EDWARDS

LIFE SAFETY & INCIDENT MANAGEMENT

Intelligent Fire Alarm Systems

iO64, iO1000



FM APPROVED

FDNY COA 6227

7165-1657: 0244

UL ULC S3000

Overview

EDWARDS brand intelligent life safety systems offer the power of high-end intelligent processing in configurations that deliver uncomplicated solutions for small to mid-sized applications. With intelligent detection, electronic addressing, automatic device mapping, optional Ethernet® connectivity, and a full line of easily-configured option cards and modules, these flexible systems offer versatility that benefits building owners and contractors alike.

The iO64 provides one Class A or Class B intelligent device loop that supports up to 64 device addresses, and two Class B Notification Appliance Circuits (NACs). Optional Class A device wiring is available with the use of a module.

The iO1000 provides one Class A or Class B intelligent device loop that supports up to 250 device addresses. Loop controller modules may be added in combination to expand total system capacity in 250-point increments to up to 1,000 device addresses. The iO1000 panel includes four NACs that may be wired for either Class A or Class B operation.

The RZI16-2 module adds even more capacity to iO installations by adding up to 16 conventional device circuits and two additional notification appliance circuits. This makes them an ideal retrofit solution that can accommodate new intelligent detectors, as well as existing conventional devices.

iO Series supports a wide range of high-end features, including:

- Supports 10-Year Carbon Monoxide detectors
- R-Series remote annunciators
- SIGA-REL Releasing Modules
- Fully integrated CO detection using Signature Series detectors with or without audible signaling

Features

- Auto-programming reduces installation time
- Supports Signature Series intelligent modules and detectors
- Combines the Signature intelligent releasing module with Signature multisensor detectors for reliable fire suppression
- Electronic addressing with automatic device mapping
- Optional Ethernet port (SA-ETH) for central station monitoring service, programming, diagnostics and a variety of system reports.
- Two programmable switches with LEDs and custom labeling
- Supports Genesis horn silence over two wires, and UL 1971-compliant strobe synchronization
- Optional multi-protocol Field Server Bridge for interface to 3rd party Building Management Systems.
- Ground fault detection by module
- Supports up to eight serial annunciators, (LCD, LED-only, and graphic interface)
- Can use existing wiring for most retrofit applications
- Upload/download remotely or locally
- Optional USB module for local printing or programming using the configuration utility on a technician's laptop.
- Two-level maintenance alert reporting
- Pre-alarm and alarm verification by point
- Adjustable detector sensitivity
- 4 x 20 character backlit LCD display
- Optional earthquake hardening: seismic Importance Factor 1.5
- Standalone operation
- Alarm ON command manually activates alarm condition
- Form C contacts for alarm and trouble, Form A for supervisory

Application

EDWARDS iO Series life safety systems are powerful intelligent solutions for small to mid-sized buildings. Advanced intelligent technology delivers the benefits of flexible system installation, while clean and easy-to-operate user interfaces make panel operation and system maintenance quick and intuitive.

The smart choice

Signature Series electronic addressing eliminates the tedium of setting dipswitches, and automatic device mapping ensures that each device resides on the system at its correct location. Meanwhile, innovative programming allows the designer to customize the system to precisely suit the needs of the building owner.

Reliability you can count on

The inherent fault-tolerant characteristics of Analog/Addressable Technology boosts the reliability of EDWARDS fire alarm systems. When combined with iO Series smoke and heat detectors, these systems deliver a level of dependability not previously available for small to mid-sized applications. All EDWARDS systems are built to exacting reliability benchmarks.

Clear-cut remote annunciation

Remote annunciation is a strong suit of the iO Series fire alarm systems. Up to eight annunciators can be installed on a single system. Compatible annunciators include a range of LED and LCD models that provide zone or point annunciation, as well as common control capabilities. iO control panels also supports graphic annunciation with optional RA Graphic Annunciator interface modules. Each interface provides common control and 32 LEDs.

Flexibility built right in

Two fully-programmable front panel switch/LED combinations provide an added measure of flexibility. Their slide-in labels take the mystery out of custom applications, and present a clean finished appearance.

Perfect for retrofits

EDWARDS iO Series control panels are particularly well-suited to retrofit applications. All connections are made over standard wiring – no shielded cable required. This means that in most situations existing wiring can be used to upgrade a legacy control panel to iO technology without the expense or disruption of rewiring the entire building. iO control panels also support the ingenious RZI16-2 Zone Module, which adds up to 16 conventional circuits and two NACs. This combination easily accommodates new intelligent detection alongside existing conventional circuits, making it an superior solution in the retrofit market.

Scalable IP and Cellular Communications

Optional SA-ETH module supports IP connection to a central station's Sur-Gard receiver, meeting one of the methods of communication allowed by NFPA 72 as of the 2013 Edition. Several popular third-party IP/Cellular communicators have been tested with the iO control panels and are compatibility listed to UL864. The IP/Cellular communicators meet NFPA72 2013 edition requirements for sole or secondary transmission paths. Using IP/Cellular communicators can reduce the cost of ownership by eliminating POTS lines. Please see the iO control panel compatibility documentation part number 3102353-EN for a full list of compatible communicators.

Signals with a difference

iO system NACs are configurable to fully support the advanced signaling technology of EDWARDS Genesis and Enhanced Integrity notification appliances. These devices offer precision synchronization of strobes to UL 1971 standards. For Genesis devices, enabling this feature allows horns to be silenced while strobes on the same two-wire circuit continue to flash until the panel is reset.

A complete line of accessories

iO Series life safety systems are supported by a complete line of analog/addressable detectors, modules and related equipment. Consult the Ordering Information section for details.

Programming and remote diagnostics

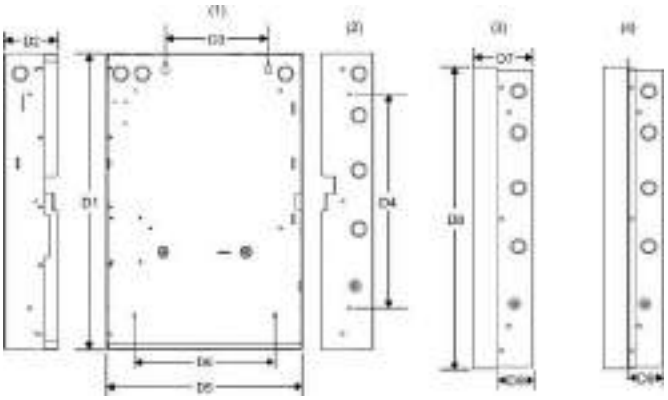
EDWARDS iO Series life safety systems are simple to set up, yet offer advanced programming features that put these small building panels into a class of their own. The auto programming feature quickly gets the panel operational using factory default settings. Basic zone and point settings can be programmed through the front panel interface, so the system is up and running in no time.

For more advanced system configuration and correlation groups programming, iO Series systems interface to a PC running compatible iO-CU software. This option offers full system configuration in the familiar Windows® operating environment. Connection is made to a laptop through the panel's optional RS-232 communications port, which can also be used to connect a system printer.

Among the many innovative features of iO Series control panels is the optional network card. This module provides a standard 10/100 Base T Ethernet® network connection that permits access to the control panel from any remote location with the correct communications protocols. The connection can be used to download to the panel from the iO-CU, or upload and view system reports using the iO-CU.

Available system reports include: Correlation groups, Device details, Device maintenance, History, Internal status, System configuration, System status, Walk test, Dialer, and CO runtime.

Dimensions



(1) Surface Mounting Holes
(2) Semi-flush mounting Holes
(3) Backbox with Door Attached
(4) Backbox with door and trim kit attached.

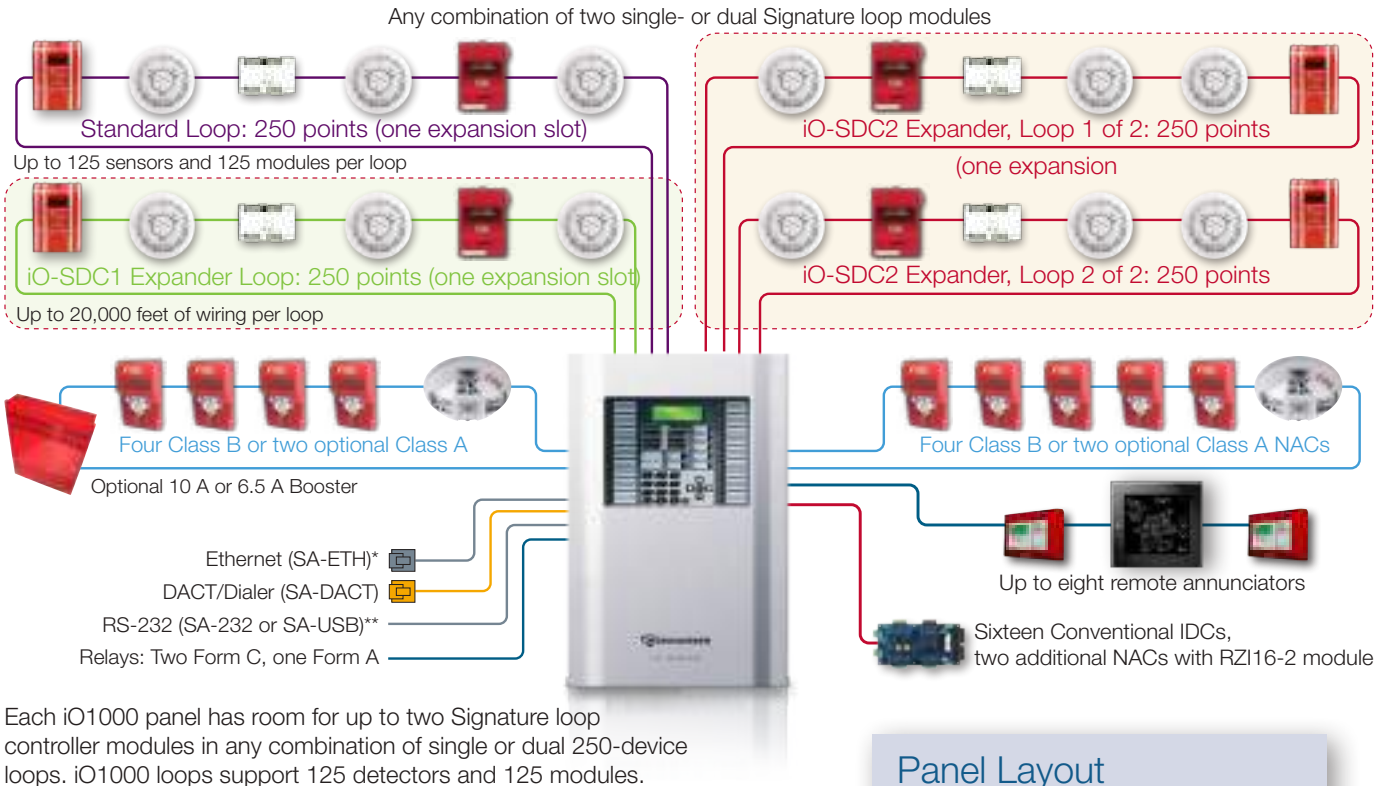
Panel dimensions, in (cm)

Model	D1*	D2	D3	D4	D5*	D6	D7	D8	D9
iO1000	28.0 (71.1)	3.85 (9.8)	9.0 (22.8)	22.0 (55.8)	15.75 (40.0)	10.25 (26.0)	4.4 (11.1)	28.2 (71.6)	2.7 (6.8)
iO64	21.5 (54.6)	3.85 (9.8)	7.5 (19.0)	15.5 (39.4)	14.25 (36.2)	10.25 (26.0)	4.5 (11.4)	21.7 (55.1)	2.7 (6.8)

* Add 1-1/2 in. (3.81 cm) to D1 and D5 dimensions for trim kit. The trim kit provides 0.75 inches (1.9 cm) of trim to the top, bottom, and sides of the backbox.

