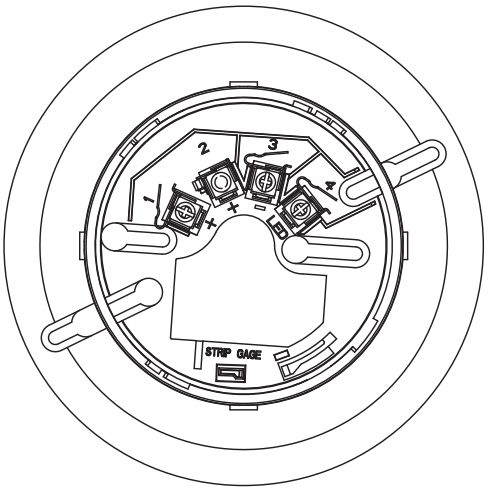
- UL - S911
- FM
- City of New York - 9-05-E
- CSFM - 7300-0900:0138

ORDERING INFORMATION

Fike P/N	Mfg. Model	Description
Mounting Bases		
63-1054	EBF	6" Flanged Mounting Base - Non-isolator
63-1060	EBFI	6" Flanged Mounting Base - Isolator
Accessories		
20-1085	F110	Retrofit Flange
02-3868	RA100Z	Remote LED Annunciator
20-1087	XR2B	Detector Removal Tool
02-4986	XP-4	Extension for 20-1087 (5–15 ft)
20-1089	BCK-200B	Black Detector Kit (10 pack)
55-051	EA-CT	IR Tool
Compatible Sensors		
63-1052	63-1052	Photo - Non-isolator
63-1058	63-1058	Photo - Isolator
63-1053	63-1053	Photo/Heat - Non-isolator
63-1059	63-1059	Photo/Heat - Isolator
60-1039	60-1039	Heat - Non-isolator
60-1040	60-1040	Heat - Isolator
67-033	67-033	Ion - Non-Isolator
67-034	67-034	Ion - Isolator

704 SW 10th Street • P.O. Box 610 • Blue Springs, Missouri 64013-0610 U.S.A.
Phone: 816•229•3405 • www.fike.com

TERMINAL LAYOUT



TERMINAL DEFINITIONS

No.	Function
T1	(+) SLC in/out 63-1054, (+) SLC in only on 63-1060
T2	No Connection 63-1054, (+) SLC out 63-1060
T3	(-) SLC in/out, (-) Remote Annunciator
T4	(+) Remote Annunciator

Form No. P.1.98.01-4, February 2019. This document shall not be used for installation purposes. Please refer to installation instructions applicable for each product.

DATA SHEET

INTELLIGENT AGENT RELEASE PULL STATION

Intelligent Agent Release Pull Station

DESCRIPTION

The Intelligent Agent Release Pull Station, P/N 20-1343, is a state-of-the-art, dual-action (i.e., requires two motions to activate the station) pull station that includes an addressable interface (mounted inside) for Fike's intelligent Cheetah Xi fire alarm control panels. This device provides a manual means of discharging an automatic fire extinguishing system. Because the 20-1343 is addressable, the control panel can display the exact location of the activated manual pull station. This leads fire service personnel quickly to the location of the alarm.

FEATURES

- Aesthetically pleasing, highly visible, dual-action design.
- Meets ADA 5 lb. maximum pull force.
- Easily operated (dual-action).
- Attractive shape and textured finish.
- When the handle latches in down position, the word "ACTIVATED" appears at the top of the handle in bright yellow to clearly indicate the station has been operated.
- Key/lock reset; needs only a 1/4-turn to lock/unlock.
- Includes Braille text on station handle.
- Captive screw terminals wire-ready for easy connection to SLC loop (accepts up to 12 AWG/3.1 mm² wire).
- Meets UL 38, Standard for Manually Actuated Signaling Boxes.
- Maintenance personnel can open station (for inspection and testing) without causing an alarm condition.
- Built-in multi color LED, which is visible through the handle of the station, flashes green in normal operation and latches on steady red when in alarm.

APPROVALS:

- UL Listed - S6239
- FM
- City of New York - 490-04-E & 307-05-E
- CSFM - 7150-0900:0144

ELECTRICAL SPECIFICATIONS

Normal Operating Voltage:	15-30 VDC
Standby Current:	370 µA. max. Average (continuous broadcasts)
Maximum Alarm Current:	2 mA (red LED on)
Temperature Range:	32 - 120°F (0 - 49°C)
Relative Humidity Range:	10% - 93% non-condensing

INSTALLATION

The 20-1343 can be semi-flush mounted onto a single-gang, double-gang, or standard 4.0" (10.16 cm) square electrical outlet box, or surface mounted.

CONSTRUCTION

Shell, door, and handle are molded of durable LEXAN® (or polycarbonate equivalent) with a textured finish.

Form No. P.1.104.01-3

704 SW 10th Street • P.O. Box 610 • Blue Springs, Missouri 64013-0610 U.S.A.
Phone: 816•229•3405 • www.fike.com

OPERATION

Pushing in, then pulling down on the handle causes it to latch in the down/activated position. Once latched, the word “ACTIVATED” (in bright yellow) appears at the top of the handle, while a portion of the handle protrudes from the bottom of the station. To reset the station, simply unlock the station with the key and pull the door open. This action resets the handle; closing the door automatically resets the switch.

Manual stations connect with two wires to one of the control panel SLC loops. Each manual station, on command from the control panel, sends data to the panel representing the state of the pull station switch. IR tool allows address setting (01-254).

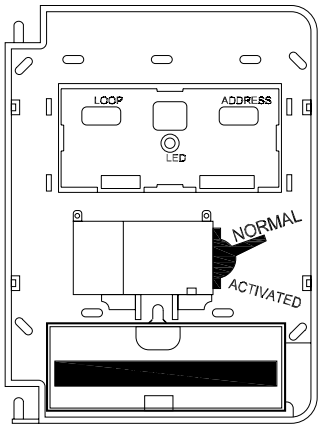
PRODUCT LINE INFORMATION

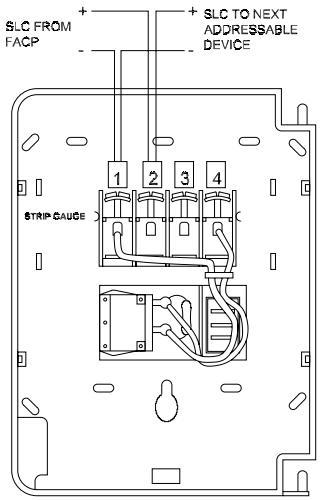
20-1343 Dual-action addressable pull station. Includes key lock/reset feature.

NOTE - Opening the pull station door will not activate or deactivate the alarm switch.

NOTE - LED is visible through translucent handle.

LED OPERTION
Normal: Flash RED
Alarm: Steady Red





Form No. P.1.104.01-3, May 2014. This document shall not be used for installation purposes. Please refer to installation instructions applicable for each product.

ABORT SWITCH

FEATURES

- Compatible with Fike suppression control panels
- Stackable, screw-terminal contact blocks
- 304 stainless steel faceplate with etched text
- Surface or flush mount
- Momentary contact push-button switch
- Normally open and closed contact blocks

General

The abort switch assembly is used to temporarily interrupt the release circuit signal when the control panel is in the alarm condition.

Approvals

Underwriters Laboratories (UL)
Factory Mutual (FM)
California State Fire Marshal (CSFM)

For exact certification listings, please reference the respective agency web site.

Ordering Information

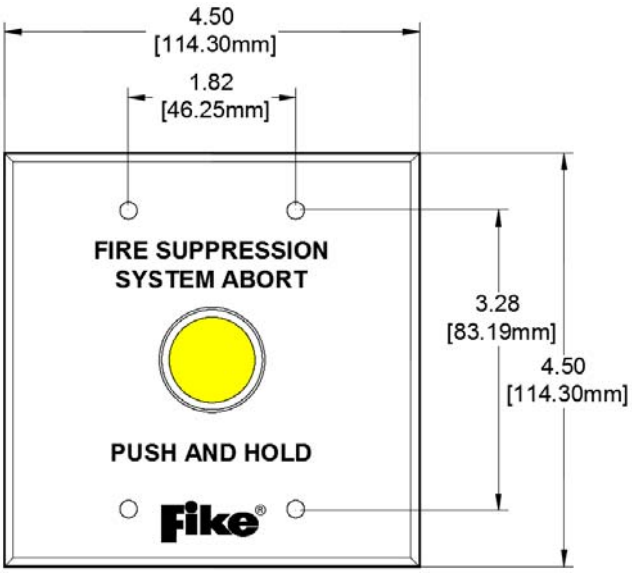
Part Number	Description
10-2965	Abort Switch Assembly
10-2981[1]	Abort Switch
10-2966[1]	304 Stainless Steel Faceplate
02-16365[2]	Contact Block, Normally Open (NO)
02-16366[2]	Contact Block, Normally Closed (NC)
02-2316[2]	Mounting Screws (4 required)
02-4780[2]	Contact Block Adapter
02-16401[2]	Anti-Rotation Ring
02-16402[2]	Locking Lever Cap
02-16372[2]	Yellow Cap
02-12318	Locking Ring Wrench
02-16369[3]	30mm to 22mm Trim Ring
02-2153	2-Gang Masonry Box, RACO 691

[1]Included in 10-2965 switch assembly.
[2]Included in 10-2981 switch assembly.
[3]Allows 22mm switch to be mounted to a 30mm switch face plate.

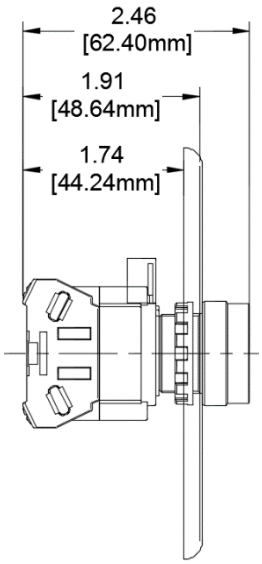
Specifications

Operating Temperature:	0°C to 49°C (32°F to 120°F)
Operating Humidity:	93% RH, non-condensing
Weight:	0.30 lb. (136 grams)
Mounting:	2-gang masonry box (RACO 691) or equivalent. For indoor use only.
Contact Block Rating:	30VDC @ 5 AMPS
Applicable Wire Size:	Minimum 1 x 22 AWG, max 2 x 14 AWG or 1 x 12 AWG
Compliance:	Restriction of Hazardous Substances (RoHS)

Product Diagram/Dimensions



Switch Front View



Switch Side View

SUPPRESSION DISCONNECT SWITCHES (P/N 10-2698 AND 10-2699)

10-2699 Disconnect Switch

Features

- Meets the requirements of NFPA 2001
- Stainless steel faceplate with etched text
- Two-position key switch removable only in ARMED position
- Available with or without status indicator LEDs
- Surface or flush mounted

Description

The Suppression Disconnect Switch is designed to prevent a false discharge during the service, maintenance or testing of the suppression system. The switch can be ordered with or without indicator LEDs. The LEDs will illuminate to provide visual indication as to the status of the releasing circuit.

The Suppression Disconnect Switch is installed into the releasing circuit between the associated releasing panel or module and the releasing device itself. When actiavated, the switch's relays will transfer to physically disconnect the releasing circuit from the panel or module and initiate a supervisory signal to the releasing panel to indicate the disconnect (disarmed) state.

Specifications

Input Voltage	15 – 30 VDC
Current Consumption	13.1 mA (LED active)
Circuit Limitations	Class B only
Weight	0.55 lb. (0.25 kg)
Operating Temp.	0 to 49°C (32 to 120°F)
Operating Humidity	93% RH
Contact Rating	8A @ 24 VDC Resistive 4A @ 24 VDC Inductive
Mounting	Surface or Flush
Compatible Releasing Devices	Agent Release Module (ARM), P/N 10-1832
	Impulse Release Module (IRM), P/N 10-2748
	Universal Valve Operator (UVO), P/N 02-13571
	Direct Fire Impulse Actuator (DFIA), P/N 02-13279
	Releaseing solenoids. Refer to Fike Device Compatibility document P/N 06-186.

Approvals

Underwriters Laboratories (UL)
Factory Mutual (FM)
California State Fire Marshal (CSFM)
New York Certificate of Approval (COA)

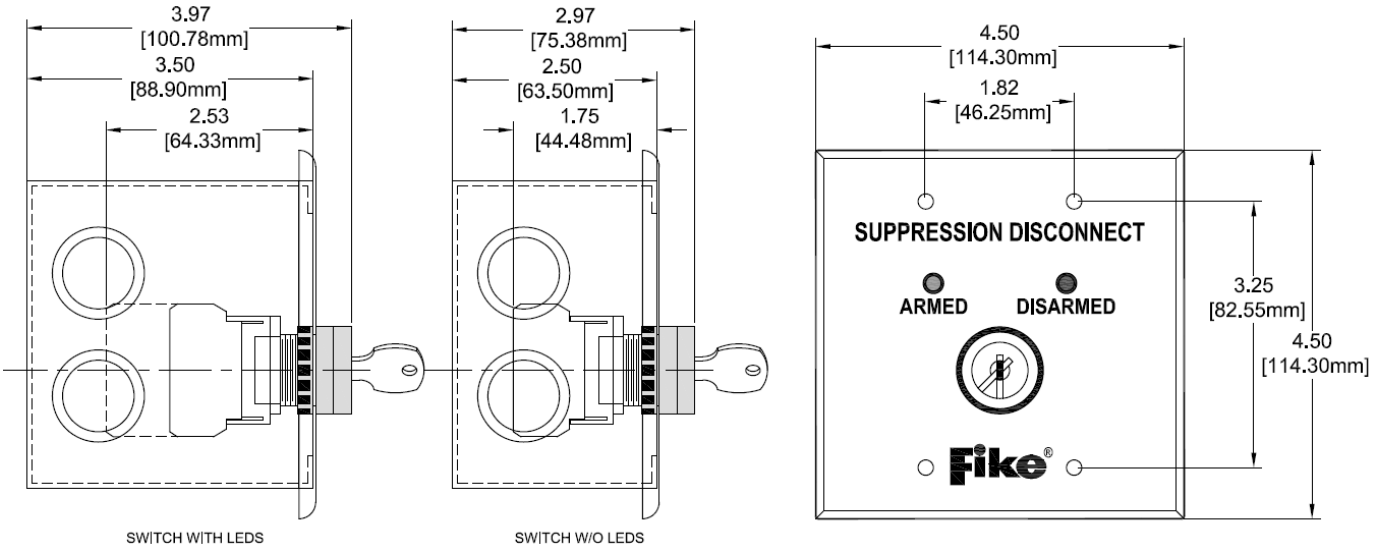
For exact certification listings, please reference the respective agency web site.

Ordering Information

Part Number	Description
10-2698	Disconnect Switch, no LED's
10-2699	Disconnect Switch, with LED's
02-2153	Two gang x 2.5" deep (RACO 691) masonry box; fits P/N 10-2698
02-17420	Two gang x 3" deep (RACO 696) masonry box; fits P/N 10-2699
Replacement Parts	
02-12294	Double contact block (2 NC)
02-12295	Double contact block (2 NO)
02-12296	Replacement keys
02-12298	Five block switch (contacts and switch)
02-12300	Single contact (NO)
02-12315	3 block switch (contacts and switch)
02-12316	Single contact block (NC)
02-12318	Locking ring wrench
10-2714	Cover plate w/o LED holes

Dimensions

The required depth of the mounting box varies between a switch with or without LEDs.



SPECIAL USE MAINTENANCE SWITCH

PART#: **GEM MAINT-SU** · Specify **3 Pole** or **4 Pole**

DESCRIPTION

Optional Surface Mount Back Box - Part# **GEM 2GRB**

This MAINTENANCE panel is a key switch which disconnects actuation circuits in the system to prevent accidental discharge during maintenance operations.

When the key is turned toward "SYSTEM INACTIVE", the red LED illuminates and the green LED indicating "SYSTEM ARMED" turns off. The key can only be removed in the "SYSTEM ARMED" position, however this panel is also available with a removable key in both the "ARMED" and the "INACTIVE" positions.