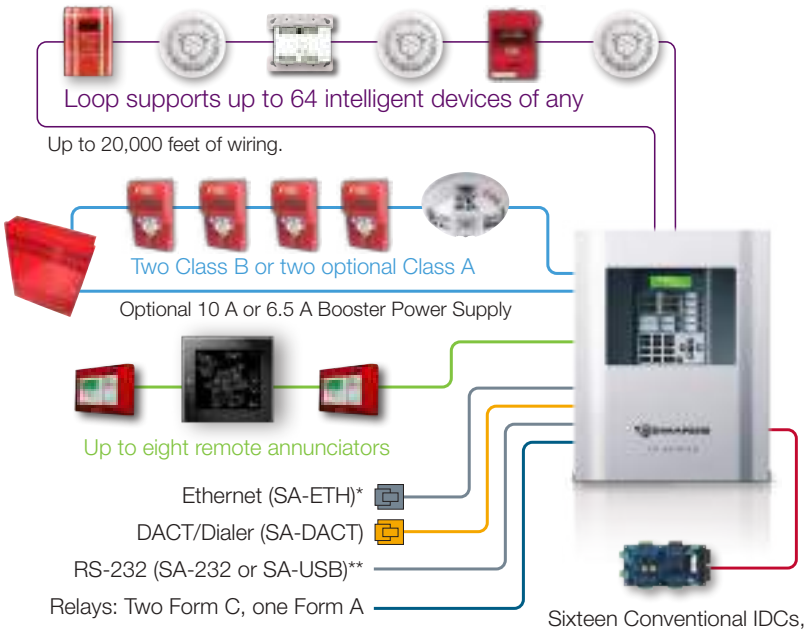
System Layout

iO1000



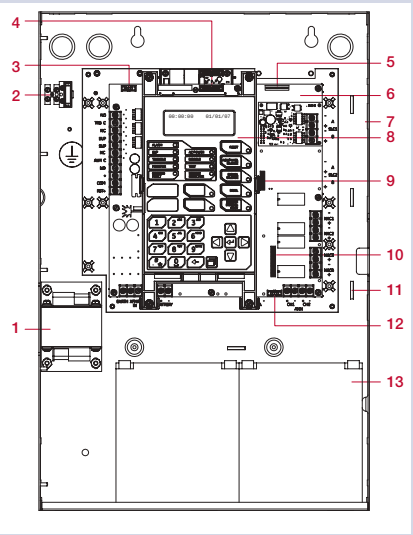
Each iO1000 panel has room for up to two Signature loop controller modules in any combination of single or dual 250-device loops. iO1000 loops support 125 detectors and 125 modules.

iO64



Each iO64 panel ships with one Signature loop controller that supports 64 devices of any type. This panel's device capacity cannot be expanded.

Panel Layout



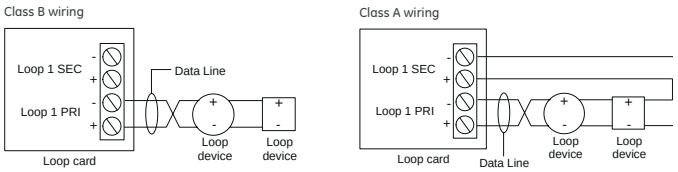
1 Transformer
2 Main AC wiring block & fuse holder
3 RS-232 card connector (J3)
4 Dialer card connection (J8)
5 Ethernet card connector (J1)
6 Main circuit board
7 Panel backbox enclosure
8 Operator interface
9 SLC card connector (J7)
10 Class A card connector (J2)
11 Tie wrap mounts
12 LED expander connector (J6)
13 Standby batteries

*SA-ETH supports: (1) remote connectivity for diagnostics & programming, (2) Central station monitoring to Sur-Gard IP Receivers.
**RS-232 supports: (1) Printer, (2) Programming Interface, (3) Use of Field Server Briidge (SA-FSB) for 3rd party Building Management Systems interface.

Signature device loop

The system provides one Signature device loop circuit with a total capacity of 125 detectors and 125 module addresses. The loop circuit is supervised for opens, shorts, and grounds.

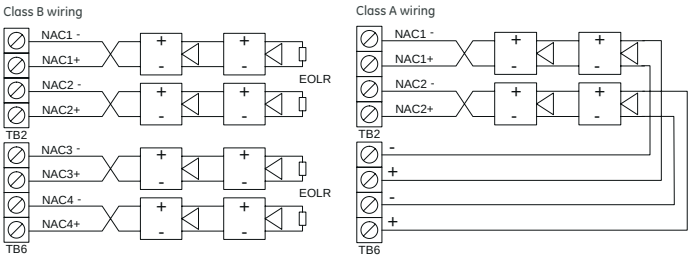
Circuit specifications	iO1000	iO64
Device loops	One Class B or A loop, supporting 125 detectors and 125 modules. Expandable to four loops.	One Class B or A loop, supporting 64 devices of any kind.
Communication line voltage	Maximum 20 V peak-to-peak	
Circuit current	0.5 A max	
Circuit impedance	66Ω total, 0.5 µF, max	
Isolators	64 maximum	
Signal Synchronization	Supported on a system-wide basis (all device loops) when using a SIGA-CC1S or SIGA-MCC1S module and Genesis or Enhanced Integrity notification appliances.	



Notification appliance circuits (TB2)

iO1000 control panels come equipped with four notification appliance circuits. iO64 control panels come with two NACs. Each circuit can be individually configured for continuous, temporal, synchronized, and coded output.

Specifications	iO1000	iO64
Circuit Type	4 Class B or 2 Class A	2 Class B or 2 Class A with SA-CLA module
Voltage	24 VFWR	
Current	6.0 A total, 2.5 A max. per circuit at 120/230 VAC 60 Hz. 5.0 A total, 2.5 A max. per circuit at 230 VAC 50 Hz.	3.75 A total, 2.5 A max. per circuit at 120/230 VAC 60 Hz. 3.0 A total, 2.5 A max. per circuit at 230 VAC 50 Hz.
Impedance	26 Ω total, 0.35 µF max	
EOLR	15 K Ω, ½ W	
Synchronization	Supported system-wide	



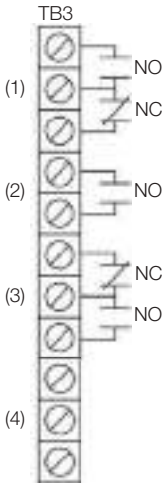
Marking indicates output signal polarity when the circuit is active. Polarity reverses when the circuit is not active. Wire notification appliances accordingly. Notification appliance polarity shown in active state.

Auxiliary & smoke power outputs (TB3)

The control panel provides two auxiliary power outputs that can be used for powering ancillary equipment such as remote annunciators and two wire smoke detectors. Aux 2 can be software selected to operate continuously. The circuit is supervised for shorts and grounds.

Circuit specifications	
Circuit voltage range	21.9 to 28.3 V
Resettable circuit (Aux power 2)	24 VDC nominal at 500 mA
Continuous circuit (Aux power 1)	24 VDC nominal at 500 mA. Use this circuit for powering two-wire smoke detectors.

Note: Any current above 0.5 amp connected to both Aux 1 and 2 will reduce the total available NAC power by that amount.



(1) Trouble
(2) Supervisory
(3) Alarm
(4) Smoke/Aux

Alarm, trouble, and supervisory relay (TB3)

The trouble relay is normally-open, held closed, and opens on any trouble event or when the panel is de-energized. The supervisory relay is normally-open, and closes on any supervisory event. The alarm relay changes over on any alarm event.

Relay specifications

	Alarm	Trouble	Supervisory
Type	Form C		Form A
Voltage	24 VDC at 1 A resistive	24 VDC at 1 A resistive	

Relay circuits can only be connected to power-limited sources.

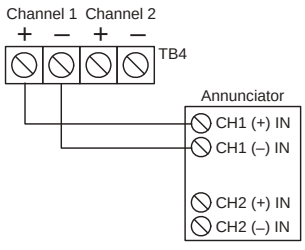
Annunciator loop (TB4)

The control panel provides a connection for up to eight serially driven and supervised remote annunciators.

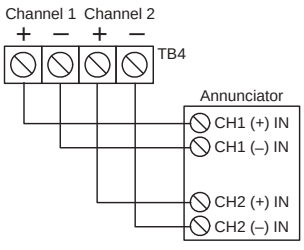
Circuit specifications

Device loops	Class B (Style Y) or Class A (Style Z)
Circuit voltage	2.55 V
Circuit current	30 mA max
Circuit impedance	Up to 8 annunciators or 4000 feet

Class B



Class A



Option Cards

EDWARDS iO Series panels are supported by a complete line of modules and related equipment that enhance performance and extend system capabilities. Option cards plug directly into the control panel main circuit board or are connected to it with a ribbon cable. After installation, terminals remain accessible. The cabinet provides ample room for wire routing, keeping wiring neat at all times.

Single and Dual Loop Controller Cards

The iO-SDC1 is a single loop controller card that can be used with the iO64 as a replacement for the standard 64-point loop, or with the iO1000 as a 250-point expansion module.

The iO-SDC2 is a 500-point dual loop controller card for the iO1000 that provides two SLC circuits, each with 125 detector addresses and 125 module addresses.

Specifications	iO-SDC1	iO-SDC2
Device Addresses	iO1000: one loop, 250 device addresses iO64: 64 addresses	iO1000: two loops, 500 device addresses
Wiring	Class B or Class A	
Operating Voltage	24 VDC	
Operating Current (fully loaded loop)	Standby: 55 mA Alarm: 80 mA	Standby: 45 mA Alarm: 70 mA
Note: These ratings do not include the use of two-wire smoke modules.		
Communication Line Voltage	Max. 20.6 V peak-to-peak	
Terminal Rating	12 to 18 AWG (0.75 to 2.5 mm^2)	
Circuit Current	0.5 A max.	
Max total loop resistance	66 Ω	
Max total loop capacitance	0.5 µF	
Isolators	64 isolators maximum per loop (total both isolator bases and modules)	
Ground Fault Impedance	0 to 5 kΩ	
Operating Environment	32 to 120°F (0 to 49°C) 0 to 93% noncondensing at 90°F (32°C)	

SA-ETH Ethernet Interface Card/IP Communicator

The SA-ETH card provides a standard 10/100 Base T Ethernet network connection for connecting to an intranet, a local network, or the Internet. The card supports IP connectivity for monitoring services by a supervising station to meet NFPA 72 Chapter 26. The Ethernet card uses the FIBRO protocol to communicate with Sur-Gard System receivers (see below). The card can be used to download configuration programming from the iO-CU tothe panel.



The Ethernet card is installed on the plastic assembly and connects to the main circuit board via a ribbon cable.

SA-ETH specifications	
Ethernet	10/100 Base-T
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Humidity	0 to 93% RH, noncondensing at 90°F (32°C)
Compatible Sur-Gard Receivers	SG-System I, II, III, IV and 5

RZI16-2 Remote Zone Interface Module



The RZI16-2 Addressable Remote Zone Interface Module is an addressable device that provides connections for sixteen Class B Initiating Device Circuits and two Class B Supervised Output Circuits. The inputs and outputs can be configured individually for several device types.

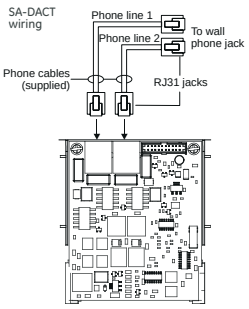
It requires 18 consecutive addresses on the Signaling Line Circuit (SLC). Addresses are assigned electronically. There are no address switches to set.

The RZI16-2 incorporates two 8-segment DIP switches that are used to select the Alarm or Supervisory default device type for each of the 16 IDC circuits. The module also includes one 4-segment DIP switch used to select the default Relay or NAC output device type. Device types other than the default are accomplished through programming.

RZI16-2 Specifications	
Voltage	
24V/Aux nominal:	24 VDC
Supervisory current:	250 mA at 24 VDC nominal
Alarm Current	1000 mA
24V/Aux minimum:	18.4 VDC
24V/Aux maximum:	26.4 VDC
NAC1, NAC2 nominal:	24 VDC
Current	
Standby current for 4.7 k EOL (U.S.)	4.8 mA/ circuit
Standby current for 3.9 k EOL (Canada)	5.7 mA/ circuit
Alarm current at nominal voltage	31.1 mA/ circuit
Relay outputs	
Quantity	2
Type Rating (pilot duty)	Programmable 24 VDC at 2.5 A
Input circuit wiring resistance	25 Ω per wire
Initiating device circuits	
Quantity	16
EOL resistor	4.7 kΩ (U.S.); 3.9 kΩ Canada
Zone voltage	22.78 V for 4.7 kΩ (U.S.) 22.08 V for 3.9 kΩ (Canada)
Alarm current	31.1 mA/ channel at nominal voltage
Alarm impedance range	< 680 Ω
Trouble impedance range	> 5.55 kΩ
Supervised output circuits	
EOL resistor	15 kΩ
Quantity	2
Short circuit detection	< 2.6 kΩ
Open circuit detection	> 61.9 kΩ
Contact ratings	24 VDC at 2.5 A (5 A for two NACs)
Compatible cabinets	MFC-A, iO1000, APS

SA-DACT Dialer

The SA-DACT provides communications between the control panel and the central station over a telephone line system. It transmits system status changes (events) to a compatible digital alarm communicator receiver over the public switched telephone network. The dialer is capable of single, dual, or split reporting of events to two different account and telephone numbers. The modem feature of the SA-DACT can also be used for uploading and downloading panel configuration, history, and current status to a PC running the iO-CU.



The dialer phone lines connect to connectors on the dialer's main circuit board. Phone line 1 connects to connector J4 and phone line 2 connects to connector J1.

The SA-DACT queues messages and transmits them based on priority (alarm, supervisory, trouble, and monitor). Activations are transmitted before restorations.

The SA-DACT is installed on the plastic assembly and connects to the main circuit board via a ribbon cable.

SA-DACT specifications	
Phone line type	One or two loop-start lines on a public, switched network
Phone line connector	RJ-31/38X (C31/38X)
Communication formats	Contact ID (SIA DC-05)
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Humidity	0 to 93% RH, noncondensing at 90°F (32°C)

Compatible DACRs		
Receiver	**Models**	**Formats**
Ademco	685	Contact ID
FBII	CP220	Contact ID
Osborne-Hoffman	OH 2000	Contact ID
Bosch	D6600	Contact ID
Silent Knight	9800	Contact ID
Sur-Gard	SG-MLR1, MLR2	Contact ID

The SA-USB Interface Card

The SA-USB Interface Card provides a USB connection to a supported printer or a connection to a PC. The card can be used for connecting a printer to the control panel to print system events. The card can also be used for uploading and downloading panel configuration, history, and current status to a PC running the configuration utility (CU).

SA-USB specifications	
Operating voltage	24VDC
Current Standby/Alarm	13 mA, max 20mA
Universal Serial Bus (USB) ports	1 USB Type A –host port J3 (printer connection) 1 USB Type B – device port J4 (CU connection)
Supported Printer	PT-1S
Printer communication speed	9600 baud
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Humidity	0 to 93% RH, noncondensing

SA-232 RS-232 interface

The SA-232 card provides an RS-232 interface with iO panels. It can be used for connecting a printer to the control panel to print system events. The card also can be used for connecting a computer to download a configuration program from the iO-CU to the control panel.

The RS-232 card is installed on the plastic assembly and connects to the main circuit board via a ribbon cable.



SA-232 specifications	
Operating voltage	Standard EIA-232
Terminal rating	12 to18 AWG (0.75 to 2.5 sq mm)
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Humidity	0 to 93% RH, noncondensing at 90°F (32°C)

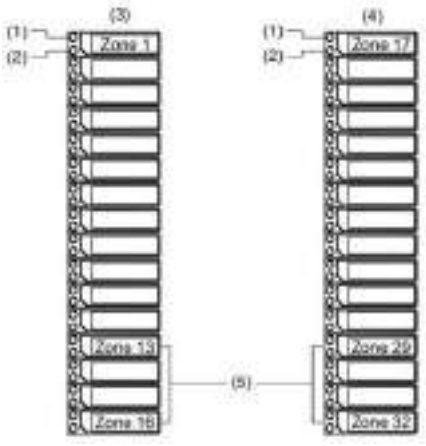
SA-CLA Class A Module (iO64 only)

The SA-CLA card provides Class A capability for NAC wiring. Its terminal block provides the wiring connection for NAC return wiring. The card is required for annunciator Class A wiring even though this wiring does not return to the SA-CLA card. The SA-CLA is compatible with iO64 control panels only. iO1000 panels are Class A Ready. The SA-CLA is installed directly to the control panel circuit board using its plastic standoffs and plug connection.

SA-CLA specifications	
Operating voltage	24 VFWR
Operating current	3.75 A FWR total at 120/230 VAC 60 Hz 3.0 A FWR total at 230 VAC 50 Hz 2.5 A max per circuit
Circuit impedance	26 ohms, 0.35uF
Terminal rating	12 to18 AWG (0.75 to 2.5 sq mm)
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Humidity	0 to 93% RH, noncondensing at 90°F (32°C)

D16L-iO LED Display Expander (iO1000 only)

The D16L-iO LED Display Expanders provide LED annunciation for up to 16 zones. It provides two LEDs for each zone. Two D16L-iO LED display expanders can be installed in each iO1000 panel.



(1) LED 1
(2) LED 2
(3) LED Expander 1
(4) LED Expander 2
(5) Alarm/non-alarm and trouble zone LEDs

Specifications

	iO64	iO1000
Device loops	1 loop Class B or Class A (Styles 4, 6, 7) supporting up to 64 device addresses (any combination of detectors and modules) Maximum T-taps: 63 (each device can be on its own branch)	1 loop, expandable to 4, Class A or B (Styles 4, 6, 7), each loop supporting up to 250 device addresses (125 detectors and 125 modules max.). Addresses 1 to 125 are for detectors and addresses 126 to 250 are for modules Maximum T-taps/loop: 124
Notification appliance circuits	2 Class B (Style Y), Class A (Style Z) optional 3.75 A FWR total at 120/230 VAC 60 Hz 3.0 A FWR total at 230 VAC 50 Hz 2.5 A FWR each max. per circuit	4 Class B (Style Y) or 2 Class A (Style Z) 6.0 A FWR total at 120/230 VAC 60 Hz 5.0 A FWR total at 230 VAC 50 Hz 2.5 A FWR each max. per circuit
Primary power	120 VAC, 60 Hz, 1.3 A max. 230 VAC, 50-60 Hz, 0.62 A max.	120 VAC, 60 Hz, 2.0 A max. 230 VAC, 50-60 Hz, 0.97 A max.
Base panel current standby	155 mA	172 mA
Base panel current alarm	204 mA	267 mA
Input zones	16 max.	32 max.
Remote annunciator	8 drops max., RS-485 Class B, Class A is optional Data line length: 4,000 ft. (1,219 m)	8 drops max., RS-485 Class A or B Data line length: 4,000 ft. (1,219 m)
Operating voltage	24 VDC panel	
Auxiliary power output circuit	Aux power 1: 500 mA, 24 VDC (1 A possible if you reduce total available NAC power by 500 mA) Aux power 2: 500 mA, 24 VDC Output: 28.3 to 21.9 VDC, special application *Note: For a list of compatible devices, see the iO64 and iO1000 Series Compatibility List (P/N 3102353-EN)*	
Loop circuit	Maximum loop resistance: 66 Ω Maximum loop capacitance: 0.5 µF Communication line voltage: Maximum 20.6 V peak-to-peak Operating current (fully loaded loop) Stand by: 55 mA/45 mA Alarm: 125 mA/115 mA (not including two-wire smoke modules) Circuit current: 0.5 A max. Style 4, 6, and 7 wiring Max. resistance between isolators: Limited only by overall wire run lengths 64 isolators maximum per loop (total both isolator bases and modules)	
Batteries	Type: Sealed lead acid Voltage: 24 VDC Charging current: 2.47 A max. Amp hour capacity: 26 Ah Standby operation: 24 hour or 60 hour Placement: Up to two 10 Ah batteries will fit in the iO64 control panel cabinet and two 18 Ah batteries will fit in the iO1000 control panel cabinet. If larger batteries are required, use an EDWARDS battery cabinet.	
SA-DACT dialer	Phone line type: One or two loop-start lines on a public, switched network Phone line connector: RJ-31/38X (C31/38X) Communication formats: Contact ID (SIA DC-05) Operating current Standby/Alarm: 41 mA Max.: 100 mA FCC registration number: GESAL01BSADACT Industry Canada Registration number: 3944A-SADACT Ringer equivalence number: 0.1B	
Ground fault impedance	0 to 5 kΩ	
Alarm contact	Form C N.O. 24 VDC at 1 A (resistive load)	
Trouble contact	Form C 24 VDC at 1 A (resistive load)	
Supervisory contact	Form A N.O. 24 VDC at 1 A (resistive load)	
Environmental	Temperature: 0 to 49°C (32 to 120°F) Relative humidity: 0 to 93% noncondensing	
Terminal rating	All terminals rated for 12 to 18 AWG (0.75 to 2.5 mm^2)	