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864 - 9th Edition

The SPECIAL USE MAINTENANCE SWITCH provides space for an optional input module. The text and your company logo (optional) are silk screened on a two-gang stainless steel plate.

INSTALLATION

The 2-Gang plate mounts to Gemcom's Surface Back Box (**Part# GEM 2GRB**) and operates on 24VDC. Flush mounting is also available with a two-gang plaster ring on a deep 4" square 1900 box. Refer below to Figures (1) and (2) for the dimensions.

FIGURE 1

2 GANG PLATE - FRONT VIEW

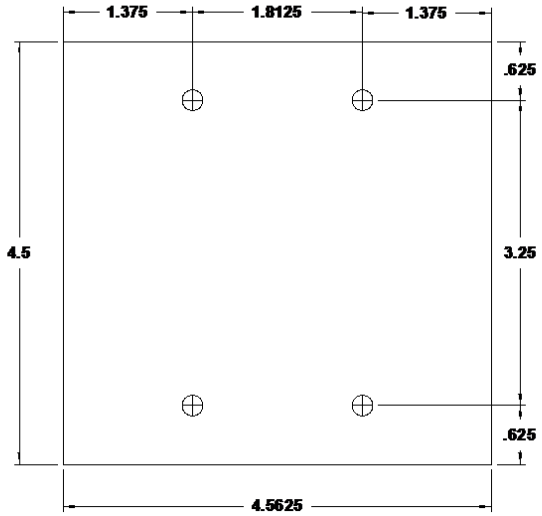
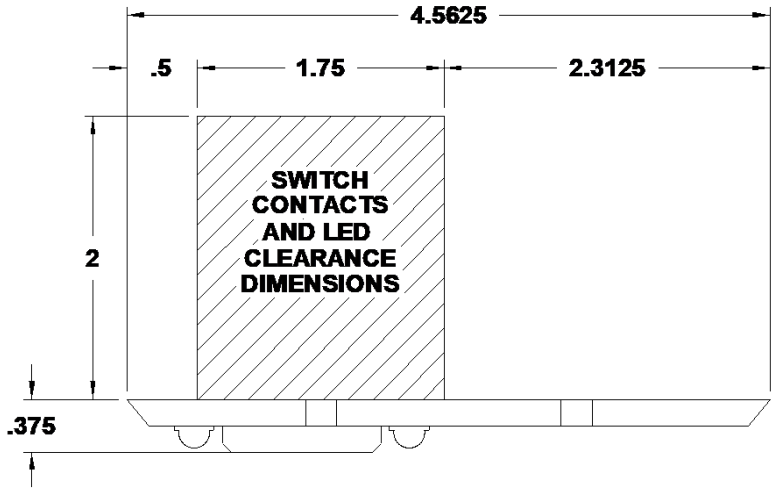


FIGURE 2

2 GANG PLATE - TOP VIEW



SPECIAL USE MAINTENANCE SWITCH

PART#: **GEM MAINT-SU** · Specify **3 Pole** or **4 Pole**

SWITCH RATING

10A 250VAC
15A 125-250VAC
DC Rating is 15A up to 30VDC

LED RATING

10mA each - total current draw of 20mA

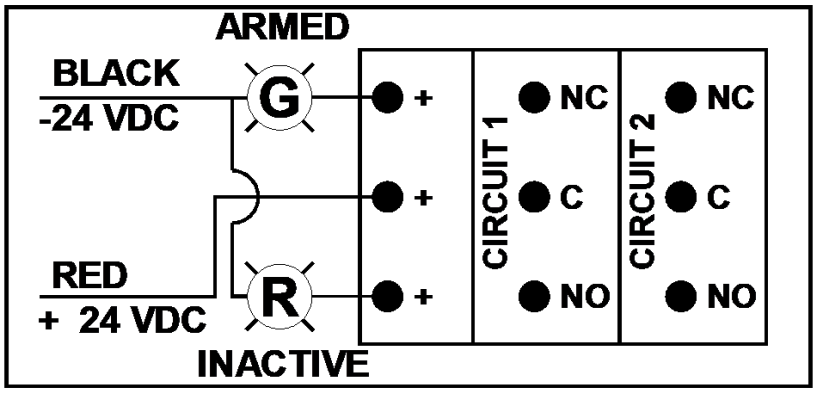
Operating Temperature 32 to 120 °F (0 to 49 °C)

For dry indoor use only

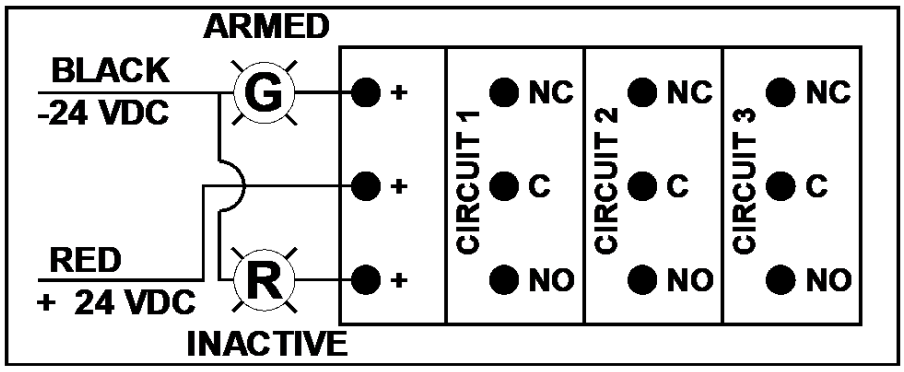
Mounting screws supplied: (4) 6-32 x 1/2"
(4) 6-32 x 1"

Listed UL 864, 9th edition

3-POLE WIRING DIAGRAM



4-POLE WIRING DIAGRAM



DATA SHEET

MONITOR MODULE

DESCRIPTION

The Monitor Module, P/N 55-041 & 55-046, provides a single Class A or B Initiating Device Circuit (IDC) capable of monitoring normally open contact fire alarm and supervisory devices or normally closed supervisory/process devices. In addition to monitoring the connected contacts, the module will monitor the wiring to the device for open circuits via an end-of-line resistor (Class B only). The module has a multi-color LED that will flash a unique color for instant status indication (Green for normal operation, Red for active input, and Yellow for device trouble). The isolator version of the module, P/N 55-046, provides complete short-circuit isolation for installations requiring NFPA, Class X wiring.

The module is compatible with Fike's CyberCat® and Cheetah® Xi intelligent control panels. Its operating parameters are configured using the panel's programming software and stored within the module's non-volatile RAM. This onboard intelligence allows each module to communicate its status directly to other devices connected to the Signaling Line Circuit (SLC). This peer-to-peer digital protocol results in less information that must be sent between the module and the host control panel, resulting in faster, more reliable communication.

APPROVALS:

- UL
- FM
- City of New York
- CSFM

Refer to agency web site for details.

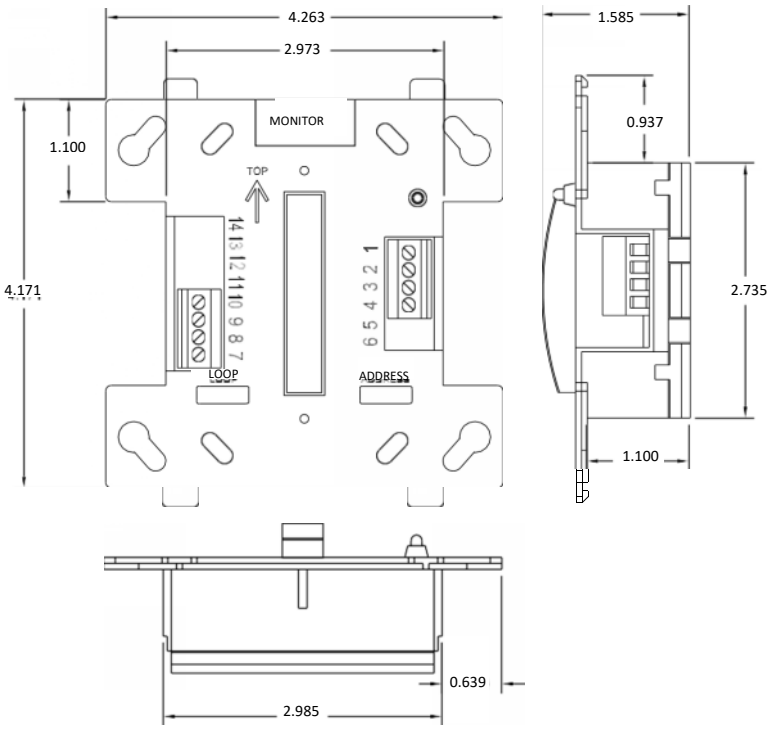
SPECIFICATIONS

Normal Operating Voltage:	15 to 30 VDC
Standby Current:	485µA max. (continuous broadcasts)
IDC Voltage:	5.4 VDC max.
Alarm Current:	2.0 mA (red LED on)
Maximum IDC Wiring Resistance:	100 Ω
Temperature Range:	32 to 120°F (0 to 49°C)
Average Humidity:	10 to 93% RH Non-condensing
Dimensions:	4.17" H x 4.26" W x 1.22" D (106 mm H × 108 mm W × 31 mm D)
Mounting:	4" square electrical box with 2 1/8" minimum depth. For surface mounting, use a 20-1347 surface mount box.

ORDERING INFORMATION

Fike P/N	Mfg. P/N	Description
55-041	EM-1M	Monitor Module, Non-isolator
55-046	EM-1MI	Monitor Module, Isolator
Accessories		
CB500	CB500	Control Module Barrier
20-1347	SMB500	Surface Mount Box
55-051	EA-CT	IR Tool
10-2625		39 kΩ End of Line Resistor Assembly
10-2530		14 kΩ Short Detect Resistor Assembly
FP-WHITE-ECL-BP	FP-WHITE-ECL-BP	Cover Plate

MODULE DIMENSIONS

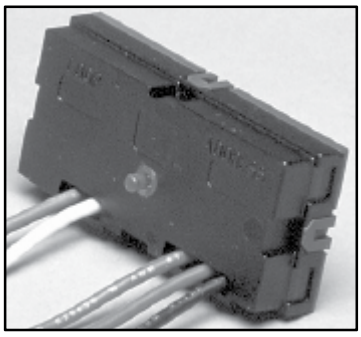


TERMINAL DEFINITIONS

T1	(+) SLC in/out	T6	No Connection
T2	(-) SLC in/out	T7	(-) IDC Class A/B
T3	(+) SLC in/out	T8	(+) IDC Class A/B
T4	(-) SLC in/out	T9	(+) IDC Class A
T5	No Connection	T10	(-) IDC Class A

DATA SHEET

MINI MONITOR MODULE



DESCRIPTION

The Mini Monitor Module, P/N 55-045 & 55-050, provides a single, Class B initiating device circuit (IDC) capable of monitoring normally open contact fire alarm and supervisory devices or normally open supervisory/process devices. In addition to monitoring the connected contacts, the module will monitor the wiring to the device for open circuits via an end-of-line resistor (Class B only). The module has a single tri-color LED to indicate device status. The isolator version of the module, P/N 55-050, provides complete short-circuit isolation for installations requiring NFPA, Class X wiring.

The module is compatible with Fike's CyberCat® and Cheetah® Xi intelligent control panels. Its operating parameters are configured using the panel's programming software and stored within the module's non-volatile RAM. This onboard intelligence allows each module to communicate its status directly to other devices connected to the Signaling Line Circuit (SLC). This peer-to-peer digital protocol results in less information that must be sent between the module and the host control panel, resulting in faster, more reliable communication.

APPROVALS:

- UL
- FM
- City of New York
- CSFM

Refer to agency web site for details.

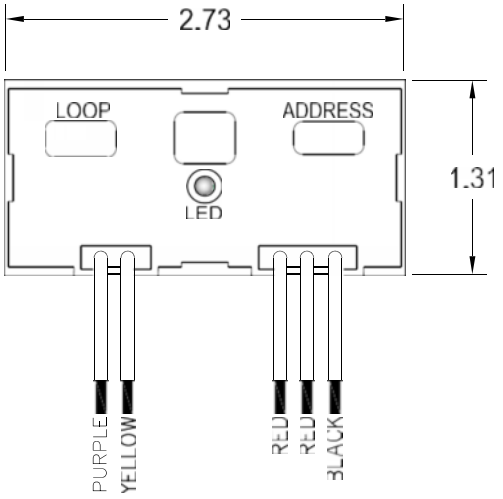
SPECIFICATIONS

Normal Operating Voltage:	15 to 30 VDC
Standby Current:	485 µA max. (continuous broadcasts)
IDC Voltage:	5.4 VDC max.
Alarm Current:	2 mA (red LED on)
Maximum IDC Wiring Resistance:	100 Ω
Temperature Range:	32 to 120°F (0 to 49°C)
Humidity:	10 to 93% RH Non-condensing
Dimensions:	1.31" H x 2.73" W x 0.61" D (33 mm H × 69 mm W × 15 mm D)
Wire Length:	6.5 inches (165 mm)
Mounting:	Inside standard electrical box behind monitored device

ORDERING INFORMATION

Fike P/N	Mfg P/N	Description
55-045	EM-1MM	Mini Monitor Module, Non-isolator
55-050	EM-1MMI	Mini Monitor Module, Isolator
Accessories		
CB500	CB500	Control Module Barrier
20-1347	SMB500	Surface Mount Box
55-051	EA-CT	IR Tool
10-2625		39Kohm End of Line Resistor Assembly
10-2530		14K Short Detect Resistor Assembly

MODULE DIMENSIONS

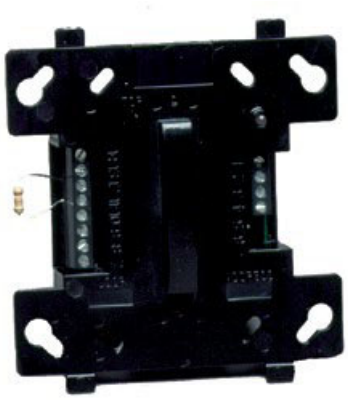


WIRE COLOR DEFINITIONS

Red	(+) SLC in/out
Red	(+) SLC in/out
Black	(-) SLC in
Purple	(+) Supervised Input
Yellow	(-) Supervised Input/(-) SLC out

DATA SHEET

SUPERVISED CONTROL MODULE



DESCRIPTION

The Supervised Control Module, P/N 55-042 & 55-047, provides a means to switch an external power supply to notification appliances or release solenoids used for sprinkler operation, or to activate Fike's Masterbox Interface module, P/N 10-2413, which is used on a Local Energy Type Auxiliary Fire Alarm System. The module is capable of Class A or Class B wiring. The device will monitor the wiring (while external power is not switched to the auxiliary devices) to the connected device for open and short circuits via an end-of-line resistor (Class B only). The module will monitor the external power input for loss of power (DC voltage supplies only). The isolator version of the module, P/N 55-047, provides complete short-circuit isolation for installations requiring NFPA, Class X wiring.

The module is compatible with Fike's CyberCat® and Cheetah® Xi intelligent control panels. Its operating parameters are configured using the panel's programming software and stored within the module's non-volatile RAM. This onboard intelligence allows each module to communicate its status directly to other devices connected to the Signaling Line Circuit (SLC). This peer-to-peer digital protocol results in less information that must be sent between the module and the host control panel, resulting in faster, more reliable communication.

APPROVALS:

- UL
- FM
- City of New York
- CSFM

Refer to agency web site for details.

SPECIFICATIONS

Normal Operating Voltage:	15 to 30 VDC
Standby Current:	630 uA max. average (continuous broadcasts)
Alarm Current:	2 mA (red LED on)
Maximum NAC Circuit Line Loss:	4 VDC
Power Supply Monitor:	Maximum (NAC): Regulated 24 VDC Trouble Range: 0 to 2 VDC
Maximum NAC Current Ratings:	3A (Class B), 2A (Class A)
Temperature Range:	32 to 120°F (0 to 49°C)
Humidity:	10 to 93% RH Non-condensing
Dimensions:	4.675"H x 4.275"W x 1.4"D (119 mm H x 109 mm W x 36 mm D)
Mounting:	4" square electrical box with 2 1/8" minimum depth. For surface mounting, use a 20-1347 surface mount box.