Ordering Information

Part	Description
iO1000 Fire Alarm Systems	
IO1000G	Four loop system with one 250-point loop installed. 110v, gray door.
IO1000G-2	Four loop system with one 250-point loop installed. 230v, gray door.
IO1000G-2-PG	Four loop system with one 250-point loop installed. 230v, gray door, Portuguese.
IO1000G-2-SP	Four loop system with one 250-point loop installed. 230v, gray door, Spanish.
IO1000G-CA	Four loop system, one 250-point loop installed. 110v, gray door, LED strips, Canada.
IO1000GD	Four loop system, one 250-point loop installed. 110v, gray door, with dialer.
IO1000G-F	Four loop system, one 250-point loop. 110v, gray door, LED strips, French Canada.
IO1000G-PG	Four loop system with one 250-point loop installed. 110v, gray door, Portuguese.
IO1000G-SP	Four loop system with one 250-point loop installed. 110v, gray door, Spanish.
IO1000R	Four loop system with one 250-point loop installed. 110v, red door.
IO1000R-2	Four loop system with one 250-point loop installed. 230v, red door.
IO1000RD	Four loop system, one 250-point loop installed. 110v, red door, with dialer.
SA-TRIM2	iO1000 Flush mount trim, black.
iO64 Fire Alarm Systems	
IO64G	One loop system with one 64-point loop installed. 110v, gray door.
IO64G-2	One loop system with one 64-point loop installed. 230v, gray door.
IO64G-2-PG	One loop system with one 64-point loop installed. 230v, gray door, Portuguese.
IO64G-2-SP	One loop system with one 64-point loop installed. 230v, gray door, Spanish.
IO64GD	One loop system, one 64-point loop installed. 110v, gray door, with dialer.
IO64GL	One loop system, one 64-point loop installed. 110v, gray door, English Canada.
IO64GL-F	One loop system, one 64-point loop installed. 110v, gray door, French Canada.
IO64G-PG	One loop system with one 64-point loop installed. 110v, gray door, Portuguese.
IO64G-SP	One loop system with one 64-point loop installed. 110v, gray door, Spanish.
IO64R	One loop system with one 64-point loop installed. 110v, red door.
IO64R-2	One loop system with one 64-point loop installed. 230v, red door.
IO64RD	One loop system, one 64-point loop installed. 110v, red door, with dialer.
SA-TRIM1	iO64 Flush mount trim, black
Option Cards	
iO-SDC1	Expansion module, one 250-device loop.
iO-SDC2	Expansion module, two 250-device loops, 500 devices total. For iO1000 only.
RZI16-2	Remote Zone Interface Module. 16 Class B IDCs, 2 Class B Output. Includes bracket.
SA-DACT	Dual Line Dialer/Modem, supports Contact ID, mounts in cabinet on base plate.
SA-232	RS-232 Serial Port for connection to printers & computers, mounts in cabinet.
SA-ETH	Ethernet Port, IP Communicator, mounts in cabinet on base plate.
SA-CLA	Class A adapter module. Provides Class A capacity on NACs. Mounts in cabinet on main board. iO64 systems only.
SA-FSB	Field Server Bridge for connection to 3rd Party Building Management Systems. Supports BACnet and Modbus protocols. Mounts in the MFCA cabinet using the FSB-BRKT2 mounting plate. See separate SA-FSB datasheet E85010-0156 for additional information.
SA-USB	RS-232 Serial port for connection to printers & computers, mounts in cabinet.
D16L-iO-2	LED Annunciator module, 16 X 2-LED zones (4 programmable for sup). Mounts in cabinet to right of LCD display for zones 17-32. For iO1000 only.
D16L-iO-1	LED Annunciator module, 16 X 2-LED zones (4 programmable for sup). Mounts in cabinet to left of LCD display for zones 1-16. For iO1000 only.
D8RY-iO-2	Canada only: LED Annunciator module, two LEDs per zone, 16 zones (4 alarm only, 8 supervisory only, 4 alarm or supervisory). Mounts in cabinet. For iO1000 only.
D8RY-iO-1	Canada only: LED Annunciator module, two LEDs per zone, 16 zones (4 alarm only, 8 supervisory only, 4 alarm or supervisory). Mounts in cabinet. For iO1000 only.
Accessories	
CTM	City Tie Module. 2-gang. Connection to a local energy fire alarm box.
MFC-A	Multifunction Fire Cabinet, 8" x 14" x 3.5" - red.
SIGA-REL	Releasing Module
PT-1S	System Printer
BC-1	Battery Cabinet. 14.0" x 18.25" x 7.25". Holds two 12V24A batteries.
BC-1R	Battery Cabinet - Red. 14.0" x 18.25" x 7.25". Holds two 12V24A batteries.
BC-1EQ	Seismic hardening Kit for iO series panels. Includes battery hardening for BC-1 enclosure and components to harden panel internal components.
Programming Tools	
iO-CU	IO Series configuration and diagnostics utility.
260097	RS232 cable, 4 conductor, DB9 PC interface

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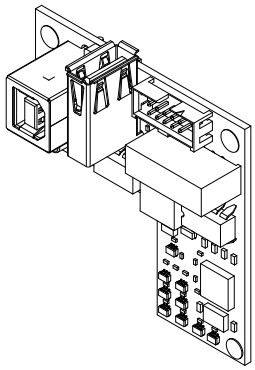
Contact us

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Hoja de instalación de la tarjeta de interfaz SA-USB



Descripción

La tarjeta de interfaz SA-USB proporciona una conexión USB a una impresora compatible o conexión a una PC. Se la puede utilizar para conectar una impresora el panel de control para imprimir eventos del sistema. La tarjeta también se puede utilizar para comunicaciones con la PC, incluida la utilidad de configuración (CU) y la utilidad de actualización de firmware (FUU).

La velocidad de transferencia predeterminada de la impresora es de 9600 baudios.

LEDs y conectores SA-USB

Consulte Figura 1 y Tabla 1 para obtener una descripción de los componentes SA-USB.

Figura 1: LEDs y conectores SA-USB

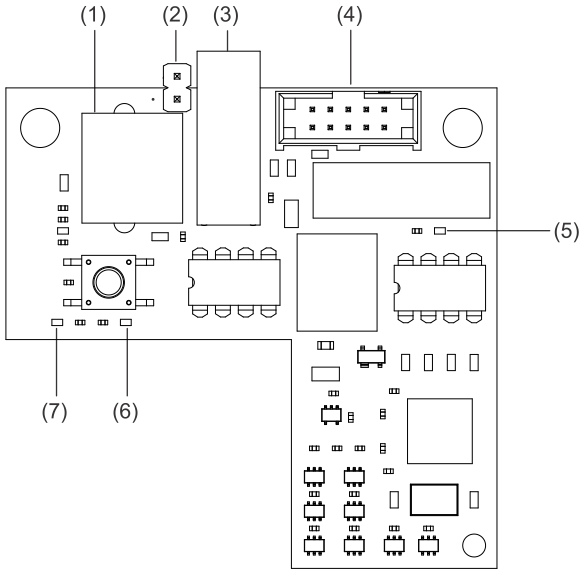


Tabla 1: LEDs y conectores SA-USB

Ítem	Etiqueta	Descripción
(1)	J4	USB 2.0, puerto de dispositivo tipo B: Se utiliza como conexión temporal a una PC.
(2)	JP1	Conector de programación: Se muestra en la posición no instalada. Cuando se instala sobre ambas clavijas, el conector se usa durante la programación de la tarjeta SA-USB para actualizar el firmware. Esto *solo* se puede lograr con la ayuda del Soporte técnico.
(3)	J3	USB 2.0, puerto host de tipo A: Se utiliza para conectar impresoras compatibles.
(4)	J1	Se utiliza para conectar la tarjeta SA-USB a la placa del panel electrónico.
(5)	DS2	LED TXD: Se utiliza para indicar todas las comunicaciones al panel tanto de la impresora como de todas las aplicaciones de la PC.
(6)	DS1	LED RXD: Se utiliza para indicar todas las comunicaciones desde el panel tanto a la impresora como a todas las aplicaciones de PC.
(7)	DS4	LED DE FALLOS: Se utiliza para indicar cuando se detecta algún problema con la impresora, como por ejemplo fuera de línea, sin papel o impresora desconectada. **Nota:** El panel solo exhibirá un problema de impresora si el modo está configurado como supervisado.

Funcionamiento de los indicadores LED

Mesa 2: Funcionamiento de los indicadores LED

LED	Funcionamiento
DS1	Encendido constante. Parpadea cuando la tarjeta SA-USB recibe datos de la impresora o aplicaciones de la PC.
DS2	Encendido constante. Parpadea cuando la tarjeta SA-USB transmite datos a la impresora o aplicaciones de la PC.
DS4	Encendido constante cuando existe un problema entre la tarjeta SA-USB y la impresora conectada.

Instalación

Instale y cablee este dispositivo según los códigos, las ordenanzas y las reglamentaciones locales y nacionales aplicables.

Precaución: Riesgo de daño al equipo. Este producto es sensible a las descargas electrostáticas (ESD). Para evitar daños, siga los procedimientos de manipulación de ESD aceptados.

Nota: La tarjeta SA-USB está instalada en la misma ubicación que la SA-232, por lo tanto, la SA-232 debe retirarse antes de instalar la tarjeta SA-USB.

Para instalar la tarjeta SA-USB:

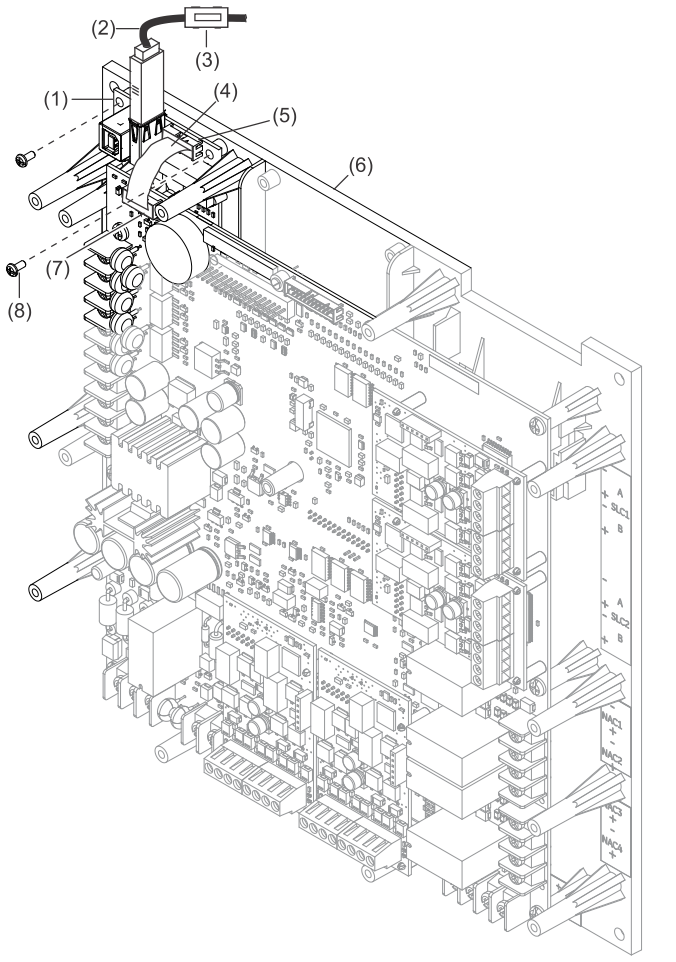
1. Apague el panel y desconecte las baterías.
2. Si está instalada, retire la tarjeta SA-232 del panel. Consulte *la ficha de instalación de la tarjeta de interfaz SA-232 RS-232*, P/N 3101095 para obtener más detalles.
3. Localice la ubicación de la tarjeta SA-USB en el conjunto de plástico detrás de la placa de circuito principal y el conector J3 en la placa de circuito principal (en la parte superior izquierda de la placa principal).
4. Conecte la tarjeta SA-USB al conjunto de plástico con dos tornillos de plástico #6 como se muestra en Figura 2.