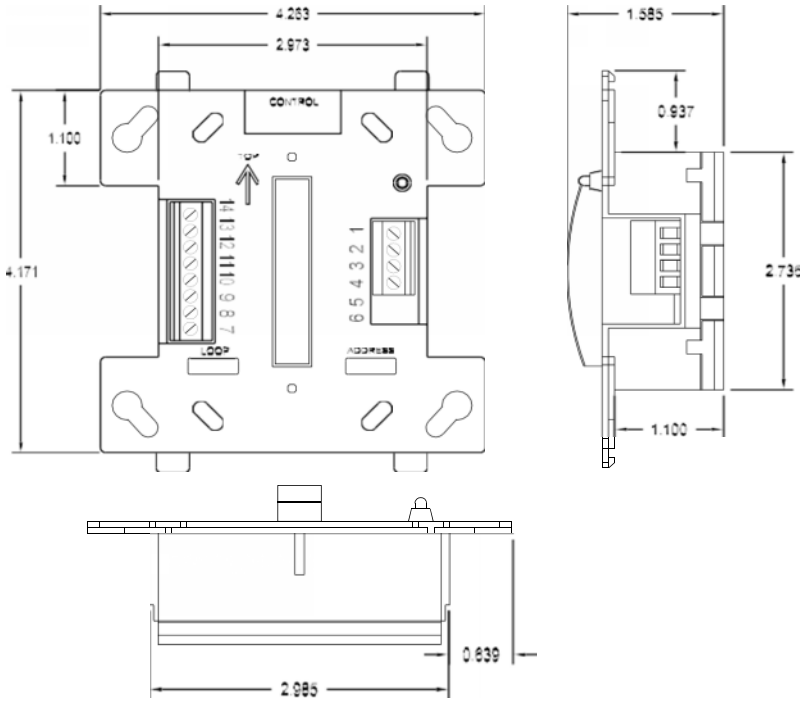
ORDERING INFORMATION

Fike P/N	Mfg. P/N	Description
55-042	EM-1SR	Supervised Control Module, Non-Isolator
55-047	EM-1SRI	Supervised Control Module, Isolator
Accessories		
CB500	CB500	Control Module Barrier
20-1347	SMB500	Surface Mount Box
55-051	EA-CT	IR Tool
10-2360		Series Solenoid Diode/Resistor Assembly
10-2625		39K ohm End of Line Resistor Assembly
FP-WHITE-ECL-BP	FP-WHITE-ECL-BP	Cover Plate

OUTPUT RATING

Current Rating	Maximum Voltage	Load Description	Application
2A	25 VAC	PF=0.35	Non-Coded
3A	30 VDC	Resistive	Non-Coded
2A	30 VDC	Resistive	Coded
0.46A	30 VDC	(L/R=20 ms)	Non-Coded
0.7A	70.7 VAC	PF=0.35	Non-Coded
0.9A	125 VDC	Resistive	Non-Coded
0.5A	125 VAC	PF=0.75	Non-Coded
0.3A	125 VAC	PF=0.35	Non-Coded

MODULE DIMENSIONS

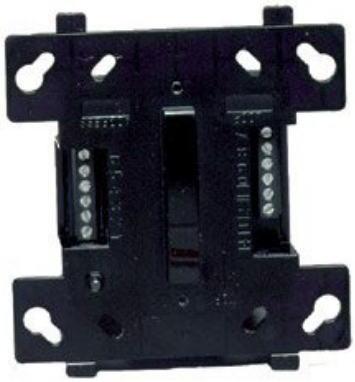


TERMINAL DEFINITIONS

T1	(+) SLC in/out	T8	(+) 24 VDC External Power in/out
T2	(-) SLC in/out	T9	(-) 24 VDC External Power in/out
T3	(+) SLC in/out	T10	(+) 24 VDC External Power in/out
T4	(-) SLC in/out	T11	NAC (+) Class A/B
T5	No Connection	T12	NAC (-) Class A/B
T6	No Connection	T13	NAC (-) Class A
T7	(-) 24 VDC External Power in/out	T14	NAC (+) Class A

DATA SHEET

RELAY MODULE



DESCRIPTION

The Relay Module, P/N 55-043 & 55-048, provides two sets of Form "C" dry relay contacts that switch together (DPDT). These contacts can initiate emergency control functions (i.e., damper closure, fan control, door holder interface, elevator recall, etc.). There is also an input capable of monitoring a dry set of contacts for open or closed conditions. The module has a multi-color LED that will illuminate a unique color for instant status indication (Green for normal operation, Red for device active, and Yellow for device trouble). The isolator version of the module, P/N 55-048, provides complete short-circuit isolation for installations requiring NFPA, Class X wiring.

The module is compatible with Fike's CyberCat® and Cheetah® Xi intelligent control panels. Its operating parameters are configured using the panel's programming software and stored within the module's non-volatile RAM. This onboard intelligence allows each module to communicate its status directly to other devices connected to the Signaling Line Circuit (SLC). This peer-to-peer digital protocol results in less information that must be sent between the module and the host control panel, resulting in faster, more reliable communication.

APPROVALS:

- UL
- FM
- City of New York
- CSFM

Refer to the agency web site for details.

SPECIFICATIONS

Normal Operating Voltage:	15 to 30 VDC
Standby Current:	580 µA max. average (continuous broadcasts)
Alarm Current:	2 mA (red LED on)
Short Circuit Current, Dry Control Input:	30 mA max. average (5 VDC)
Maximum Resistance, Dry Contact Input:	100Ω
Temperature Range:	32 to 120°F (0 to 49°C)
Humidity:	10 to 93% RH Non-condensing
Dimensions:	4.675" H x 4.275" W x 1.4" D (119 mm H x 109 mm W x 36 mm D)
Mounting:	4" square electrical box with 2 1/8" minimum depth. For surface mounting, use a 20-1347 surface mount box.

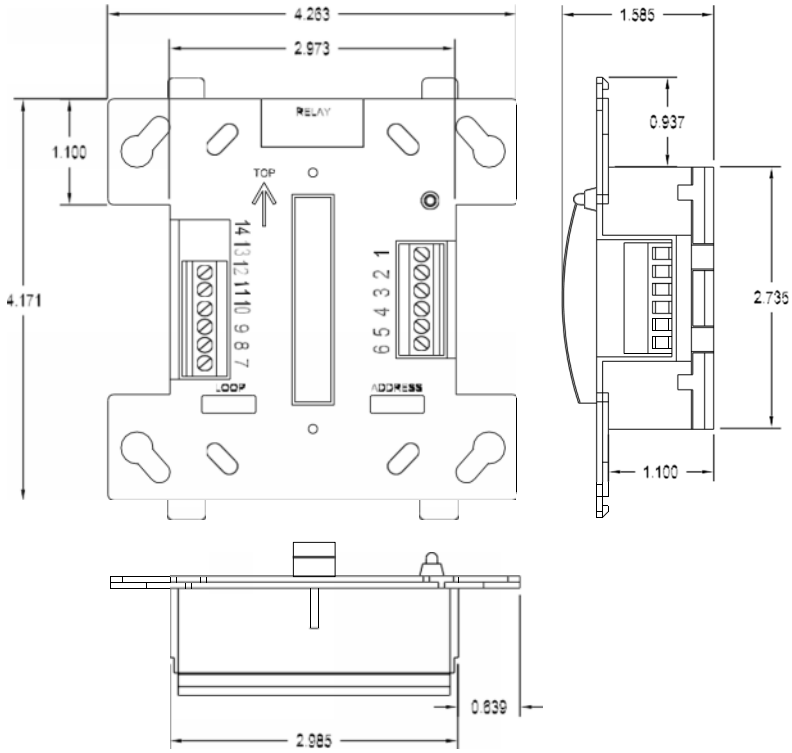
ORDERING INFORMATION

Fike P/N	Mfg. P/N	Description
55-043	EM-1R	Relay Module, Non-isolator
55-048	EM-1RI	Relay Module, Isolator
Accessories		
CB500	CB500	Control Module Barrier
20-1347	SMB500	Surface Mount Box
55-051	EA-CT	IR Tool
FP-WHITE-ECL-BP	FP-WHITE-ECL-BP	Cover Plate

RELAY CONTACT RATING

Current Rating	Maximum Voltage	Load Description	Application
2A	25 VAC	PF=0.35	Non-Coded
3A	30 VDC	Resistive	Non-coded
2A	30 VDC	Resistive	Coded
0.46A	30 VDC	(L/R=20ms)	Non-coded
0.7A	70.7 VAC	PF=0.35	Non-Coded
0.9A	125 VDC	Resistive	Non-Coded
0.5A	125 VAC	PF=0.75	Non-Coded
0.3A	125 VAC	PF=0.35	Non-Coded

MODULE DIMENSIONS

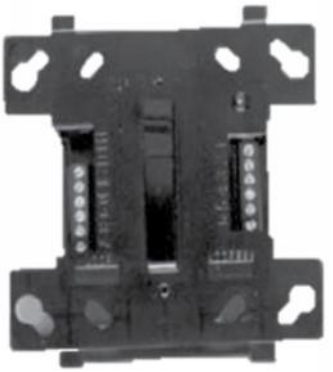


TERMINAL DEFINITIONS

T1	(+) SLC in/out	T7	Normally Closed #1
T2	(-) SLC in/out	T8	Common #1
T3	(+) SLC in/out	T9	Normally Open #1
T4	(-) SLC in/out	T10	Normally Closed #2
T5	(+) Dry Contact Input	T11	Common #2
T6	(-) Dry Contact Input	T12	Normally Open #2

DATA SHEET

RELEASING CONTROL MODULE



DESCRIPTION

The Releasing Control Module, P/N 55–052/55-053, provides a means to supervise and control either an agent/impulse release module(s) or a solenoid compatible with the Cheetah Xi™. It can only be used for one application at a time. Supervising up to six agent/impulse release modules or one solenoid, but never both simultaneously. This module also monitors the external power input for loss of power. The module has a tri-color LED that will flash a unique color for instant status indication (Green for normal operation, Red for module active, and Yellow for device trouble). The isolator version of the module, P/N 55-053, provides complete short-circuit isolation for installations requiring NFPA 72, Class X wiring.

The module is compatible with Fike's Cheetah Xi intelligent control panels. Its operating parameters are configured using the panel's programming software and stored within the module's non-volatile RAM. This onboard intelligence allows each module to communicate its status directly to other devices connected to the Signaling Line Circuit (SLC). This peer-to-peer digital protocol results in less information that must be sent between the module and the host control panel, resulting in faster, more reliable communication.

APPROVALS:

- UL
- FM
- City of New York
- CSFM

Refer to agency web site for details.

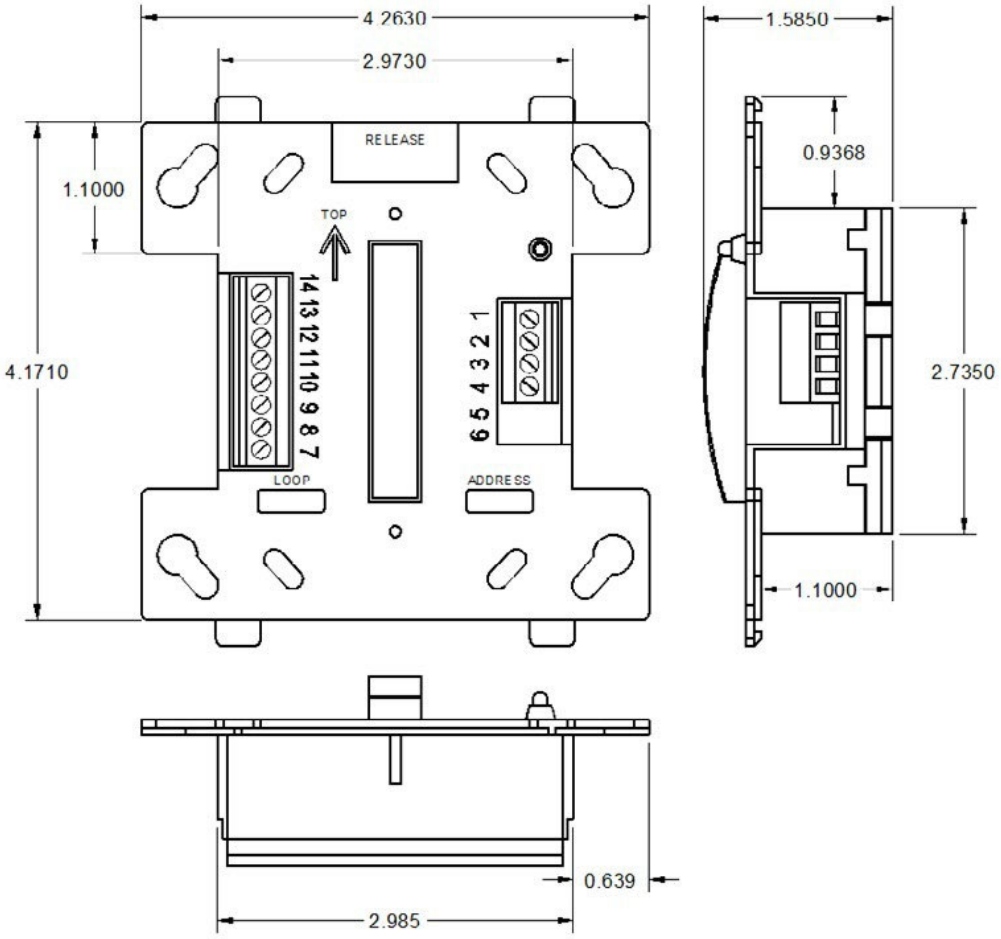
SPECIFICATIONS

SLC:	Normal Operating Voltage: 24 VDC Nominal
	Standby Current: 450 µA max, average (continuous broadcasts)
	Activation Current: 6 mA (red LED on)
External Supply:	Normal Operating Voltage: 24 VDC Nominal
	Standby Current: 6.4 mA
	Activation Current: 10 mA
Agent Releasing Module:	Supervisory Loop Voltage: 20 to 28 V
	Supervisory Loop Current (Normal): 13 mA
Solenoid:	Supervisory Loop Voltage: 3.3 V
	Supervisory Loop Current (Normal): 30 mA
Temperature Range:	32 to 120°F (0 to 49°C)
Humidity:	10 to 93% RH Non-condensing
Dimensions:	4.17"H x 4.26"W x 1.22"D (106 mm H x 108 mm W x 31 mm D)
Mounting:	4" square electrical box with 2 1/8" minimum depth.
	For surface mounting, use a 20-1347 surface mount box.

ORDERING INFORMATION

Fike P/N	Mfg. P/N	Description
55-052	EM-1RM	Releasing Module (Cheetah Xi Only), Non-isolator
55-053	EM-1RMI	Releasing Module (Cheetah Xi Only), Isolator
Accessories		
CB500	CB500	Control Module Barrier
20-1347	SMB500	Surface Mount Box
55-051	EA-CT	IR Tool
FP-WHITE-ECL-BP	FP-WHITE-ECL-BP	Cover Plate
10-2165		2.7Kohm End of Line Resistor Assembly
10-2360		Series Solenoid Diode/Resistor Assembly

MODULE DIMENSIONS



TERMINAL DEFINITIONS

T1	(+) SLC in/out	T8	(+) external power line in/out
T2	(-) SLC in/out	T9	(-) external power line in/out
T3	(+) SLC in/out	T10	(+) external power line in/out
T4	(-) SLC in/out	T11	(+) ARM supervisory/(-) ARM
T5	No Connection	T12	(-) ARM supervisory/(+) ARM
T6	No Connection	T13	(-) Solenoid
T7	(-) external power line	T14	(+) Solenoid

GES3 / GEC3 Series

Selectable Candela Evacuation Signals

12 VDC and 24 VDC Commander3 Strobe and Horn/Strobe

24 units per carton, 28 pounds per carton

Applications

The Commander3 Series is a low profile strobe and horn/strobe combination that offers dependable audible and visual alarms and the absolute lowest current available.