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5. Conecte un extremo del cable plano (P/N 7140187) al conector J1 en la tarjeta SA-USB y el otro extremo al conector J3 en la placa de circuito principal como se muestra en Figura 2.
6. Conecte el cable USB correspondiente a la tarjeta SA-USB. Consulte “Cableado”.
7. Encienda el panel, y luego conecte las baterías.

Figura 2: Instalación SA-USB (típica, LCD retirado para mayor claridad)



(1) Tarjeta SA-USB
(2) Cable USB
(3) Abrazadera de ferrita
(4) Cable plano
(5) J1 en tarjeta SA-USB
(6) Conjunto de plástico detrás de la placa de circuito principal
(7) J3 en la placa de circuito principal
(8) Tornillo plástico #6 (2X)

Cableado

Cableado de la impresora

Notas

- La impresora debe habilitarse y configurarse mediante programación para que funcione correctamente.
- No instale el conector JP1 (ítem 2, Figura 1). Si el conector JP1 está instalado (colocado en ambas clavijas), la impresora no funcionará. El panel solo exhibirá un problema de impresora si el modo está configurado como supervisado.

Para cablear a una impresora:

1. Si tiene una computadora conectada a la tarjeta SA-USB, desconéctela.
2. Localice el puerto USB en la parte posterior de la impresora. Consulte la *hoja de instalación de la impresora de alarma contra incendios PT-1S*, P/N 3100989 para obtener más detalles.
3. Conecte un cable USB 2.0 A a B, adquirido por separado, al puerto USB de la impresora.
4. Conecte el otro extremo del cable USB 2.0 a la tarjeta SA-USB, conector J3 (ítem 3, Figura 1).
5. Si está instalado en ambas clavijas, retire el conector JP1 (ítem 2, Figura 1) de una clavija de la tarjeta SA-USB como se muestra en Figura 1.
6. Instale la abrazadera de ferrita incluida (ítem 3, Figura 2) en el cable USB abriéndola y luego colocándola en su lugar sobre el cable USB como se muestra en Figura 2.

Cableado de computadora

Para conectarse a una computadora:

1. Localice un puerto USB 2.0 con alimentación en la computadora.
2. Conecte un cable USB 2.0 A a B, comprado por separado, al puerto USB de la computadora.
3. Conecte el otro extremo del cable USB 2.0 a la tarjeta SA-USB, conector J4 (Figura 1).

Instalación del driver

El driver necesario de la tarjeta SA-USB se instalará automáticamente en la mayoría de los sistemas operativos cuando se conecta a una computadora. Si el driver no se instala automáticamente, haga lo siguiente.

1. Asegúrese de que la tarjeta SA-USB esté conectada a la computadora.
2. **Sistemas iO y VS:** Descargue el driver SA-USB del sitio web de My-Eddie (https://my-eddie.com/) a su computadora.
3. **Sistemas FX:** Descargue el driver de la tarjeta SA-USB del sitio web de la serie FX (https://kiddefx.kidde.com/) a su computadora.
4. Abra el Administrador de dispositivos y luego seleccione el dispositivo USB que aparece en Otros dispositivos.
5. Haga clic con el botón derecho en el dispositivo USB y luego seleccione Actualizar driver.
6. Seleccione "Examinar mi computadora para hallar el software del driver” y luego navegue hasa la carpeta del driver de SA-USB.
7. Haga clic en Siguiente. Una vez que se instala el driver, aparece en Puertos, USB-SERIAL CH340.

   El puerto COM aparecerá como un puerto disponible en la CU y la FUU.

Especificaciones

Voltaje de funcionamiento	24 V CC
Corriente	
Modo de espera / Alarma	13 mA , max 20 mA
Puertos de bus serie universal (USB) [1]	1 USB tipo A: puerto host J3 (conexión de impresora) 1 USB tipo B: puerto de dispositivo J4 (conexión CU)
Impresora compatible	PT-1S, MIR-PRT/S
Longitud del cable de impresora	Ubique impresoras USB supervisadas en la misma habitación que el equipo al que se conectan. Localice impresoras USB sin supervisión en la misma habitación y a menos de 20 pies (6,1 m) del equipo al que se conectan. Envuelva el cableado en un conducto o una protección equivalente contra daños mecánicos.
Velocidad de comunicación de la impresora	9600 baudios
Entorno operativo	
Temperatura	32 a 120 ° F (0 a 49 ° C)
Humedad relativa	0 a 93% sin condensación

[1] Las conexiones del puerto USB se pueden conectar en caliente.

Información sobre reglamentaciones

Cumplimiento FCC	Este dispositivo cumple con la Parte 15 de las normas FCC. El funcionamiento está sujeto a las siguientes dos condiciones: (1) que este dispositivo no cause interferencia dañina y (2) que este dispositivo acepte todas las interferencias que reciba, incluida aquella interferencia que pudiese provocar un funcionamiento no deseado.
Clase ambiental	UL: Interior seco

Información de contacto

Para ver información de contacto, visite www.edwardsfiresafety.com

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Sealed Lead-Acid Batteries



Overview

Rechargeable sealed lead-acid batteries are ideal for use as a secondary (standby) power source as defined by NFPA 72. Their low maintenance and high energy density make them ideal for fire alarm signaling applications.

Standard Features

- Rechargeable
- Non-spillable
- Non-hazardous
- Low maintenance
- High energy density

Application

When multiple power supplies are provided, each power supply's battery requirements should be calculated individually. Consult the specific system manual to determine battery capacity requirements.

Safety Information
Due to a battery's low internal resistance and high power density, high levels of short circuit current can develop across battery terminals. Put on protective eye covering and remove all jewelry before working on batteries. Do not rest tools or cables on the battery, and only use insulated tools. Follow all manufacturers installation instructions and diagrams when installing or maintaining batteries.

DATA SHEET E85010-0127
Not to be used for installation purposes. Issue 1.1

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Web: *edwards-fire.com*

1016 Corporate Park Drive
Mebane, NC 27302

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Specifications

Case Material	ABS Thermoplastic
Regulatory Information	DOT Class 60, Batteries, non-hazardous, non-spillable
Operating Environment	32° F to 120° F (0° C to 49° C) 0 to 93% RH, Non-condensing

Ordering Information

Catalog Number	Description	Shipping Weight, lb (kg)
12V4A	4.5 Ah Sealed Lead Acid Battery - 12 Vdc	5 (2.27)
12V6A5	7.2 Ah Sealed Lead Acid Battery - 12 Vdc	6 (2.72)
6V8A	8 Ah Sealed Lead Acid Battery - 6 Vdc	4 (1.81)
6V10A	12 Ah Sealed Lead Acid Battery - 6 Vdc	5 (2.27)
12V10A	11 Ah Sealed Lead Acid Battery - 12 Vdc	10 (4.45)
12V17A	18 Ah Sealed Lead Acid Battery - 12 Vdc	13 (5.90)
12V24A	26 Ah Sealed Lead Acid Battery - 12 Vdc	20 (9.07)
12V40A	40 Ah Sealed Lead Acid Battery - 12 Vdc	32 (14.51)
12V50A	50 Ah Sealed Lead Acid Battery - 12 Vdc	40 (18.14)
12V65A	65 Ah Sealed Lead Acid Battery - 12 Vdc	49 (22.23)

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Intelligent Smoke Detector

SIGA-OSD



UL CERTIFIED S853
Helps Reduce Cooking Nuisance Alarms
UL 268 7th Ed.

Overview

The Signature Optica Series SIGA-OSD smoke detector brings advanced optical sensing technology to a practical design that increases efficiency, saves installation time, cuts costs, and extends life safety and property protection capabilities. Continuous self-diagnostics ensure reliability over the long-haul, while environmental compensation helps reduce maintenance costs.

Like all Signature Optica Series detectors, the SIGA-OSD is an intelligent device that gathers analog information from multiple optical sensors, converting this data into digital signals. Utilizing dual optical wavelengths combined with multiple detection angles, the SIGA-OSD differentiates particles that are not representative of actual smoke. Particle data is input into digital filters which feed a series of ratios removing signal patterns that are typical of nuisance sources, thus reducing unwanted alarms. To make an alarm decision, the detector's on-board microprocessor measures and analyzes all optical sensor readings and compares this information to preprogrammed settings.

Standard Features

- Multi-criteria optical smoke sensing technology
- Wide 0.5 to 4.36 %/ft. (1.6 to 13.6 %/m) smoke obscuration
- Uses Existing Wiring
- Integrated nuisance rejection reducing unwanted alarms from general cooking particulates
- Listed to UL 268 7th edition
- Automatic Device Mapping
- Up To 250 Total Signature Addresses Per Loop
- Two Levels of Environmental Compensation
- Two Levels of Dirty Detector Warning
- Twenty Pre-Alarm Settings
- Five Sensitivity Settings
- Non-Volatile Memory
- Electronic Addressing
- Automatic Day/Night Sensitivity Adjustment
- Bicolor (Green/Red) Status LED
- Standard, Relay, Fault Isolator, and Audible Mounting Bases
- Sensor Markings Provide Easy Testing Identification

Note: Some features described here may not be supported by all control systems. Check your control panel's Installation and Operation Guide for details.

Application

The SIGA-OSD detects particles from a wide range of combustion sources and will trigger an alarm when smoke density in the chamber reaches preprogrammed level. Thanks to its high-performance reflective response technology, the smoke sensor responds quickly and reliably to a wide range of fire types, including both fast and slow burning fires fueled by combustibles typically found in modern multi-use buildings.

Compatibility

The SIGA-OSD detector is compatible only with control panels using a Signature Loop controller.

Installation

Signature Series detectors mount to North American 1-gang boxes, 3-1/2 inch or 4 inch octagon boxes, and to 4 inch square electrical boxes 1-1/2 inches (38 mm) deep. They mount to European BESA and 1-gang boxes with 60.3 mm fixing centers. See mounting base installation and wiring for more information.



Sensing and reporting technology

The microprocessor in each detector provides additional benefits – Self-diagnostics and History Log, Automatic Device Mapping, and Fast, Stable Communication.

Self-diagnostics and History Log - Each Signature Series detector constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in the detector's non-volatile memory

Automatic Device Mapping - The loop controller learns where each device's serial number address is installed relative to other devices on the circuit. The mapping feature provides supervision of each device's installed location to prevent a detector from being reinstalled (after cleaning, etc.) in a different location from where it was originally.

Fast Stable Communication - On-board intelligence means less information needs to be sent between the detector and the loop controller. Other than regular supervisory polling response, the detector only needs to communicate with the loop controller when it has something new to report.