The GE3 Series 24 VDC offers tamperproof field selectable candela options of 15, 30, 60, 75, and 110 candela. The 12 VDC offers tamperproof field selectable candela options of 15, 30, 60, and 75 candela. The GEC3 horn/strobe offers a continuous or synchable temporal 3 in 2400Hz, mechanical and chime as well as a whoop tone. All tones are easy for the professional to change in the field by the use of switches.

The Commander3 Series is shipped with a standard 4" metal mounting plate which incorporates the popular Super-Slide® feature that allows the installer to easily test for supervision. The product also features a locking mechanism which secures the product to the bracket without any screws showing. The Commander3 also features the patented Checkmate® instant voltage verification feature which allows the installer to check the voltage drop draw and match it to the blueprint.

The GE3 Series appliances are ANSI/UL 464, ANSI/UL 1971, CAN/ULC S525 (24 VDC only) and/or CAN/ULC S526 (24 VDC only), is listed for use with fire protective systems and are warranted for three years from date of purchase.

Standard Features

- Nominal voltage 12 VDC and 24 VDC
- 24 VDC field selectable candelas: 15, 30, 60, 75 & 110
- 12 VDC field selectable candelas: 15, 30, 60 & 75
- Unit Dimensions: 5" (12.7 cm) high x 4.5" (11.43 cm) wide x 2.5" (6.35 cm) deep
- Super-Slide® Bracket, Ease of Supervision Testing
- Checkmate® Instant Voltage Verification
- Prewire entire system, install mounting bracket, then install signals
- Documented lower installation and operating costs
- Input terminals accept 12 to 18 AWG
- Horn/strobe switch selection for high or low dBA
- Horn/strobe switch for 2400 Hz, mechanical, chime and whoop tones
- Horn/strobe switch for continuous or temporal 3 (not available on whoop tone)
- Synchronize strobe and/or horn with Gentex AVSM Control Module
- Silence audible while visual appliance will remain flashing
- Tamperproof re-entrant style grill and locking screw (optional use)
- Surface mount with the GSB (Gentex Surface Mount Box)
- Faceplate available in red or off-white
- Wall mount

Product Listings

SIGNALING C UL US LISTED

- ANSI/UL 464 and ANSI/UL 1971 Listed
- CAN/ULC S525 and/or CAN/ULC S526 Listed (24 VDC only)
- CSFM: 7135-0569:122 (GEC3-24 & GEH-24)
  7125-0569:123 (GES3-24)
  7125-0569:129 (GES3-12)
  7135-0569:130 (GEC3-12 & GEH-12)
- MEA: 285-91-E (GEC3-24 & GES3-24)
  580-06-E (GEC3-12 & GES3-12)

Patents

- 7,375,617 May 20, 2008

Product Compliance

- NFPA 72
- Americans with Disabilities Act (ADA)
- IBC/IFC/IRC
- Quality Management System is certified to: ISO 9001:2008

GES3 12 VDC / GES 24 VDC Selectable Candela, Low Profile Evacuation Strobe

Model	Part Number	Voltage (VDC)	Candela
GES3-12WR	904-1235-002	12	15, 30, 60, 75
GES3-12WW	904-1237-002	12	15, 30, 60, 75
GES3-24WR	904-1321-002	24	15, 30, 60, 75, 110
GES3-24WW	904-1319-002	24	15, 30, 60, 75, 110

GEC3 12VDC / GEC3 24VDC Selectable Candela, Low Profile Evacuation Horn/Strobe

Model	Part Number	Voltage (VDC)	Candela	Reverberant dBA at 10ft.	Anechoic Room dBA at 10ft.
GEC3-12WR	904-1231-002	12	15, 30, 60, 75	62-82 dBA	100 dBA
GEC3-12WW	904-1233-002	12	15, 30, 60, 75	62-82 dBA	100 dBA
GEC3-24WR	904-1317-002	24	15, 30, 60, 75, 110	62-82 dBA	100 dBA
GEC3-24WW	904-1315-002	24	15, 30, 60, 75, 110	62-82 dBA	100 dBA

R = Red Faceplate, W = White Faceplate

All units are available in plain (no lettering)
Plain units are not returnable

ALERT and AGENT bezels available for order

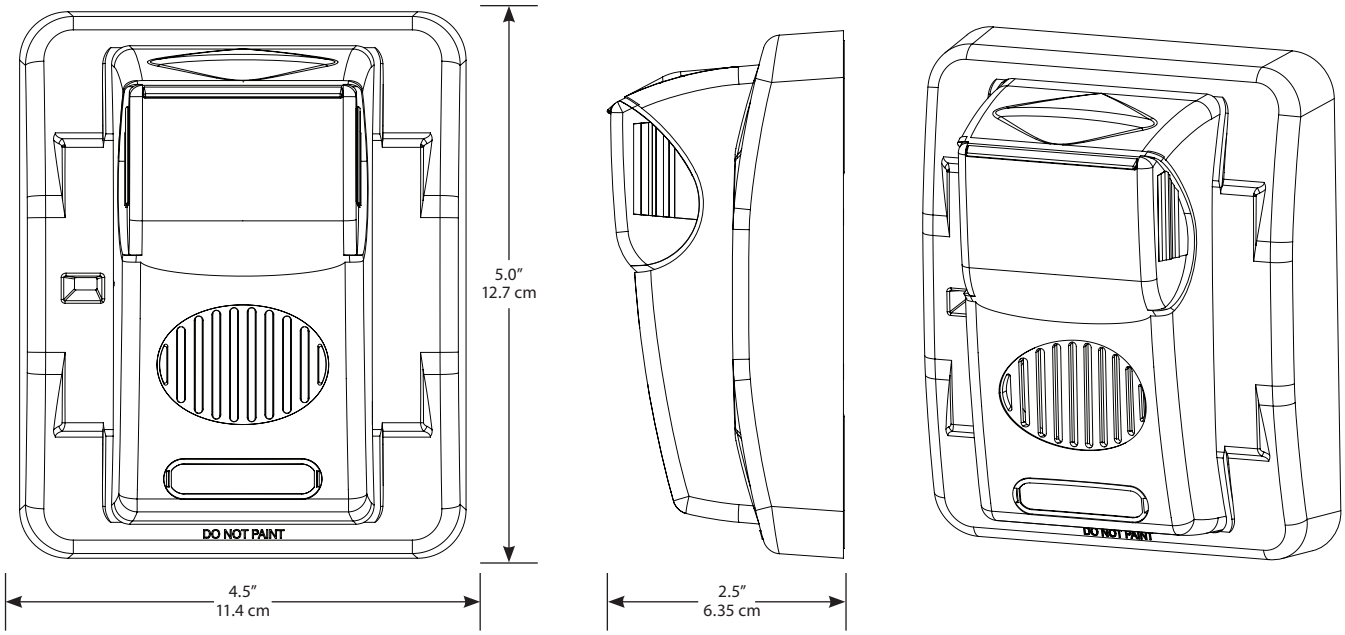
GE3 12 VDC / 24 VDC Strobe Current Ratings (mA)

	12 VDC (8-17.5 Volts)		24 VDC (16-33 Volts)	
Candela	12 VDC	UL Max	24 VDC	UL Max
15cd	106 mA	92 mA	30 mA	42 mA
30cd	131 mA	141 mA	42 mA	58 mA
60cd	186 mA	260 mA	66 mA	97 mA
75cd	237 mA	312 mA	80 mA	116 mA
110cd			103 mA	161 mA

GE3 12 VDC / 24 VDC Horn Decibel (dBA) and Current Ratings (mA)

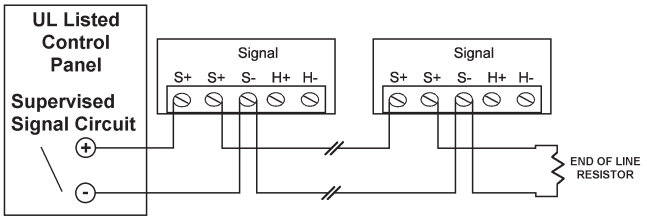
	12 VDC (8-17.5 Volts)			24 VDC (16-33 Volts)		
	Horn Decibel Levels (dBA)		Horn Current Ratings (mA	Horn Decibel Levels (dBA)		Horn Current Ratings (mA)
Horn Mode	Minimum SPL at 10ft., per ANSI/UL 464 (HIGH)	Minimum SPL at 10ft., per ANSI/UL 464 (LOW)	UL MAX Regulated 12 VDC Operating Current (HIGH)	Minimum SPL at 10ft., per ANSI/UL 464 (HIGH)	Minimum SPL at 10ft., per ANSI/UL 464 (LOW)	UL MAX Regulated 24 VDC Operating Current (HIGH)
Temporal 3 2400 Hz	76 dBA	69 dBA*	29 mA	78 dBA	71 dBA*	28 mA
Temporal 3 Mechanical	75 dBA	68 dBA*	26 mA	76 dBA	70 dBA*	25 mA
Temporal 3 Chime	62 dBA*	60 dBA*	13 mA	70 dBA*	66 dBA*	15 mA
Continuous 2400 Hz	79 dBA	74 dBA*	29 mA	81 dBA	74 dBA*	28 mA
Continuous Mechanical	78 dBA	72 dBA*	26 mA	80 dBA	72 dBA*	25 mA
Continuous Chime	63 dBA*	61 dBA*	13 mA	70 dBA*	66 dBA*	15 mA
Whoop	78 dBA	71 dBA*	55 MA	82 dBA	69 dBA*	56 mA

* Operating the horn in this mode at this voltage will result in not meeting the minimum ANSI/UL 464 reverberant sound level required for public mode fire protection service. These settings are acceptable only for private mode fire alarm use. Use the high dBA setting for public mode application (not applicable when using the chime tone. The chime tone is always private mode).



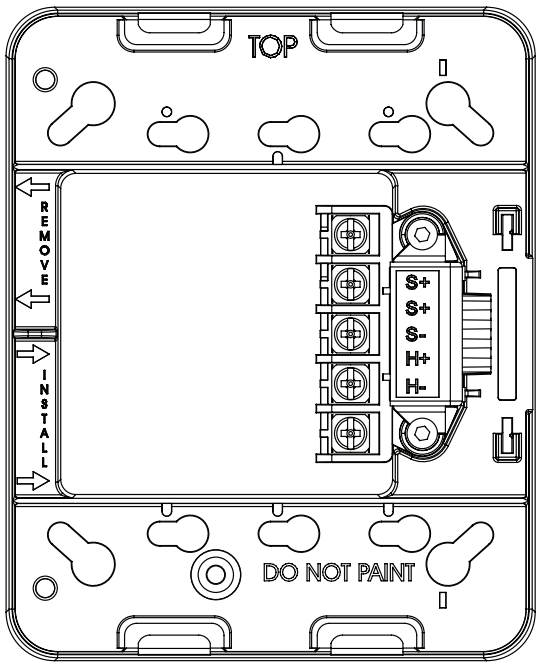
Gentex Super-Slide® Mounting Bracket

Allows the installer to prewire the system, test for system supervision, remove the signal head until occupancy, switch out Gentex signals without changing mounting brackets and has locking edge connector for snap-in-place installation.



Gentex Checkmate® Instant Voltage Verification

It is often necessary to confirm the voltage drop along a line of devices. The access holes are provided in the back of the terminal block to allow the voltage to be measured directly without removing the device. Typically this would be done at the end of the line to confirm design criteria. Most measurements will be taken using the S+ and S- locations although access is provided to other locations. *Notice: Care should be taken to not short the test probes.*



Notes

- Operating temperature: 32° to 120°F (0° to 49°C)
- The GES3/GEC3 Series is not listed for outdoor use
- For nominal and peak current across ANSI/UL regulated voltage range for filtered DC power and unfiltered (FWR [Full Wave Rectified]) power, see installation manual
- The sound output for the temporal 3 tone is rated lower since the time the horn is off is averaged into the sound output rating. While the horn is producing a tone in the temporal 3 mode, its sound pressure is the same as the continuous mode.
- This appliance is not recommended for use on coded or pulsing signaling circuits

GES3 / GEC3 Series

Selectable Candela Evacuation Signals

Architect & Engineering Specifications

The audible and/or visible signal shall be Gentex GES3, GEC3 Series or approved equal and shall be listed by Underwriters Laboratories (ANSI/UL) for use with fire protective signaling systems (ANSI/UL 1971 and/or ANSI/UL 464) and with CAN/ULC S526 (24 VDC only) and/or CAN/ULC S525 (24 VDC only) with intended use in fire alarm systems. The notification appliance (GEC3) shall produce a peak sound output of 100 dBA or greater at 12 VDC or 24 VDC as measured in an anechoic chamber and shall also have the capability to silence the audible signal while leaving the visible signal energized with the use of a single pair of power wires. Additionally, the user shall be able to select either continuous or temporal tone output with the temporal signal having the ability to be synchronized. The unit shall be capable of being installed so that any unauthorized attempt to change the candela setting will result in a trouble signal at the fire alarm control panel. The audible/visible and visible signaling appliance shall also maintain a minimum flash rate of 1 Hz or up to 2 Hz regardless of power input voltage. The strobe appliance shall have an operating current of 42 mA or less at 24 VDC for the 15 Cd strobe circuit and 92 mA or less at 12 VDC for the 15 Cd strobe circuit. The appliance shall be polarized to allow for electrical supervision of the system wiring. The unit shall be provided with a mounting bracket with terminals and barriers for input/output wiring and be able to mount to a single gang or double gang box or double workbox without the use of an adapter plate. The GE3 Series shall be mounted on the wall. The unit shall have an input voltage range of 16-33 volts with either direct current or full wave rectified power at 24 VDC or a voltage range of 8-17.5 volts at 12 VDC. The appliance shall be capable of testing supervision without disconnecting wires, verify voltage without removing unit and be capable of mounting to a surface back box.

GENTEX CORPORATION

Fire Protection Products Group | 10985 Chicago Drive | Zeeland, MI 49464

gentex.com | **Phone:** 616.392.7195 | **Toll-free:** 800.436.8391 | **Fax:** 616.392.4219

551-0050-07

FK-5-1-12 CLEAN AGENT

Description

FK-5-1-12 is a colorless, clear liquid (see Physical Properties Table for additional information). It is stored as a liquid and dispensed into the hazard as an electrically non-conductive gaseous vapor that is clear and does not obscure vision. It leaves no residue and has acceptable toxicity for use in occupied spaces at design concentration.

Extinguishing Method

FK-5-1-12 extinguishes a fire by heat absorption. The gaseous mixture created when FK-5-1-12 discharges into air has a much higher heat capacity than air alone. The gaseous mixture absorbs large amounts of heat due to the high heat capacity and extinguishes fires by sufficiently cooling the combustion zone. It is important to note, FK-5-1-12 does not use the depletion or displacement of oxygen to extinguish a fire and therefore is safe for use in occupied spaces.

Approvals

- Underwriters Laboratories (UL)
- Underwriters Laboratories of Canada (ULC)
- Factory Mutual (FM)
- United States EPA Significant New Alternative Policy (SNAP report

For exact certification listings, please reference the respective agency web site.

Use and Limitations

FK-5-1-12 system can be used on the following Class of Hazards:

Class A & C:	Electrical and Electronic Hazards Telecommunications Facilities High value assets, where the associated down-time would be costly
Class B:	Flammable liquids and gases

FK-5-1-12 systems shall "NOT" be used on fires involving the following materials:

- Chemicals or mixtures of chemicals that are capable of rapid oxidation in the absence of air such as Cellulose Nitrate and Gunpowder
- Reactive metals such as Lithium, Sodium, Potassium, Magnesium, Titanium, Zirconium, Uranium, and Plutonium
- Metal hydrides such as Sodium Hydride and Lithium Aluminum Hydride
- Chemicals capable of undergoing auto-thermal decomposition such as Organic Peroxides and Hydrazine

Exposure Limitations

The discharge of clean agent systems to extinguish a fire can result in potential hazard to personnel from the natural form of the clean agent or from the products of combustion that result from exposure of the agent to the fire or hot surfaces. Unnecessary exposure of personnel either to the natural agent or to the products of decomposition shall be avoided.

Hazard Type	Design Concentration	Maximum Human Exposure Time
Normally Occupied Space	4.5% to 10%	5 minutes

Fike does not recommend FK-5-1-12 systems to be used in any normally occupied spaces where the design concentration required is above 10%

Physical Properties

Chemical Name	Dodecafluoro-2-methylpentan-3-one
ASHRAE Designation	FK-5-1-12
Chemical Formula	$CF_3CF_2C(O)CF(CF_3)_2$
CAS No.	756-13-8
Molecular Wt.	316.04
Boiling Point @ 1 atm (760 mmHg), °C (°F)	49 (120.2)
Melting Point, °C (°F)	-108 (-162.4)
Critical Temperature, °C (°F)	168.66 (335.6)
Critical Pressure, kPa (psia)	1865 (270.44)
Critical Density, kg/m^3 (lb/ft^3)	639.1 (39.91)
Density, Sat. Liquid, g/ml (lb/ft^3)	1.60 (99.9)
Density, Gas @ 1 atm, g/ml (lb/ft^3)	0.0136 (0.851)
Specific Heat, Liquid (Cp) @ 25°C (77°F), kJ/kg-°C (Btu/lb-°F)	1.103 (0.2634)
Specific Heat, Vapor (Cp) @ 25°C (77°F), kJ/kg-°C (Btu/lb-°F) and 1 ATM	0.891 (0.2127)
Vapor Pressure @ 25°C (77°F), kPa (psia)	40.4 (5.85)
Heat of Vaporization @ Boiling Point, kJ/kg (Btu/lb)	88 (37.8)
Thermal Conductivity, Liquid @ 25°C (77°F),W/m-°C (Btu/hr-ft-°F)	0.059 (0.034)
Viscosity, Liquid (lb/ft-hr) @ 25°C (77°F), cP (lb/ft-hr)	0.524 (1.27)
Relative dielectric strength @ 1atm, 25°C (N_2 =1)	2.3
Solubility of Water in FK-5-1-12 @ 70°F, ppm	< 0.001
Ozone Depletion Potential	0
Global Warming Potential, GWP (100 yr. ITH. For CO_2, GWP = 1)	≤1

FK-5-1-12 CLEAN AGENT
IMPULSE VALVE STORAGE CONTAINERS

Description

Fike's clean agent containers are painted steel containers available in various sizes and varying fill densities. Each container is fitted with an internal siphon tube, Fike Impulse Valve assembly, pressure gauge, container nameplate and applicable mounting hardware. Refer to page 3 for illustration of items supplied with the container.

The Impulse Valve contains a fast-acting rupture disc that retains the agent within the container until the disc is ruptured by an Impulse Valve Actuator (ordered separately) allowing the agent to be released from the container.

Each container is factory filled with FK-5-1-12 fire extinguishing agent in 1 lb. (0.5 kg) increments up to their required capacity and is then super-pressurized with dry nitrogen to 500 psig at 70° F (34.5 bar at 21°C). Fill density must be specified when ordering. Containers sharing the same manifold must be equal in size and fill density.

Specifications

Fill Range	30 to 70 lbs/ft^3 (481 to 1121 kg/m^3)
Fill Increments	1.0 lbs (0.5 kg)
Super Pressurization Level	500 psig at 70°F (34.5 bar at 21°C) after filling with dry nitrogen
Storage Temp Limits*	32°F (0°C) minimum 130°F (54.4°C) maximum
Construction	Carbon steel alloys
Rating	DOT 4BW500 TC 4BWM534
Color Options	Baked enamel finish, white (default) or red**
Actuation Methods	Electric/Pneumatic/Manual

** If container pressure reaches 720 to 800 psi (49.6 to 55 bar), valve will open automatically. This also fulfills the pressure relief valve requirements in accordance with DOT regulations.*

***5 lb. (2 L) and 10 lb. (4 L) containers are white only.*

Reliability

Each container is manufactured in strict accordance with U.S. Department of Transportation (DOT) regulations and has successfully passed testing by Factory Mutual (FM) and Underwriters Laboratories, Inc. (UL). Each container is leak tested and pressure tested to 1000 psig (69 bar) prior to shipment.

Approvals

Underwriters Laboratories (UL)
Underwriters Laboratories of Canada (ULC)
Factory Mutual (FM)

For exact certification listings, please reference the respective agency web site.

Container Data

Container		Fill Range		Tare Weight	Dimensions (approximate)		Valve Size
Size	P/N	Minimum	Maximum		Diameter	Height	
lb. (L)		lbs. (kg)	lbs. (kg)	lbs. (kg)	in. (mm)	in. (mm)	in. (mm)
5 (2)	70-357	3 (1.0)	5 (2.0)	6.2 (2.8)	4.15 (105.4)	12.59 (320)	1 (25)
10 (4)	70-358	5 (2.5)	10 (4.5)	12.5 (5.7)	4.15 (105.4)	23.63 (600)	1 (25)
20 (8.5)	70-359	9 (4.5)	21 (9.5)	20.9 (9.5)	7.0 (178)	21.50 (457)	1 (25)
35 (15)	70-360	17 (7.5)	38 (17.0)	31.1 (14.1)	7.0 (178)	32.50 (826)	1 (25)
60 (27)	70-361	30 (13.5)	68 (30.5)	52.0 (23.6)	10.75 (273)	27.00 (686)	1 (25)
100 (44)	70-362	47 (21.5)	108 (49.0)	74.1 (33.6)	10.75 (273)	38.75 (984)	1 (25)
150 (61)	70-363	65 (29.5)	150 (68.0)	130.1 (59.0)	20.0 (508)	18.75 (476)	3 (80)
215 (88)	70-364	93 (42.5)	216 (98.0)	157 (71.2)	20.0 (508)	28.56 (725)	3 (80)
375 (153)	70-365	163 (74.0)	378 (171.5)	224 (101.6)	20.0 (508)	42.50 (1080)	3 (80)
650 (267)	70-366	283 (128.5)	660 (299.0)	384.9 (174.6)	24.0 (610)	48.69 (1237)	3 (80)
1000 (423)	70-367	449 (203.5)	1045 (474.0)	539.9 (244.9)	24.0 (610)	70.00 (1778)	3 (80)

FLOOR LOADING / AREA BY CONTAINER SIZE											
Container Size		Total Container Weight *		Container Floor Area		Container Floor Loading		Container Floor Area w/Plate **		Container Floor Loading w/Plate ***	
lbs	L	lbs.	kg	ft^2	m^2	lbs/ft^2	kg/m^2	ft^2	m^2	lbs/ft^2	kg/m^2
5	2	11	5	0.09	0.009	119	582	4.0	0.36	8	42
10	4	23	10	0.09	0.009	240	1169	4.0	0.36	11	57
20	8.5	42	19	0.27	0.02	157	766	4.0	0.36	16	81
35	15	69	31	0.27	0.02	258	1262	4.0	0.36	23	115
60	27	120	54	0.63	0.06	190	930	4.0	0.36	36	180
100	44	182	83	0.63	0.06	289	1410	4.0	0.36	51	258
150	61	280	127	2.18	0.20	128	627	4.0	0.36	76	381
215	88	373	169	2.18	0.20	171	835	4.0	0.36	99	498
375	153	602	273	2.18	0.20	276	1347	4.0	0.36	156	787
650	267	1045	474	3.14	0.29	333	1624	4.0	0.36	267	1345
1000	423	1585	719	3.14	0.29	504	2463	4.0	0.36	402	2025

Notes:

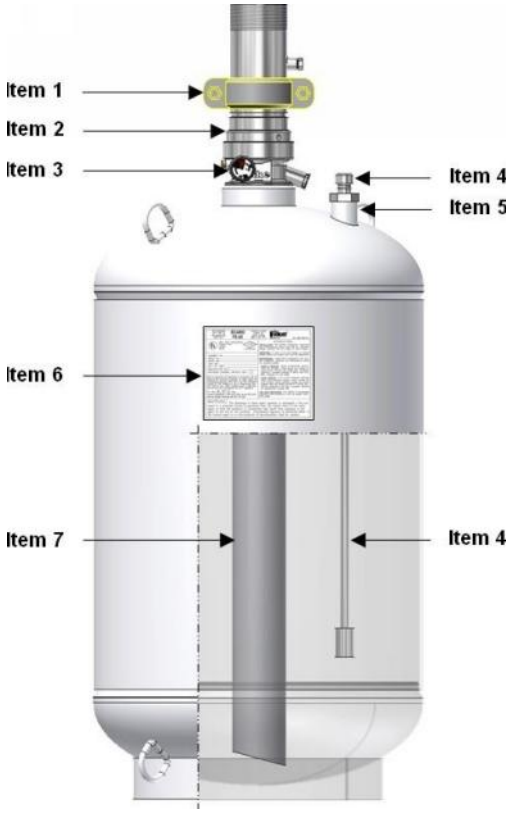
** Total container weight is based on container tare weight + maximum fill weight*

*** Plate size = ¼" x 2" x 2" (6.4mm x 0.6m x 0.6m)*

**** Total container weight + 22.5 lbs (10.2 kg) added for plate used to calculate container with plate floor loading*

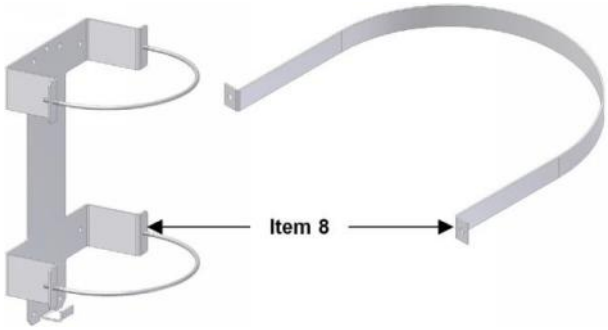
Items Supplied with Container Assembly

Item No.	Description	Data Sheet
1	Victaulic Coupling & Nipple	n/a
2	Impulse Valve	IV.1.14.01
3	Pressure Gauge	IV.1.29.01
4	Liquid Level Indicator (optional)	IV.1.20.01
5	LLi Boss (see note 1)	n/a
6	Nameplate (see note 2)	n/a
7	Siphon Tube (see note 3)	n/a
8	Mounting Straps & Brackets	IV.1.18.01

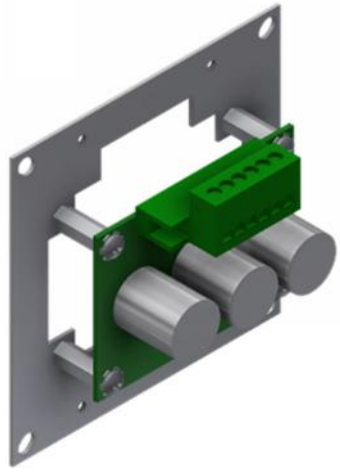


Notes:

1) *100 thru 1000 lb. (44 thru 423 L) containers are equipped with an LLi boss that facilities the installation of an optional Liquid Level Indicator (LLi).*
2) *Fike nameplate provides the information that is specific to each container: Assembly and serial number of the container, weight information: tare, gross and agent and installation, operation and safety information. All containers filled either by the factory or by an Approved Initial Fill Station are provided with a name plate bearing the UL & FM markings.*
3) *Fike Clean Agent containers are equipped with a siphon tube. All containers with siphon tubes shall be mounted upright only.*



IMPULSE RELEASE MODULE (IRM)



Description

The Impulse Releasing Module (IRM) provides the primary interface between the supervised releasing circuit(s) of a Fike releasing control panel and the actuators identified in the Specifications section, which are used to release the fire suppressant agent from the container.

The IRM is equipped with three capacitors that receive a constant 24 VDC charging current from the releasing circuit of the control panel. Upon activation of the releasing circuit, the circuits output voltage polarity is reversed, causing the stored energy in the capacitors to be released to the connected actuator resulting in device activation.

Each IRM is equipped with a red LED, which when illuminated provides positive indication that the module is in the active (discharge) state or if the field wiring has been installed incorrectly. The IRM is compatible with Class A or Class B wiring.

The IRM supervises the wiring of the connected actuator by monitoring the output circuit's current draw.

Specifications

Part Number	10-2748
Current Consumption	+24V Supervisory 20.0 ma (during capacitor charging) 3.0 ma (after capacitor is charged)
	-24V Activated 37.0 ma (LED active)
Temperature	32 to 130°F (0 to 54°C) 93% max. humidity
Module Wiring	Control panel to IRM connections are supervised and power-limited Actuator connection to the IRM (IVO terminals) is supervised and power-limited
Compatible Actuation Devices	02-12728, Impulse Valve Operator (IVO)
	70-376, Impulse Energetic Actuator (1" valves)*
	70-374, Impulse Energetic Actuator (3" valves)*
	IG71-247, Universal Energetic Actuator (ProInert)*
Compatible Releasing Panels**	SHP PRO® Cheetah® Xi Cheetah® Xi 50
Mounting	4" square x 2.125" deep standard electrical box with 2-gang cover plate (supplied by others)

**A maximum of six IRM's, wired in parallel, can be connected to each panel's releasing circuit or releasing module

Approvals

Underwriters Laboratories (UL)
Factory Mutual (FM)
California State Fire Marshal (CSFM)
New York Certificate of Approval (COA)

For exact certification listings, please reference the respective agency web site.

Ordering Information

The IRM can be ordered seperately or it can be ordered as part of the following kits.

P/N	Description
IVO Kit (P/N 70-279)	
02-12728	Impulse Valve Opeator (IVO)
02-14263	Impulse Valve Operator Supervisor (IVOS)
10-2748	Impulse Releasing Module (IRM)
IEA Kit (P/N 70-390)	
70-374	Impulse Energetic Actuator (IEA)*
02-14263	Impulse Valve Operator Supervisor (IVOS)
10-2748	Impulse Releasing Module (IRM)

*UL Listed only.

IMPULSE VALVE OPERATOR (IVO)

Description

The Impulse Valve Operator (IVO) provides a means to activate a Fike Impulse Valve container via an electric signal from a Fike control panel. The IVO can also be manually activated by removing the safety cotter pin and depressing the red strike button.

Activation of the IVO provides the force required to extend its stainless steel piston through the base of the actuator where it will impact the container's rupture disc valve causing it to open, allowing the agent to be released from the container. The IVO can easily be reset after activation to return it to normal operation.

Electrical activation of the IVO requires it to be connected to a Fike Impulse Releasing Module (P/N 10-2748). The IRM provides the interface between the IVO and the releasing circuit of the Fike control panel.

Connection of the IVO to the container's actuator port must be continuously supervised. This is accomplished by using a Fike Impulse Valve Operator Supervisor (P/N 02-14263) to secure the IVO to the container's actuator port. Refer to IVOS Data Sheet IV.1.23.01 for details.

Specifications

Part Number	02-12728
Construction	Stainless Steel Body Brass End Cap Stainless Steel Piston
Electrical Connection	1/2" NPT(F) conduit connection
Wires	2, 20 AWG Black Wires 36" (914 mm) long
Temperature	32 to 130°F (0 to 54.4°C), 93% maximum humidity
Normal Supply Voltage	24 VDC
Current Consumption*	0 Amps Standby 0 Amps Active (3 Amp momentary pulse from IRM capacitors)

*For battery calculations.