Testing & Maintenance

Each detector automatically identifies when it is dirty or defective and causes a "dirty detector" message. The detector's sensitivity measurement can also be transmitted to the loop controller. A sensitivity report may be printed to satisfy NFPA sensitivity measurements, which must be conducted at the end of the first year and every two years thereafter.

The user-friendly maintenance program shows the current state of each detector and other pertinent messages. Single detectors may be turned off temporarily from the control panel. Availability of maintenance features is dependent on the fire alarm system used.

Accessories

Detector mounting bases have wiring terminals that are accessible from the "room-side" after mounting the base to the electrical box. The bases mount to North American 1-gang boxes and to 3½ inch or 4 inch octagon boxes, 1½ inches (38 mm) deep. They also mount to European BESA and 1-gang boxes with 60.3 mm fixing centers. The SIGA-SB4, SIGA-RB4, and SIGA-IB4 mount to North American 4 inch sq. electrical boxes in addition to the above boxes. They include the SIGA-TS4 Trim Skirt, which is used to cover the "mounting ears" on the base. The SIGA-AB4G mounts to a 4 inch square box only.



SIGA-AB4G/T/LF	SIGA-SB	SIGA-IB	SIGA-RB	SIGA-LED
Audible Base	Standard Base	Isolator Base	Relay Base	Remote LED

Remote LED SIGA-LED - The remote LED connects to the SIGA-SB or SIGA-SB4 Standard Base only. It features a North American size 1-gang plastic faceplate with a white finish and red alarm LED.

SIGA-TS4 Trim Skirt - Supplied with 4 inch bases, it can also be ordered separately to use with the other bases to help hide surface imperfections not covered by the smaller bases.

Sounder Bases - Signature Series sounder bases are designed for use where localized or group alarm signaling is required.

- **SIGA-AB4G** bases provide sounder capability to Signature Series to heat and smoke detectors. They are not intended for use with combination carbon monoxide detectors in Fire-plus-CO mode.
- **SIGA-AB4GT** bases provide sounder capability to Signature Series smoke and heat detectors, as well as carbon monoxide detectors when used with a SIGA-TCDR Temporal Pattern Generator.
- **SIGA-AB4G-LF** bases provide 520 Hz low frequency sounder capability to Signature Series smoke and heat detectors, as well as carbon monoxide detectors when used with a SIGA-TCDR Temporal Pattern Generator. The SIGA-AB4G-LF is suitable for applications requiring low frequency audible tones.

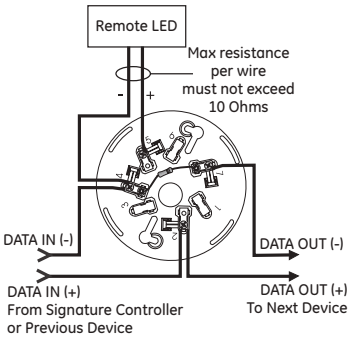
Typical Wiring

The detector mounting bases accept #18 AWG (0.75mm^2), #16 (1.0mm^2), #14 AWG (1.5mm^2), and #12 AWG (2.5mm^2) wire sizes. Sizes #16 AWG (1.0mm^2) and #18 AWG (0.75mm^2) are preferred for ease of installation.

Standard Detector Base, SIGA-SB, SIGA-SB4

This is the basic mounting base for EDWARDS Signature Series detectors. The SIGA-LED Remote LED is supported by this Base.

Term	Description
1	Not Used
2	DATA IN/OUT (+)
3	Not Used
4	DATA IN (-)
4	Remote LED (-)
5	Remote LED (+)
6	Not Used
7	DATA OUT (-)



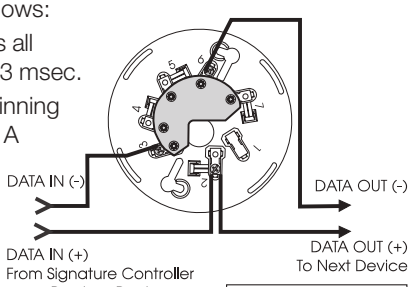
Isolator Detector Base, SIGA-IB, SIGA-IB4

This base includes a built-in line fault isolator for use on Class A circuits. A detector must be installed for it to operate. The isolator base does not support the SIGA-LED Remote LED.

The isolator operates as follows:

- a short on the line causes all isolators to open within 23 msec.
- at 10 msec intervals,beginning on one side of the Class A circuit nearest the loop controller, the isolators close to provide the next isolator down the line with power.
- when the isolator next to the short closes, it reopens within 10 msec.

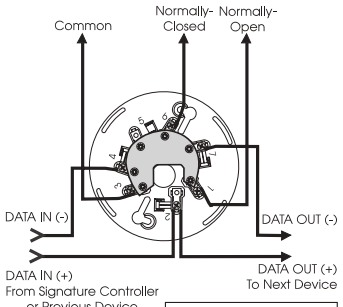
The process repeats beginning on the other side of the loop controller.



Term	Description
1	Not Used
2	DATA IN/OUT (+)
3	DATA IN (-)
4	Not Used
5	Not Used
6	DATA OUT (-)
7	Not Used

Relay Detector Base, SIGA-RB, SIGA-RB4

This base includes a relay. Normally Open or Normally Closed operation is selected during installation. The dry contact is rated for 1 amp (pilot duty) @ 30 Vdc. The relay's position is supervised to avoid accidentally jarring it out of position. The SIGA-RB can be operated as a control relay if programmed to do so at the control panel. The relay base does not support the SIGA-LED Remote LED.

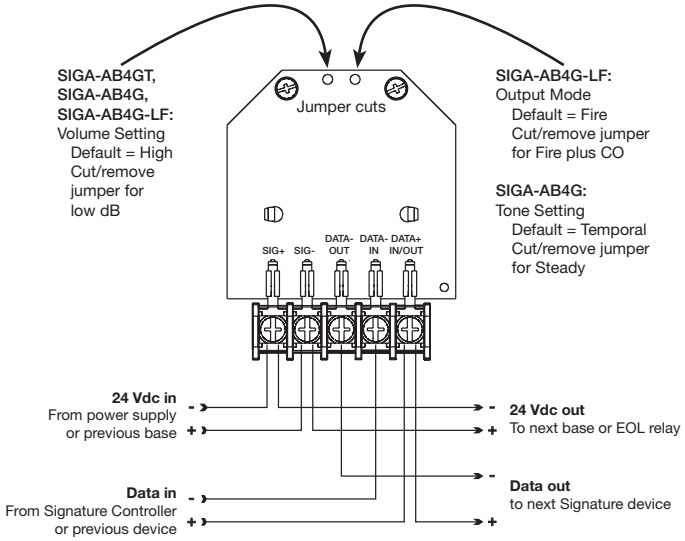


CONTACT RATING
1.0 Amp @ 30 VDC
(Pilot Duty)

Term	Description
1	Normally Open
2	DATA IN/OUT (+)
3	Common
4	DATA IN (-)
5	Not Used
6	Normally-Closed
7	DATA OUT (-)

Audible Sounder Bases, Fire Mode

AB4GT, AB4G, AB4G-LF sounder bases



Warnings & Cautions

- This detector does not operate without electrical power. As fires frequently cause power interruption, discuss further safeguards with the local fire protection specialist.
- This detector does not sense fires in areas where smoke cannot reach the detector. Smoke from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector.
- In Canada, install according to CAN/ULC-S524 Standard for the Installation of Fire Alarm Systems, CSA C22.1 Canadian Electrical Code, and the local authority having jurisdiction.

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Contact us...

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Dimensions



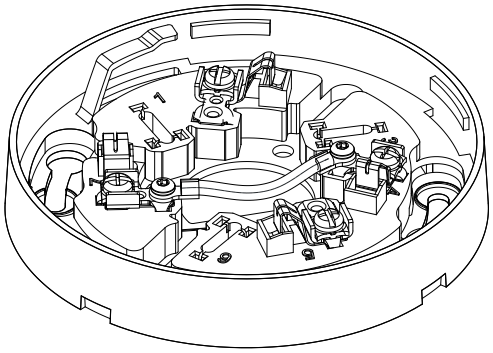
Specifications

Operating voltage	15.20 to 19.95 VDC
Normal operating current	32 µA
Alarm current	45 µA
Smoke Sensitivity Range	UL/ULC: 0.5 to 4.36 %/ft. (1.6 to 13.6 %/m) obscuration
Vibration level	10 to 35 Hz, with an amplitude of 0.01 in.
Air velocity	0 to 4,000 ft./min (0 to 20 m/s)
Wall mounting	12 in. (305 mm) max. from ceiling
Compatible bases	See Ordering Information
Compatible detector testers	Testifire 1000, Testifire 2000
Operating environment	32 to 120°F (0 to 49°C), 0 to 93% RH, noncondensing
Construction	High Impact Engineering Polymer, White
Storage temperature	-4 to 140°F (-20 to 60°C)
Environmental compensation	Automatic
Agency Listings	CAN/ULC-S529, UL 268-7, UL 268A

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
SIGA-OSD	Intelligent Optical Smoke Detector	0.4 (0.16)
Accessories		
SIGA-SB	Detector Mounting Base - Standard	0.2 (.09)
SIGA-SB4	4-inch Detector Mounting Base c/w Trim Skirt	
SIGA-RB	Detector Mounting Base w/Relay	
SIGA-RB4	4-inch Detector Mounting Base w/Relay, c/w Trim Skirt	
SIGA-IB	Detector Mounting Base w/Fault Isolator	
SIGA-IB4	4-inch Detector Mounting Base w/ Fault Isolator, c/w Trim Skirt	
SIGA-LED	Remote Alarm LED (not for EN54 applications)	
SIGA-AB4G	Audible (Sounder) Base for Fire Detectors	0.3 (0.15)
SIGA-AB4G-LF	Low Frequency Audible (Sounder) Base for CO and/or Fire Detectors	0.3 (0.15)
SIGA-AB4GT	Audible (Sounder) Base for CO and/or Fire Detectors	0.3 (0.15)
SIGA-TS4	Trim Skirt (supplied with 4-inch bases)	0.1 (0.04)
SIGA-TS	Trim Skirt - (optional for non 4-inch bases)	0.1 (0.04)
SIGA-DMP	Detector Mounting Plate	3.0 (1.4)
SIGA-RTA	Detector Removal Tool	
SIGA-VA	Detector Cleaning Tool	

SIGA-SB Detector Base Installation Sheet



Description

The SIGA-SB is the standard base for Signature Series detectors. It connects the detector to the signaling line circuit (SLC), and provides wiring terminals for connection to a SIGA-LED.

Installation

Caution: Risk of equipment damage. To prevent damage to the base, do not overtighten the base mounting screws or wire terminal screws. Refer to “Specifications” for torque values.

Refer to Technical Bulletin P/N 270145-EN for location and spacing requirements.

To install the SIGA-SB:

1. Mount the SIGA-SB on a compatible electrical box using the screws provided with the electrical box.
2. Wire the base as shown in the “Wiring” section.
3. Write the address assigned to the detector on the label provided and apply the label to the inside rim of the base.
4. Use a SIGA-TS trim skirt to finish the installation as needed.