Approvals

Underwriters Laboratories (UL)
Underwriters Laboratories of Canada (ULC)
Factory Mutual (FM)

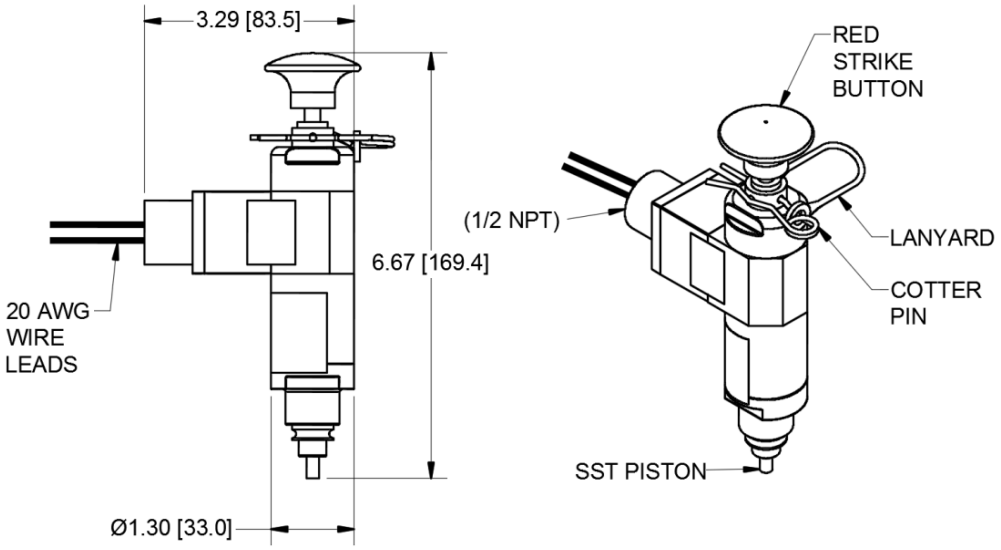
For exact certification listings, please reference the respective agency web site.

Ordering Information

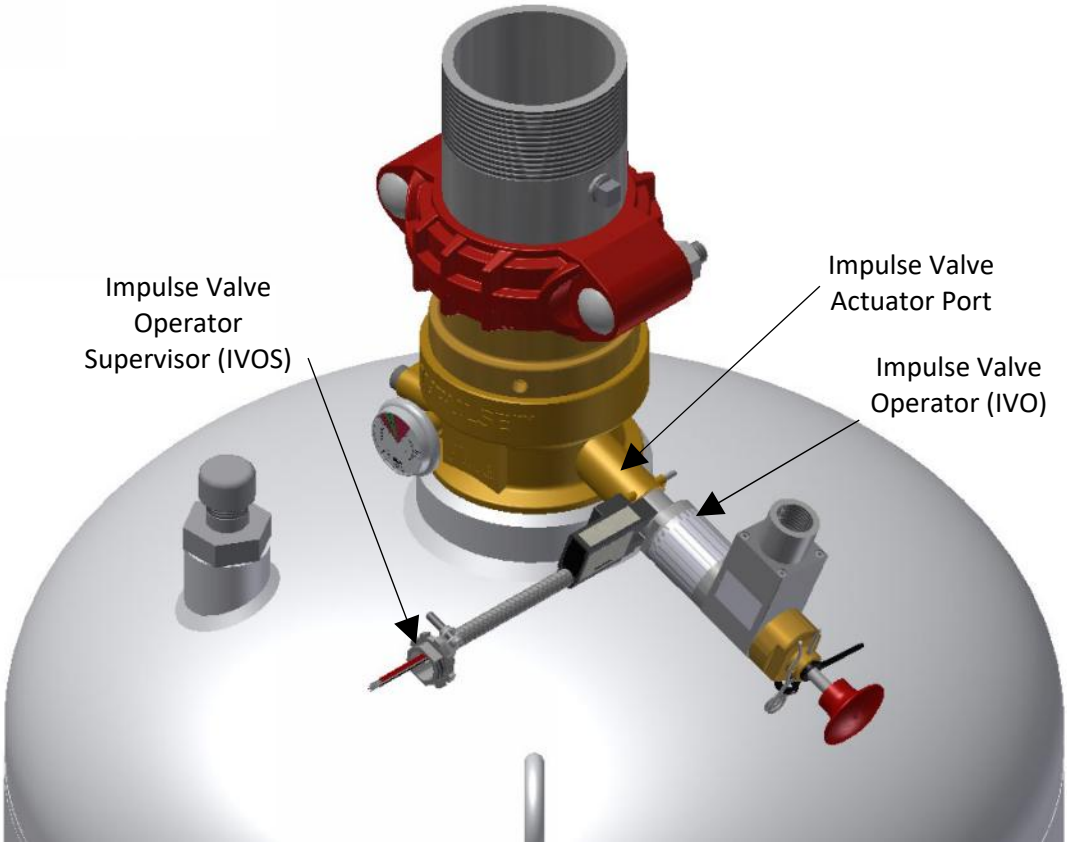
The IVO can be ordered seperately using the part number listed above or it can be ordered as part of the following kit.

IVO Kit (P/N 70-279)	
Part Number	**Description**
02-12728	Impulse Valve Operator (IVO)
02-12925	Black Plastic Cap
02-13130	Cotter Pin
02-2213	Security Tie
02-14263	Impulse Valve Operator Supervisor (IVOS)
10-2748	Impulse Releasing Module (IRM)

IVO Dimensions



IVO Connection to Container



IVO Installed on Container Valve

DATA SHEET

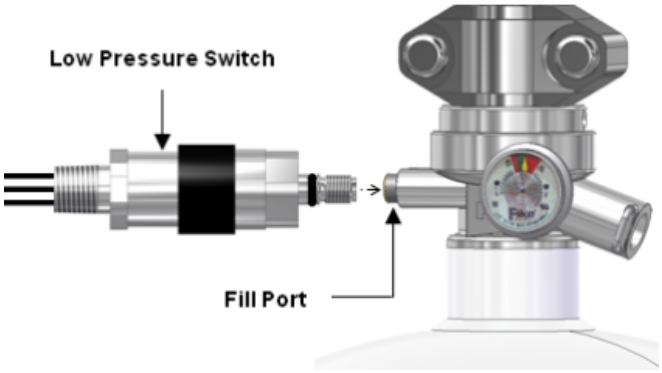
FK-5-1-12 CLEAN AGENT
IMPULSE VALVE LOW PRESSURE SWITCH

Description

The FK-5-1-12 low pressure switch (LPS) is an optional item that can be added to Impulse Valve containers for the purpose of continuously monitoring the container pressure for a low-pressure condition. If the pressure inside the container drops below 450 psig (31 bar), the LPS contacts will transfer and invoke a “Supervisory” indication on the control panel.

The LPS may be ordered along with a configured Impulse Valve container or as a separate item that can be installed on a fully pressurized container without loss of agent or pressure.

The switch is mounted in the fill port on the container valve.



Specifications

Part Number	02-15801
Temperature Limits	32 to 130°F (0 to 54°C)
Enclosure Classification	NEMA 4
Contact Rating	Single pole, double throw; 5 amps resistive, 3 amps inductive @ 30 VDC (can be wired for normally open or normally closed operation)
Body Material	Aluminum with irridite finish
Pressure Connection	M10 x 1-6G
Approximate Length	4.375” (111 mm) (including both connectors)
Electrical Connection	1/2” (15 mm) NPT
Wire Leads	(3) 18 gauge x 48" (122 cm) long Violet (C), Blue (NO), Black (NC)
Pressure Setting	450 psig (31 bar), decreasing
Weight	6.5 ounces (184 g)

Approvals

Underwriters Laboratories (UL)
Underwriters Laboratories of Canada (ULC)
Factory Mutual (FM)

For exact certification listings, please reference the respective agency web site.

DATA SHEET

IMPULSE VALVE DISCHARGE PRESSURE SWITCH

Description

The discharge pressure switch (DPS) is used to provide a positive confirmation to the control system that the Fike fire suppression system has been discharged manually via the strike button on the Impulse Valve Operator (IVO). In response, the control panel will activate various audio/visual warning devices and auxiliary relays to notify occupants that the system has been discharged.

The switch is mounted to the discharge piping and is operated pneumatically using the agent pressure in the discharge piping network.

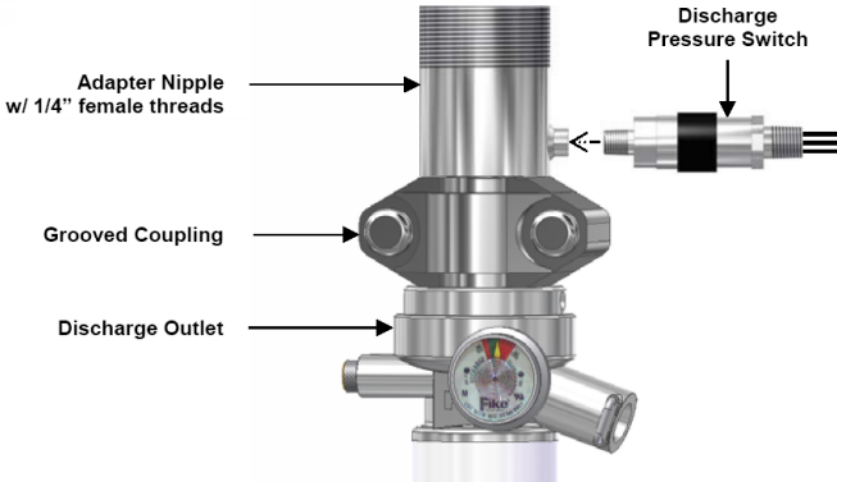
Specifications

Part Number	02-12534
Temperature Limits	32 to 130°F (0 to 54°C)
Enclosure Classification	NEMA 4
Contact Rating	Single pole, double throw 5A resistive/3A inductive @ 30 VDC Normally open or normally closed
Body Material	Aluminum with irridite finish
Pressure Connection	1/4” (6 mm) NPT
Approximate Length	4.125” (105 mm) (including both connectors)
Electrical Connection	1/2” (15 mm) NPT
Wire Leads	(3) 18 gauge x 20" (508 mm) long Violet (C), Blue (NO), Black (NC)
Pressure Setting	40 psig (3 bar), increasing
Weight	6.5 ounces (184 g)

Approvals

Underwriters Laboratories (UL)
Underwriters Laboratories of Canada (ULC)
Factory Mutual (FM)

For exact certification listings, please reference the respective agency web site.



IMPULSE VALVE OPERATOR SUPERVISOR (IVOS)

Description

The Impulse Valve Operator Supervisor (IVOS) provides the means to secure and electrically supervise the connection of an electric actuator or pneumatic operator to the discharge valve on a Fike Impulse Valve container.

The IVOS has a built-in Form-C push-button switch that supervises the connection of the electric actuator or pneumatic actuator to the containers discharge valve. Removal of the IVOS from the discharge valve will trigger the IVOS switch causing a visual and audible "Supervisory" indication at the Fike control panel signaling that the container's actuator has been disconnected.

Approvals

Underwriters Laboratories (UL)
Underwriters Laboratories of Canada (ULC)
Factory Mutual (FM)

For exact certification listings, please reference the respective agency web site.

Specifications

Part Number	02-14263
Construction	– Plastic housing with insert molded SST clip and sealed push-button switch (Form C)
	– SST flexible conduit, 0.25" (6.4 mm) ID, 33.5" (850.9 mm) long
	– 3/8" electrical connector for 1/2" knockout
	– 22 AWG wire leads, 44" (1117.6 mm) long; Black (NC) / White (NO) / Red (Common)
Temperature	32 to 130°F (0 to 54.4°C)
Humidity	93% maximum humidity

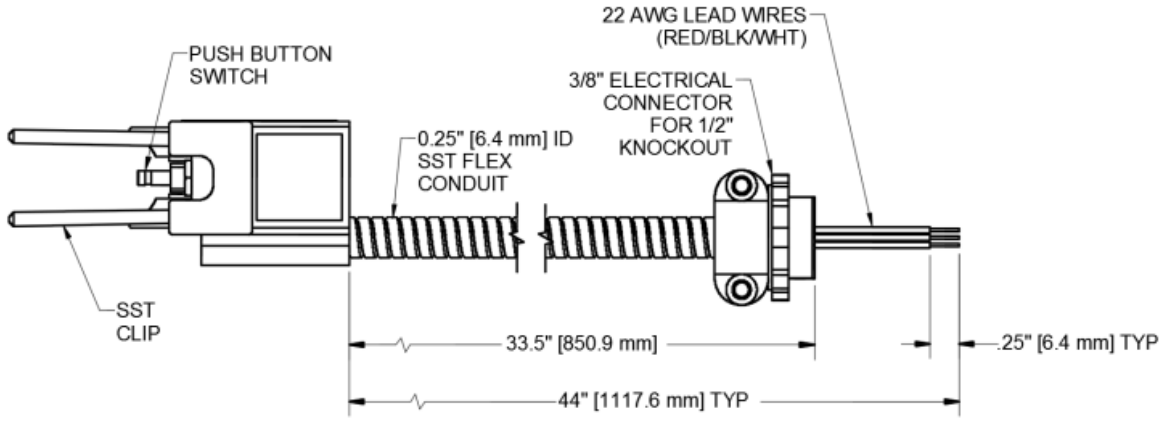
Ordering Information

The IVOS can be ordered seperately using the part number listed above or it can be ordered as part of the following kits.

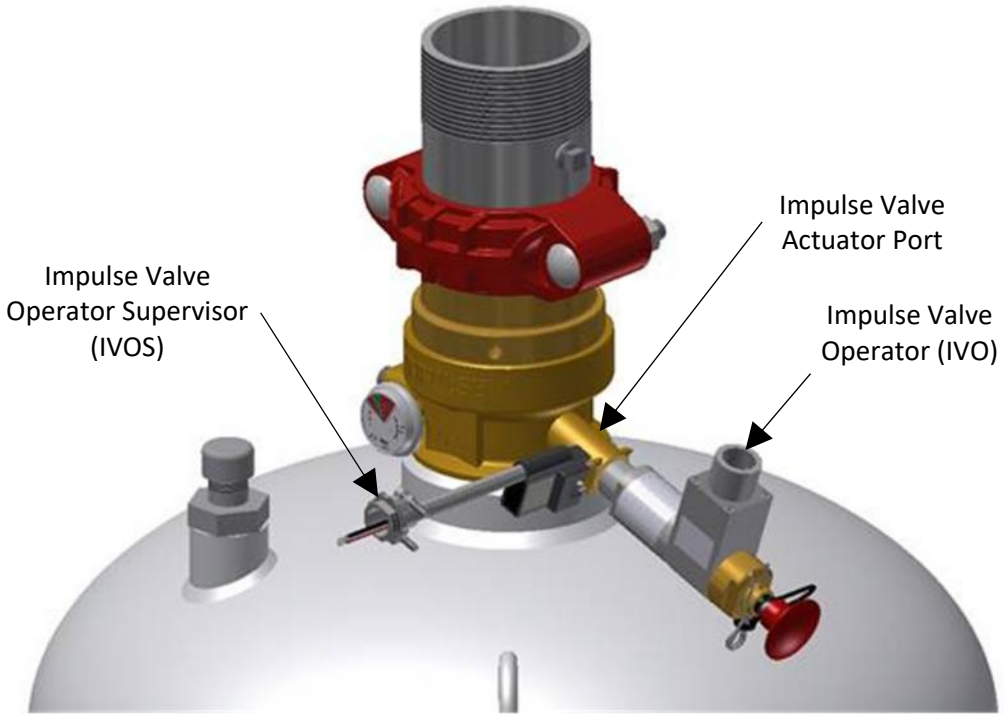
Part Number	Description
IVO Kit (P/N 70-279)	
02-12728	Impulse Valve Opeator (IVO)
02-12925	Black Plastic Cap
02-13130	Cotter Pin
02-2213	Security Tie
02-14263	Impulse Valve Operator Supervisor (IVOS)
10-2748	Impulse Releasing Module (IRM)
IEA Kit (P/N 70-390)	
70-374	Impulse Energetic Actuator (IEA)
02-14263	Impulse Valve Operator Supervisor (IVOS)
10-2748	Impulse Releasing Module (IRM)

*The IEA is UL Listed only.

IVOS Dimensions



IVOS Connection to Container



IVOS Installed on Container Valve

FK-5-1-12 ENGINEERED DISCHARGE NOZZLES

360° Nozzle

180° Nozzle

Description

The discharge nozzles are made of brass and are available in a 180° and 360° discharge patterns. The nozzles are designed to control the agent flow and to distribute the agent throughout the protected enclosure in a uniform, predetermined pattern and concentration.

Six sizes of discharge nozzles are available, 1/2” (15 mm) through 2” (50 mm). The size refers to the size of schedule 40 or 80 pipe that the nozzle can be connected to. Each nozzle has NPT female threads for connection to the pipe network.

When ordering nozzles, orifice size must be specified. The nozzle orifice area is determined by performing a hydraulic calculation using the Fike Engineered Flow Calculation program. Nozzle(s) should not be ordered until the clean agent system pipe network is installed and an “As Built” hydraulic calculation is performed. Nozzle orifice drilling must be done at Fike factory, or at a UL listed nozzle drill station.

Approvals

Underwriters Laboratories (UL)
Underwriters Laboratories of Canada (ULC)
Factory Mutual (FM)

For exact certification listings, please reference the respective agency web site.

Ordering

Part Number	Description
80-124-50-XXXX	1/2” (15 mm) 360° nozzle
80-124-75-XXXX	3/4” (20 mm) 360° nozzle
80-124-100-XXXX	1” (25 mm) 360° nozzle
80-124-125-XXXX	1 1/4” (32 mm) 360° nozzle
80-124-150-XXXX	1 1/2” (40 mm) 360° nozzle
80-124-200-XXXX	2” (50 mm) 360° nozzle
80-122-50-XXXX	1/2” (15 mm) 180° nozzle
80-122-75-XXXX	3/4” (20 mm) 180° nozzle
80-122-100-XXXX	1” (25 mm) 180° nozzle
80-122-125-XXXX	1 1/4” (32 mm) 180° nozzle
80-122-150-XXXX	1 1/2” (40 mm) 180° nozzle
80-122-200-XXXX	2” (50 mm) 180° nozzle

Note: -XXXX in part number is the orifice code designation.

PIPE AND FITTINGS

General

Pipe and fittings form an integral part of the Fike clean agent suppression system. The performance of the system is dependant on the integrity and reliability of the pipe network to deliver the suppression agent to the protected hazard; therefore, the pipe and fittings used in the piping network must conform to the requirements outlined in NFPA 2001, latest edition.

NOTE: Fike does not manufacture or sell pipe and fittings. These materials must be supplied by others.

Piping

The thickness of the piping wall shall be calculated in accordance with ASME B31.1, Power Piping Code. For Fike clean agent systems, a minimum pipe design pressure of 500 psi (34.5 bar) shall be used.

Fittings

Pipe joints other than threaded, welded, or flanged shall be Listed or Approved.

Fittings shall have a minimum rated working pressure equal to or greater than the minimum piping design pressure of 500 psi (34.5 bar).

Cast-iron or Class 150 fittings **SHALL NOT** be used.

Where grooved fittings are used to join pipe, do not exceed the manufacturer's pressure and temperature ratings. All grooved fittings must be UL Listed.

The following table lists the acceptable pipe types and grades that can be used with pipe configurations utilizing threaded, welded or grooved (rolled or cut) end connections.

Pipe Sch.	NPS (in.)	Wall Thk. (in.)	Grade/Type						
			Grade	A-106C	A-53B/A-106B	A-53B	A-53A/A-106A	A-53A	A-53F
			Type*	S	S	E	S	E	F
40	3/8**	0.091		●	●	●	●	●	●
	1/2	0.109		●	●	●	●	●	●
	3/4	0.113		●	●	●	●	●	●
	1	0.133		●	●	●	●	●	●
	1 ¼	0.140		●	●	●	●	●	●
	1 ½	0.145		●	●	●	●	●	●
	2	0.154		●	●	●	●	●	●
	2 ½	0.203		●	●	●	●	●	●
	3	0.216		●	●	●	●	●	●
	4	0.237		●	●	●	●	●	●
	6	0.280		●	●	●	●	●	●

**S = Seamless; E = ERW; F = Furnace-butt-weld*
***HFC-227ea and HFC-125 systems only.*

NOTE: Cast iron pipe, steel pipe conforming to ASTM A120, or nonmetallic pipe **SHALL NOT** be used.

The following table lists the acceptable fittings sizes and Classes that can be used with a Fike clean agent system.

Fitting Size	Fitting Class
Up to 6" NPT	Class 300-lb. threaded malleable or ductile iron
Up to 6" NPT	Grooved type fittings*
All pipe sizes	Class 300-lb. flanged

*Check with grooved fitting manufacturers for pressure ratings.

FK-5-1-12 INSTRUCTIONAL SIGNS

Description

Instructional signs are used to provide the necessary information to personnel in the area and to comply with NFPA 2001 requirements. The caution lettering and backgrounds meet the requirements of ANSI Z535. The sign are made from flame retardant, Lexan™ polycarbonate material. Each sign has an adhesive backing for mounting purposes. These signs are an optional item and must be ordered separately.

Approvals

Underwriters Laboratories (UL)
Underwriters Laboratories of Canada (ULC)
Factory Mutual (FM)

For exact certification listings, please reference the respective agency web site.

CAUTION – AREA PROTECTED BY FK-5-1-12 SIGN (P/N 02-15995)

Provided to alert personnel that the room is protected with an FK-5-1-12 system and that they should not enter the area during or after discharge.

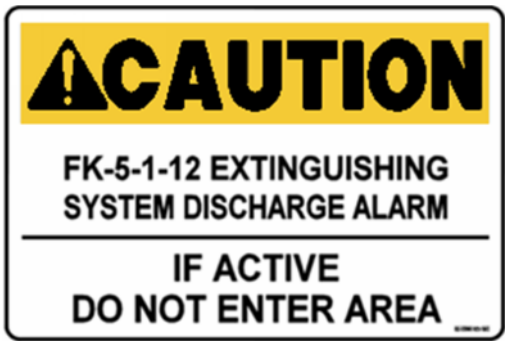
The sign also indicates the requirement that all doors serving the protected area must be kept closed at all times.

Dimensions	13” (330 mm) wide x 10” (254 mm) high
Caution Text	Black lettering on yellow background
Body Text	Black lettering on white background

CAUTION – SYSTEM DISCHARGE ALARM SIGN (P/N 02-15996)

Provided to alert personnel that the room is protected with an FK-5-1-12 system and to evacuate the area when the alarms sound.

This sign is provided to alert personnel that the room is protected with an FK-5-1-12 system and that they should not enter the area when the alarm sounds.



Dimensions	9” (229 mm) wide x 6” (154 mm) high
Caution Text	Black lettering on yellow background
Body Text	Black lettering on white background

CAUTION - EXIT AREA (P/N 02-15997)

Provided to explain the presence of notification devices that are located inside the protected space.

This sign explains that the FK-5-1-12 system will soon be discharged if the strobe light is flashing, and appropriate actions should be taken. This sign should be placed at each strobe light location.

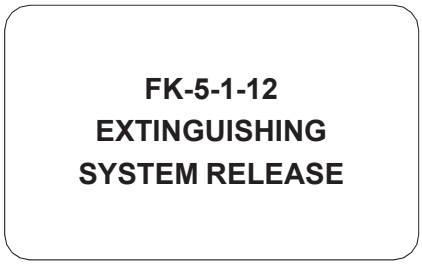
Dimensions	9” (229 mm) wide x 6” (154 mm) high
Caution Text	Black lettering on yellow background
Body Text	Black lettering on white background

SYSTEM RELEASE SIGN (P/N 02-15998)

Provided to identify each system release station associated with the FK-5-1-12 system. This reduces the risk of a manual discharge station being mistaken for a fire alarm pull station.

This sign should be placed at each manual release station location for positive identification.

Dimensions	4” (102 mm) wide x 2.25” (57 mm) high
Text	Red lettering on white background



MAIN / RESERVE SIGN (P/N 02-15999)

Provided to identify each system main/reserve station associated with the FK-5-1-12 system. This sign clearly identifies the purpose of the switch.

This sign should be placed at each main/reserve station location for positive identification.

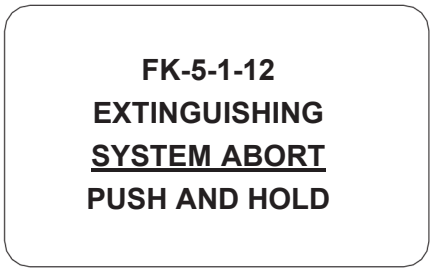
Dimensions	4” (102 mm) wide x 2.25” (57 mm) high
Text	Red lettering on white background

SYSTEM ABORT SIGN (P/N 02-16000)

Provided to identify each system abort station associated with the FK-5-1-12 system. This reduces the risk of an abort station being mistaken for a manual release or fire alarm pull station.

This sign should be placed at each abort station location for positive identification.

Dimensions	4” (102 mm) wide x 2.25” (57 mm) high
Text	Red lettering on white background



CHEETAH Xi BATTERY CALCULATION WORKSHEET

TOTAL SYSTEM REQUIREMENTS			Standby Current	Alarm Current	
1	Controller		0.275 A	0.275 A	
2	DACT	(Insert 1 if installed)	0.000 A	0.000 A	Current included in Section 3 total
3	SLM	(Insert 1 if installed)	0.000 A	0.000 A	
4	CRPM	(Insert 1 if installed)		0.000 A	
5	Network Module	(Insert 1 if installed)	0.000 A	0.000 A	
6	CRM4	(Insert # of modules installed) 1 (0.010 A per relay used)		0.040 A	
7	Signaling Line Circuits (CSC + SLM)		0.006 A	0.024 A (Note 4,8)	Total from Section 2
8	Auxiliary Power (CSC + SPS)		0.000 A (Note 1)	0.020 A (Note 2, 6)	Total from Section 3
9	Notification Circuits			0.195 A (Note 2)	Total from Section 4

Total(Stdby) 0.281 A **Total (Alm)** 0.554 A **(Note 1 & 2)**

Standby Capacity = [Total (Stdby)] X [Standby Time] + [Total (ALM)] X [Minutes] = 6.791 AH **(Note 5)**

Minimum Battery Size = [Standby Capacity] X [1.2] = **8.15 AH** (Note 3,5)

SECTION 2

Addressable Device Current		(# used)	x	(current)	=	total		(# used)	x	(current)	=	total		
		Communication Loop						Alarm Current						
63-1052/1058	Photo		x	0.481	=	0	mA	0	x	2.000	=	0.000	mA	
67-033/034	Ion		x	0.481	=	0	mA	0	x	2.000	=	0.000	mA	
63-1053/1059	Photo / Heat		x	0.481	=	0	mA	0	x	2.000	=	0.000	mA	
60-1039/1040	Heat		x	0.451	=	0	mA	0	x	2.000	=	0.000	mA	
55-045/050	MMM	3	x	0.485	=	1.455	mA	3	x	1.600	=	4.800	mA	
55-041/046	MM	6	x	0.485	=	2.91	mA	6	x	1.600	=	9.600	mA	
20-1063/1064	APS		x	0.370	=	0	mA	0	x	1.600	=	0.000	mA	
55-042/047	SCM	1	x	0.630	=	0.63	mA	1	x	1.600	=	1.600	mA	
55-043/048	RM	1	x	0.580	=	0.58	mA	1	x	1.600	=	1.600	mA	
63-1057/1062	Duct		x	0.481	=	0	mA	0	x	2.000	=	0.000	mA	
63-1063	Relay Base		x	0.565	=	0	mA	0	x	0.565	=	0.000	mA	
63-1064	Sounder Base		x	0.900		0	mA							
55-052/053	Release Module	1	x	0.450		0.45	mA	1	x	6.000	=	6.000	mA	
	Number of ARMS connected to Release Module =							2	x	10	=	20.000	mA	(Note 7)
	Number of Solenoids connected to Release/Control Modules =								x	(Amps)	=	0.000	A	(Note 6)
Total Signaling Line Circuits		**6.025**	**mA / 1000**		**=**	**0.00603 A**		**23.600**	**mA / 1000**		**=**	**0.0236 A**		

Totals inserted in line # 7 of Section 1

SECTION 3

Auxiliary Power		Standby Current (# used)	x	(current)	=	total		Alarm Current (# used)	x	(current)	=	total		
10-2528	DACT	0	x	0.150	=	0.000	A	0	x	0.190	=	0.000	A	(Note 8)
63-1064	Sounder Base	0	x	0.007	=	0.000	A	0	x	0.027	=	0.000	A	(Note 8)

Total Standby Current of Devices from Aux Power Devices Worksheet = 0.000 A Alarm Current = 0.000 A

Total Aux. Power **(Stdby)** 0.000 A **(Alrm)** 0.020 A **Total inserted in line #7 above**

SECTION 4

Notification Appliances/Devices

Total from NAC Appliances Worksheet = 0.195 A **Total inserted in line # 8 above**

Standby Time Desired: 24 Hours

Alarm Time Required: 5 Minutes (5 or 10)

SEE NOTES ON NEXT PAGE

Voltage Drop Calculator for NAC Circuits (Circuit Nominal 24Vdc)

		Circuit Current	Ohms / 1000 ft	Wire Length (One Way) (Feet)	Total Ohms	Volts at EOL	% Drop	
Wire Size	14 awg Str Copper	0.166	3.14	100	0.63	**23.90**	0.43%	**Should be less than 10% Drop**
Wire Size	14 awg Str Copper	0.029	3.14	100	0.63	**23.98**	0.08%	
Wire Size	18 awg Solid Copper		7.77		0.00	**24.00**	0.00%	

NOTES:

1 Panel Auxiliary Standby Power cannot exceed 2.0A, or 4.0A w/ SPS.

2 Panel Auxiliary Alarm Power plus Notification Power cannot exceed 6.0 A, or 12.0 A w/ SPS.

3 Cheetah Xi Control Panel can support charging up to 75 AH of standby batteries. The SPS can support charging up to an additional 75 AH of standby batteries for a system total of up to 150 AH.

4 SLC Loop power does not include current delivered to SCM output circuits during alarm conditions.

5 Standby time should be 24, 60 or 90 hours as required by the local authority having jurisdiction or installation requirements. Factory Mutual requires 90 hour standby time for Sprinkler Systems.
0.083 hour represents 5 minutes of alarm.
1.2 represents battery derating factor.

6 Solenoid current is included in Aux Power totals in Section 3, then included in line 8 of Section 1, since power for this feeds off the Aux Power and not from the SLC loop.

7 Release module can activate up maximum of 6 ARMs or 1 - 24Vdc solenoid or 2 - 12Vdc solenoids in series.
For battery calcs, enter the number or ARMs and the value of 10.0 mA each
This current is then included in Aux Power, and not SLC loop power.

8 DACT and Sounder base are shown in Section 1 and Section 3 both. Since these are powered by the Aux power, Section 1 totals shown are drawn in from Section 3 and not added twice in the calculations.