Wiring

Caution: Risk of system failure. Electrical supervision requires that the wire run be broken at each terminal. Do not loop the field wires around the terminals.

Notes

- Shielded wire is required only in environments with very high electrical noise.
- Shields, if used, must be continuous and insulated from ground.
- For Class B wiring, there is no shield connection to ground at the last device.

To wire the SIGA-SB:

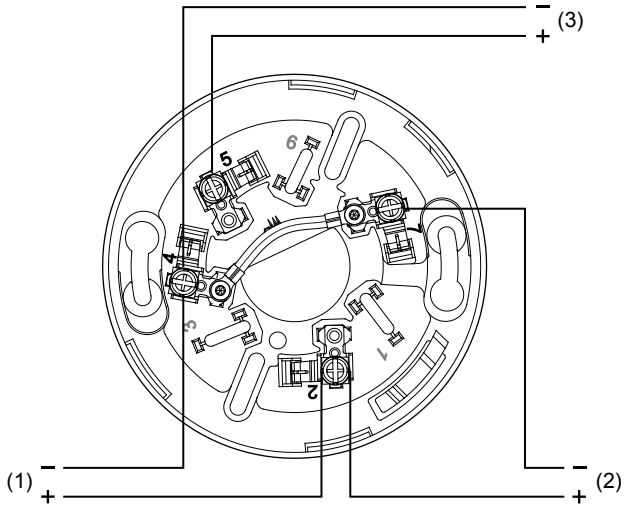
1. Wire the detector base as shown in Figure 1.

   Break the wire run at each terminal. Do not loop the signaling line circuit field wires around the terminals.
2. Insulate the shield with electrical tape.

SIGA-SB

7 93016 01977 6

Figure 1: Wiring the SIGA-SB



(1) SLC IN from previous device.
(2) SLC OUT to next device.
(3) To SIGA-LED. Maximum resistance per wire is 10 Ω.

Table 1: Base terminals

Number	Description	Number	Description
1	Not used	4	Remote LED −
2	SLC IN/OUT +	5	Remote LED +
3	Not used	6	Not used
4	SLC IN −	7	SLC OUT −

Specifications

Wire size	12 to 18 AWG (1.0 to 4.0 mm²) Sizes 16 and 18 AWG are preferred
Screw torque	
Base mounting	18 lbf-in (2.0 N·m) max.
Terminal	12 lbf-in (1.4 N·m) max.
Housing	High-impact engineering polymer, white
Compatible detectors	Signature Series detectors
Accessories	SIGA-TS Four-Inch Box Trim Skirt/Ring
Compatible electrical boxes	North American single-gang box Octagon box 3-1/2 in. (89 mm) by 1-1/2 in. (38 mm) deep Octagon box 4 in. (102 mm) by 1-1/2 in. (38 mm) deep European single-gang box 75 mm with 60.3 mm fixing centers BESA box with 60.3 mm fixing centers
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing
Technical bulletin	P/N 270145-EN

Regulatory information

North American standards	CAN/ULC-S529-09, UL 268, and UL 521

Contact information

For contact information, see www.est-fire.com.

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EDWARDS
United Technologies
LIFE SAFETY & INCIDENT MANAGEMENT

Manual Pull Stations

SIGA-270, SIGA-270P, SIGA-278



SIGA-270 SERIES

SIGA-278

Patented

MEA FM APPROVED 7150-1657: 0129 S2318

Overview

The SIGA-270 and SIGA-278 series Manual Pull Stations are part of EDWARDS's Signature Series system. The SIGA-270 Fire Alarm Manual Pull Stations feature our very familiar teardrop shape. They are made from die-cast zinc and finished with red epoxy powder-coat paint complemented by aluminum colored stripes and markings. With positive pull-lever operation, one pull on the station handle breaks the glass rod and turns in a positive alarm, ensuring protection plus fool-proof operation. Presignal models (SIGA-270P) are equipped with a general alarm (GA) keyswitch for applications where two stage operation is required. The up-front highly visible glass rod discourages tampering, but is not required for proper operation.

EDWARDS's double action single stage SIGA-278 station is a contemporary style manual station made from durable red colored lexan. To initiate an alarm, first lift the upper door marked "LIFT THEN PULL HANDLE", then pull the alarm handle.

Standard Features

Note: *Some features described here may not be supported by all control systems. Check your control panel's Installation and Operation Guide for details.*

- **Traditional familiar appearance**
  SIGA-270 models feature our familiar teardrop design with simple positive pull action and sturdy die-cast metal body.
- **One stage (GA), two stage (pre-signal), and double action models**
  SIGA-270 models are available for one or two stage alarm systems. The single stage double action SIGA-278 features a rugged Lexan housing with keyed reset mechanism.
- **Break glass operation**
  An up-front visible glass rod on the SIGA-270 discourages tampering.
- **Intelligent device with integral microprocessor**
  All decisions are made at the station allowing lower communication speed while substantially improving control panel response time. Less sensitive to line noise and loop wiring properties; twisted or shielded wire is not required.
- **ADA Compliant**
  Meets ADA requirements for manual pull stations.
- **Electronic Addressing with Non-volatile memory**
  Permanently stores programmable address, serial number, type of device, and job number. Automatically updates historic information including hours of operation, last maintenance date, number of alarms and troubles, and time and date of last alarm.
- **Automatic device mapping**
  Each station transmits wiring information to the loop controller regarding its location with respect to other devices on the circuit.
- **Diagnostic LEDs**
  Status LEDs; flashing GREEN shows normal polling; flashing RED shows alarm state.
- **Designed for high ambient temperature operation**
  Install in ambient temperatures up to 120 °F (49 °C).

DATA SHEET E85001-0279
Not to be used for installation purposes. Issue 1

Application

The operating characteristics of the fire alarm stations are determined by their sub-type code or “Personality Code”. NORMALLY-OPEN ALARM - LATCHING (Pesonality Code 1**)** is assigned by the factory; no user configuration is required. The device is configured for Class B IDC operation. An ALARM signal is sent to the loop controller when the station’s pull lever is operated. The alarm condition is latched at the station.

Compatibility

Signature Series manual stations are compatible only with EDWARDS’s Signature Loop Controller.

Warnings & Cautions

This device will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your local fire protection specialist.

Testing & Maintenance

To test (or reset) the station simply open the station and operate the exposed switch. The SIGA-270 series are opened with a tool; the SIGA-278 requires the key which is supplied with that station.

The station’s automatic self-diagnosis identifies when it is defective and causes a trouble message. The user-friendly maintenance program shows the current state of each Signature series device and other pertinent messages. Single devices may be deactivated temporarily, from the control panel. Availability of maintenance features is dependent on the fire alarm system used.

Scheduled maintenance (Regular or Selected) for proper system operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72 and ULC CAN/ULC 536 standards.

Typical Wiring

The fire alarm station’s terminal block accepts #18 AWG (0.75mm^2) to #12 AWG (2.5mm^2) wire sizes. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

Wiring Notes

1. Refer to Signature Loop Controller manual for maximum wire distance.
2. All wiring is power limited and supervised.

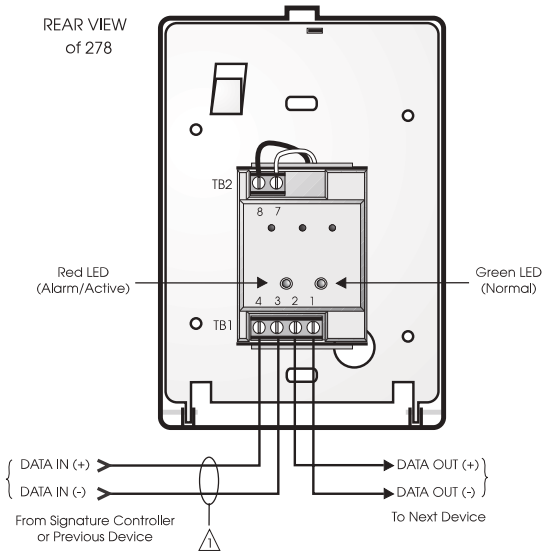


Figure 4. Single Stage Systems

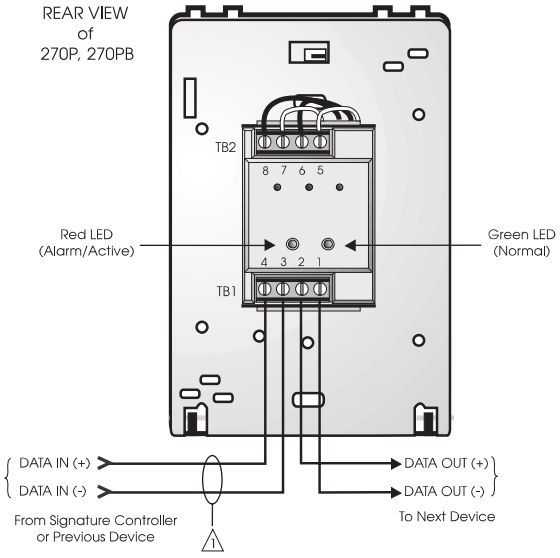


Figure 5. Two Stage Systems

Installation

Single-stage Signature Series fire alarm manual pull stations mount to North American 2½ inch (64 mm) deep 1-gang boxes.

Two stage presignal (270P) models require 1½ inch (38 mm) deep 4-inch square boxes with 1-gang, ½-inch raised covers. Openings must be angular. *Rounded openings are not acceptable.* Recommended box: Steel City Model 52-C-13; in Canada, use Iberville Model CI-52-C-49-1/2.

All models include terminals are suited for #12 to #18 AWG (2.5 mm^2 to 0.75 mm^2) wire size. EDWARDS recommends that these fire alarm stations be installed according to latest recognized edition of national and local fire alarm codes.

Electronic Addressing: The loop controller electronically addresses each manual station, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each station has its own unique serial number stored in its on-board memory. The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the stations can be addressed using the SIGA-PRO Signature Program/Service Tool.