Flow Calculation Report

06-873 Fike Flow Calculation Version 3.0.7.0

FK-5-1-12 Calculation Engine Version 1.00.0000

UL Ex4623 FM 3059379

Date Printed: 4/22/2025

Project Setup

Selected Agent Type:	FK-5-1-12
Selected Hardware Group:	Fike US
Ambient Room Temperature:	70 °F
Discharge Time:	10 s

Project Information

Description:	LEE'S SUMMIT JOINT OPERATIONS FACILITY
Designer:	AJS
Account Number:	5-25-0011

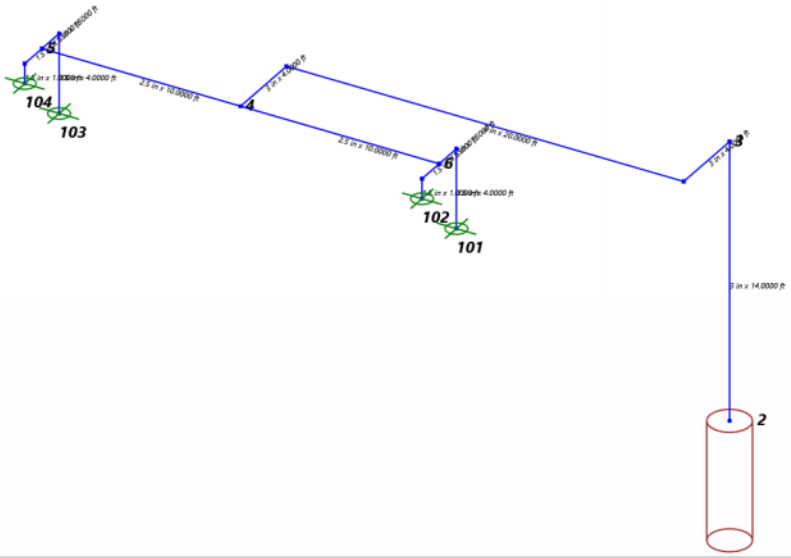
Hazard Information

Description:	SERVERS 146
Protecting Agent:	FK-5-1-12
Length:	44.75 ft
Width:	16.50 ft
Height:	20.00 ft
Added Volume:	180.00 ft^3
Removed Volume:	0.00 ft^3
Protected Volume:	14947.50 ft^3
Minimum Temperature:	70 °F
Maximum Temperature:	70 °F
Relative Humidity:	38.00 %
Altitude:	0 ft
Minimum Agent Concentration:	6.6 %
Agent Design Concentration:	6.6 %
Maximum Agent Concentration:	6.6 %
Agent Required:	914.0 lb

Total Agent Required

Agent Required for all Hazards:	914.0 lb

Pipe Network Layout



Cylinder Information

Description	Agent Qty	Pressure	Volume	Diameter	Height
70-367-X-X 1000 lb Upright	914.0 lb	500 psi	14.9400 ft^3	2.0000 ft	5.9900 ft

Nozzle Information

Description	Requested Agent	Orifice	Type	Thread	Dispersion Angle
80-124-150-X 1-1/2 in (40 mm)	228.5 lb	1.1719 in	Standard	NPT	360
80-124-150-X 1-1/2 in (40 mm)	228.5 lb	1.1719 in	Standard	NPT	360
80-124-150-X 1-1/2 in (40 mm)	228.5 lb	1.1719 in	Standard	NPT	360
80-124-150-X 1-1/2 in (40 mm)	228.5 lb	1.1719 in	Standard	NPT	360

Table Input Data

Start	End	Length	Elevation Change	Diameter	Schedule	Cylinder	90° Elbows	45° Elbows	Thru Branch	Side Branch	Union	Equiv Length	Agent Quantity	Nozz Type	Nozz Orifice
1	2	5.9900 ft	5.9900 ft	3 in	Schedule 40T	1	0	0	0	0	0	24.9100 ft			
2	3	14.0000 ft	14.0000 ft	3 in	Schedule 40T	0	0	0	0	0	0				
3	4	28.0000 ft		3 in	Schedule 40T	0	3	0	0	0	0				
4	5	10.0000 ft		2-1/2 in	Schedule 40T	0	0	0	0	1	0				
4	6	10.0000 ft		2-1/2 in	Schedule 40T	0	0	0	0	1	0				
5	103	5.5000 ft	-4.0000 ft	1-1/2 in	Schedule 40T	0	1	0	0	1	0		228.5000 lb	360	1.1719 in
5	104	2.5000 ft	-1.0000 ft	1-1/2 in	Schedule 40T	0	1	0	0	1	0		228.5000 lb	360	1.1719 in
6	101	5.5000 ft	-4.0000 ft	1-1/2 in	Schedule 40T	0	1	0	0	1	0		228.5000 lb	360	1.1719 in
6	102	2.5000 ft	-1.0000 ft	1-1/2 in	Schedule 40T	0	1	0	0	1	0		228.5000 lb	360	1.1719 in

Table Results Data

Start	End	Pipe Type	Equivalent Length	Start Pressure	End Pressure	Agent Flow Rate	Nozzle Agent	Nozzle Orifice Size	Initial Vapor Time	Liquid Discharge Time	End of Liquid Time
1	2	3 -SCH 40	30.9000 ft	215.0000 psi	193.0000 psi	118.1585 lb / s					
2	3	3 -SCH 40	14.0000 ft	193.0000 psi	177.0000 psi	118.1585 lb / s					
3	4	3 -SCH 40	51.0100 ft	177.0000 psi	155.0000 psi	118.1585 lb / s					
4	5	2 1/2-SCH 40	22.3450 ft	155.0000 psi	145.0000 psi	59.0793 lb / s					
4	6	2 1/2-SCH 40	22.3450 ft	155.0000 psi	145.0000 psi	59.0793 lb / s					
5	103	1 1/2-SCH 40	17.5750 ft	145.0000 psi	128.0000 psi	29.4674 lb / s	228.7007 lb	1.1719 in	0.4170 s	8.0192 s	8.4363 s
5	104	1 1/2-SCH 40	14.5750 ft	145.0000 psi	128.0000 psi	29.6119 lb / s	228.2993 lb	1.1719 in	0.3919 s	8.0443 s	8.4363 s
6	101	1 1/2-SCH 40	17.5750 ft	145.0000 psi	128.0000 psi	29.4674 lb / s	228.7007 lb	1.1719 in	0.4170 s	8.0192 s	8.4363 s
6	102	1 1/2-SCH 40	14.5750 ft	145.0000 psi	128.0000 psi	29.6119 lb / s	228.2993 lb	1.1719 in	0.3919 s	8.0443 s	8.4363 s

Table Results Messages

FK-5-1-12 Flow Calculation Engine Version 1.00.0000
Calculation based on fixed nozzle codes and pipe sizes.
System calculated within limits of Fikes UL listing and FM approval
Calculation performed on 4/22/2025 2:11 PM
Discharge time is 8.436253 seconds, which is within the 5.95 to 10 second limits.

Bill of Materials

Pipes	
Quantity	**Description**
2	1-1/2 in x 1.0000 ft (Schedule 40T)
4	1-1/2 in x 1.5000 ft (Schedule 40T)
2	1-1/2 in x 4.0000 ft (Schedule 40T)
2	2-1/2 in x 10.0000 ft (Schedule 40T)
1	3 in x 14.0000 ft (Schedule 40T)
1	3 in x 20.0000 ft (Schedule 40T)
2	3 in x 4.0000 ft (Schedule 40T)
Nozzles	
Quantity	**Description**
4	1-1/2 in (40 mm) (Part Number '80-124-150-11719')
Cylinders	
Quantity	**Description**
1	1000 lb Upright (914.0000 lb) (Part Number '70-367-X-X')
Elbows	
Quantity	**Description**
4	1-1/2 in x 1-1/2 in
3	3 in x 3 in
Tees	
Quantity	**Description**
2	1-1/2 in x 1-1/2 in x 2-1/2 in
1	2-1/2 in x 2-1/2 in x 3 in

System Acceptance Report

Nozzle Performance

Nozzle Number	Orifice Diameter	Agent Requested	Agent Predicted	Nozzle Pressure
103	1.1719 in	228.5000 lb	228.7007 lb	128.0000 psi
104	1.1719 in	228.5000 lb	228.2993 lb	128.0000 psi
101	1.1719 in	228.5000 lb	228.7007 lb	128.0000 psi
102	1.1719 in	228.5000 lb	228.2993 lb	128.0000 psi

Agent Concentration Per Hazard

Hazard	Minimum Concentration	Design Concentration	Min Predicted Concentration	Max Predicted Concentration	Discharge Time
SERVERS 146	6.6 %	6.6 %	6.6045 %	6.6045 %	8.4363 s

Equivalent Leakage Area

Hazard	Positive (Flow Out) ELA	Negative (Flow In) ELA	Positive (Flow Out) Pressure	Negative (Flow In) Pressure
SERVERS 146	52.5513 in^2	790.1687 in^2	1213.52 psf	892.98 psf

Flow Calculation Report

06-873 Fike Flow Calculation Version 3.0.7.0

FK-5-1-12 Calculation Engine Version 1.00.0000

UL Ex4623 FM 3059379

Date Printed: 4/22/2025

Project Setup

Selected Agent Type:	FK-5-1-12
Selected Hardware Group:	Fike US
Ambient Room Temperature:	70 °F
Discharge Time:	10 s

Project Information

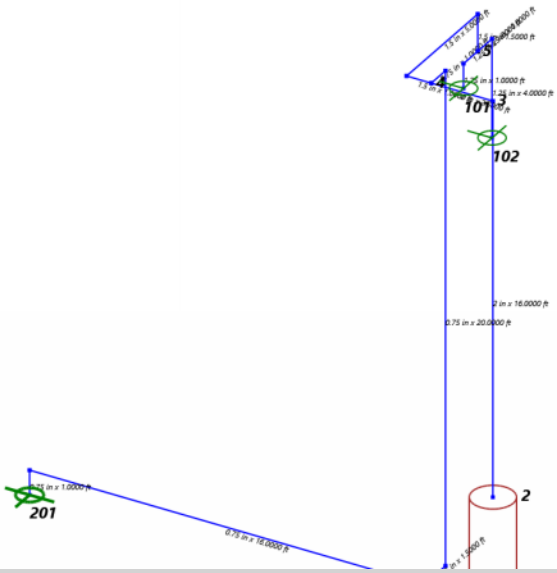
Description:	LEE'S SUMMIT JOINT OPERATIONS
Designer:	AJS
Account Number:	5-25-0011

Hazard Information	
Description:	UPS 147
Protecting Agent:	FK-5-1-12
Length:	18.50 ft
Width:	10.25 ft
Height:	20.00 ft
Added Volume:	0.00 ft^3
Removed Volume:	0.00 ft^3
Protected Volume:	3792.50 ft^3
Minimum Temperature:	70 °F
Maximum Temperature:	70 °F
Relative Humidity:	38.00 %
Altitude:	0 ft
Minimum Agent Concentration:	6.6 %
Agent Design Concentration:	6.7 %
Maximum Agent Concentration:	6.7 %
Agent Required:	236.0 lb

Hazard Information	
Description:	SERVERS 146 SUBFLOOR
Protecting Agent:	FK-5-1-12
Length:	44.75 ft
Width:	16.50 ft
Height:	1.00 ft
Added Volume:	0.00 ft^3
Removed Volume:	0.00 ft^3
Protected Volume:	738.38 ft^3
Minimum Temperature:	70 °F
Maximum Temperature:	70 °F
Relative Humidity:	38.00 %
Altitude:	0 ft
Minimum Agent Concentration:	6.6 %
Agent Design Concentration:	6.7 %
Maximum Agent Concentration:	6.7 %
Agent Required:	46.0 lb

Total Agent Required	
Agent Required for all Hazards:	282.0 lb

Pipe Network Layout



Cylinder Information

Description	Agent Qty	Pressure	Volume	Diameter	Height
70-365-X-X 375 lb Upright	282.0 lb	500 psi	5.4100 ft^3	1.6670 ft	3.6150 ft

Nozzle Information

Description	Requested Agent	Orifice	Type	Thread	Dispersion Angle
80-122-125-X 1-1/4 in (32 mm)	118.0 lb	0.6875 in	Standard	NPT	180
80-122-125-X 1-1/4 in (32 mm)	118.0 lb	0.6875 in	Standard	NPT	180
80-122-075-X 3/4 in (20 mm)	46.0 lb	0.5000 in	Standard	NPT	180

Table Input Data

Start	End	Length	Elevation Change	Diameter	Schedule	Cylinder	90° Elbows	45° Elbows	Thru Branch	Side Branch	Union	Equiv Length	Agent Quantity	Nozz Type	Nozz Orifice
1	2	3.6150 ft	3.6150 ft	3 in	Schedule 40T	1	0	0	0	0	0	27.2850 ft			
2	3	16.0000 ft	16.0000 ft	2 in	Schedule 40T	0	0	0	0	0	0				
3	4	2.5000 ft		2 in	Schedule 40T	0	1	0	0	0	0				
4	5	7.5000 ft	-1.5000 ft	1-1/2 in	Schedule 40T	0	2	0	1	0	0				
4	201	39.5000 ft	-21.0000 ft	3/4 in	Schedule 40T	0	4	0	0	1	0		46.0000 lb	180	0.5000 in
5	101	2.0000 ft	-1.0000 ft	1-1/4 in	Schedule 40T	0	1	0	0	1	0		118.0000 lb	180	0.6875 in
5	102	5.0000 ft	-4.0000 ft	1-1/4 in	Schedule 40T	0	1	0	0	1	0		118.0000 lb	180	0.6875 in

Table Results Data

Start	End	Pipe Type	Equivalent Length	Start Pressure	End Pressure	Agent Flow Rate	Nozzle Agent	Nozzle Orifice Size	Initial Vapor Time	Liquid Discharge Time	End of Liquid Time
1	2	3 -SCH 40	30.9000 ft	257.0000 psi	251.0000 psi	35.9904 lb / s					
2	3	2 -SCH 40	16.0000 ft	251.0000 psi	232.0000 psi	35.9904 lb / s					
3	4	2 -SCH 40	7.6675 ft	232.0000 psi	229.0000 psi	35.9904 lb / s					
4	5	1 1/2-SCH 40	18.2333 ft	229.0000 psi	212.0000 psi	29.8501 lb / s					
4	201	3/4 -SCH 40	51.8600 ft	229.0000 psi	170.0000 psi	6.1403 lb / s	50.0670 lb	0.5000 in	0.8028 s	8.0387 s	8.8414 s
5	101	1 1/4-SCH 40	12.3500 ft	212.0000 psi	207.0000 psi	14.7868 lb / s	113.7986 lb	0.6875 in	0.3226 s	8.5188 s	8.8414 s
5	102	1 1/4-SCH 40	15.3500 ft	212.0000 psi	208.0000 psi	15.0632 lb / s	118.1344 lb	0.6875 in	0.3577 s	8.4837 s	8.8414 s

Table Results Messages

FK-5-1-12 Flow Calculation Engine Version 1.00.0000
Calculation based on fixed nozzle codes and pipe sizes.
System calculated within limits of Fikes UL listing and FM approval
Calculation performed on 4/22/2025 2:47 PM
Discharge time is 8.841434 seconds, which is within the 5.95 to 10 second limits.

Bill of Materials

Pipes

Quantity	Description
1	1-1/2 in x 1.0000 ft (Schedule 40T)
1	1-1/2 in x 1.5000 ft (Schedule 40T)
1	1-1/2 in x 5.0000 ft (Schedule 40T)
3	1-1/4 in x 1.0000 ft (Schedule 40T)
1	1-1/4 in x 4.0000 ft (Schedule 40T)
1	2 in x 16.0000 ft (Schedule 40T)
1	2 in x 2.5000 ft (Schedule 40T)
2	3/4 in x 1.0000 ft (Schedule 40T)
1	3/4 in x 1.5000 ft (Schedule 40T)
1	3/4 in x 16.0000 ft (Schedule 40T)
1	3/4 in x 20.0000 ft (Schedule 40T)

Nozzles

Quantity	Description
2	1-1/4 in (32 mm) (Part Number '80-122-125-6875')
1	3/4 in (20 mm) (Part Number '80-122-075-5000')

Cylinders

Quantity	Description
1	375 lb Upright (282.0000 lb) (Part Number '70-365-X-X')

Elbows

Quantity	Description
2	1-1/2 in x 1-1/2 in
2	1-1/4 in x 1-1/4 in
1	2 in x 2 in
4	3/4 in x 3/4 in

Tees

Quantity	Description
1	1-1/2 in x 3/4 in x 2 in
1	1-1/4 in x 1-1/4 in x 1-1/2 in

System Acceptance Report

Nozzle Performance

Nozzle Number	Orifice Diameter	Agent Requested	Agent Predicted	Nozzle Pressure
201	0.5000 in	46.0000 lb	50.0670 lb	170.0000 psi
101	0.6875 in	118.0000 lb	113.7986 lb	207.0000 psi
102	0.6875 in	118.0000 lb	118.1344 lb	208.0000 psi

Agent Concentration Per Hazard

Hazard	Minimum Concentration	Design Concentration	Min Predicted Concentration	Max Predicted Concentration	Discharge Time
UPS 147	6.6 %	6.7 %	6.6053 %	6.6053 %	8.8414 s
SERVERS 146 SUBFLOOR	6.6 %	6.7 %	7.2715 %	7.2715 %	8.8414 s

Equivalent Leakage Area

Hazard	Positive (Flow Out) ELA	Negative (Flow In) ELA	Positive (Flow Out) Pressure	Negative (Flow In) Pressure
UPS 147	12.7240 in^2	191.3194 in^2	1247.9 psf	918.24 psf
SERVERS 146 SUBFLOOR	2.7271 in^2	41.0053 in^2	1129.95 psf	831.57 psf