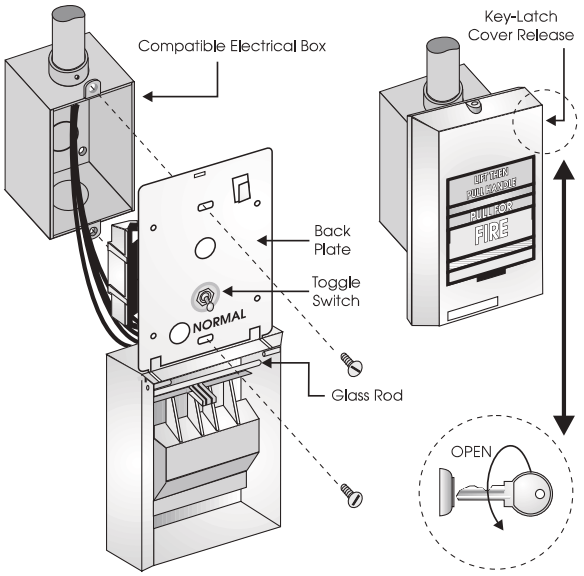


Figure 1. SIGA-278 installation

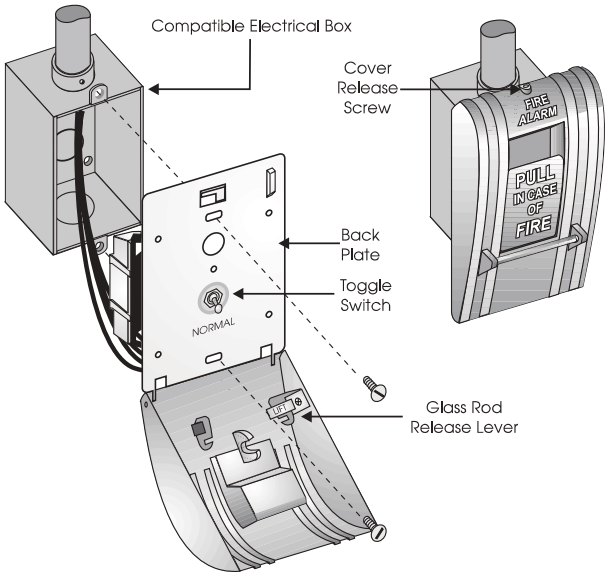


Figure 2. SIGA-270, SIGC-270F, SIGC-270B installation

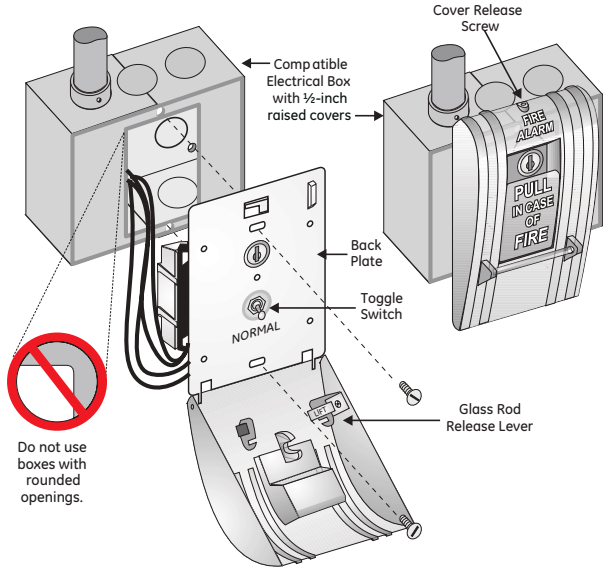


Figure 3. SIGA-270P, SIGC-270PB installation

LIFE SAFETY & INCIDENT MANAGEMENT

Contact us...

Email: edwards.fire@fs.utc.com
Web: *Edwards-fire.com*

EDWARDS is a UTC brand.
1016 Corporate Park Drive
Mebane, NC 27302

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Specifications

Catalog Number	SIGA-270, SIGC-270F, SIGC-270B	SIGA-270P, SIGC-270PB	SIGA-278
Description	Single Action - One Stage	Single Action -Two Stage (Presignal)	Double Action - One Stage
Addressing Requirements	Uses 1 Module Address	Uses 2 Module Addresses	Uses 1 Module Address
Operating Current	Standby = 250µA Activated = 400µA	Standby = 396µA Activated = 680µA	Standby = 250µA Activated = 400µA
Construction & Finish	Diecast Zinc - Red Epoxy with aluminum markings		Lexan - Red with white markings
Type Code	Factory Set		
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)		
Storage and Operating Environment	Operating Temperature: 32ºF to 120ºF (0ºC to 49ºC) Storage Temperature: -4ºF to 140ºF (-20ºC to 60ºC) Humidity: 0 to 93% RH		
LED Operation	On-board Green LED - Flashes when polled On-board Red LED - Flashes w hen in alarm		
Compatibility	Use With: Signature Loop Controller		
Agency Listings	UL, ULC (note 1), MEA, CSFM, FM		

Note: *SIGC-270F, SIGC-270B and SIGC-270PB are ULC listed only. Suffix "F" indicates French markings. Suffix "B" indicates English/French biling ual markings.*

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
SIGA-270	One Stage Fire Alarm Station, English Markings - UL/ULC Listed	1 (0.5)
SIGC-270F	One Stage Fire Alarm Station, French Markings - ULC Listed	
SIGC-270B	One Stage Fire Alarm Station, French/English Markings - ULC Listed	
SIGA-270P	Two Stage (Presignal) Fire Alarm Station, English Markings - UL/ULC Listed	
SIGC-270PB	Two Stage (Presignal) Fire Alarm Station, French/English Markings - ULC Listed	
SIGA-278	Double Action (One Stage) Fire Alarm Station, English Markings - UL/ULC Listed	

Accessories		
32997	GA Key w/Tag - for pre-signal station (CANADA ONLY)	0.1 (.05)
276-K2	GA Key - for pre-signal station (USA ONLY)	
276-K1	Station Reset Key, Supplied with all Key Reset Stations	
27165	12 Glass Rods - for SIGA-270 series (CANADA ONLY)	
270-GLR	20 Glass Rods - for SIGA-270 series (USA ONLY)	
276-GLR	20 Glass Rods - for SIGA-278 series	
276B-RSB	Surface Mount Box, Red - for SIGA pull stations	1 (0.6)

EDWARDS

LIFE SAFETY & INCIDENT MANAGEMENT

STI Series Stopper® II



MEA

S2466

Overview

This unique and patented device helps to prevent false fire alarms without restricting legitimate alarms. It consists of a tamper-proof, clear Lexan polycarbonate shield and frame that fits easily over manual pull stations. When lifted to gain access to the actual alarm, it sounds a piercing warning horn. Immediate attention is drawn to the pull station and a prankster will run or be caught. Legitimate alarms can still be pulled.

Use proven in thousands of applications around the world-including colleges, schools, hospitals, nursing homes, correctional institutions, hotels/motels and stores.

Testing Approvals

Stopper II has been tested and approved or listed by:

- Underwriter Laboratories No. 49G2
- Underwriter Laboratories of Canada Issue No. 13959C
- Factory Mutual No. OG6A2.AY
- New York City Board of Standards No. 947-81-SA
- State of California (approval not required)
- General Service Administration

Standard Features

- Fits virtually all pull stations
- Tested and approved by wide range of fire prevention and testing authorities
- Unconditional lifetime guarantee against breakage and damage to molded polycarbonate cover
- Guards against physical damage to manual pull station
- Weatherproofing option
- Optional 9-volt alkaline battery (included) powered horn

Dimensions

Size of Pull Station Accommodated

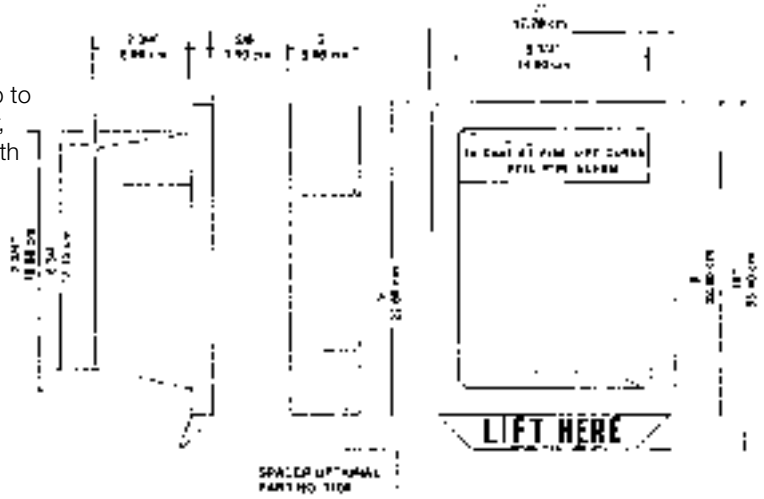
The Stopper II can be installed over a flush-mounted station up to 5½ inches (140mm) wide x 6¾ inches (171mm) high. However, the pull station's maximum dimensions will decrease as its depth (distance from wall) increases. e.g.:

3¼ inch (19mm) deep pull station may be
5 inches (140mm) wide x 6 inches(152mm) high

1-5/8 inch (41mm) deep pull station may be
5 inches (127mm) wide x 6 inches (152mm) high

2-3/8 inch (60mm) deep pull station may be
4 inches (102mm) wide x 5 inches(146mm) high

2 inch (70mm) deep pull station may be
3 inches (76mm) wide x 5 inches (140mm) high



NOTE: If additional depth is needed, use the Conduit Spacer (Part No. STI 3100) which adds 2 inches (51mm) to the depth.

Patent Approval

Stopper II has received patent approval from the United States (No. 4267549) and Canada (No. 1147828Z). Patents for other countries are pending.

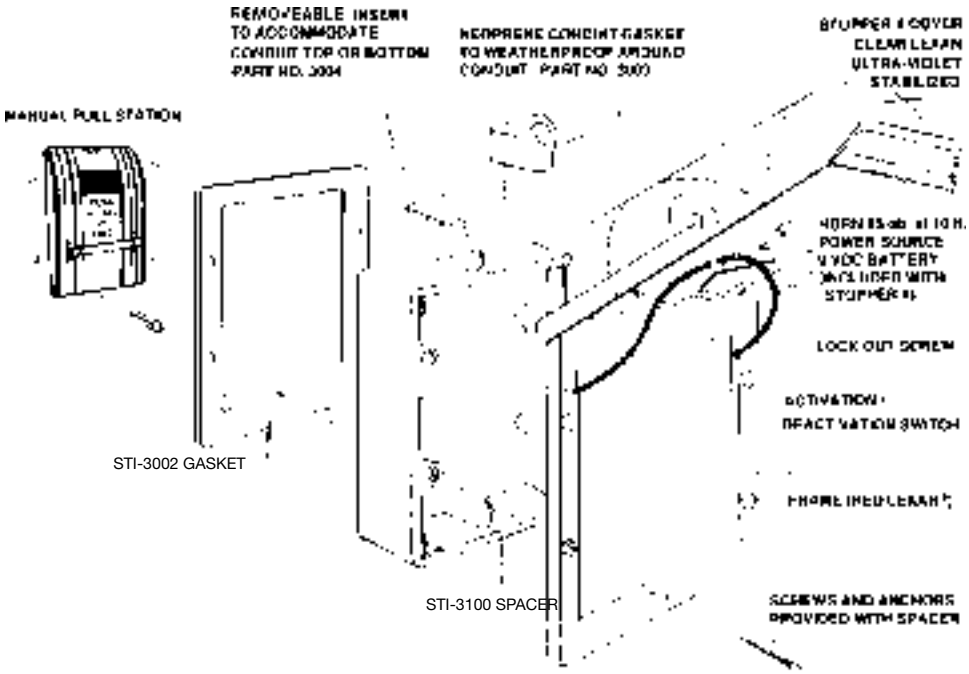
Mounting

Two types of mounting are available. Flush-mounted means the pull station is mounted directly on the wall. Surface-mounted means the pull station is mounted on an electrical box away from the wall.

Surface Mounted: When the pull station is mounted on an electrical box away from the wall, order Part No. STI 1130 (with horn) or Part No. STI 1230 (without horn). Each includes longer screws with anchors and a 2 inch (51mm) conduit spacer (Part No. STI 3100) with knockouts top and bottom to accommodate the conduit pipe.

For Added Weatherproofing

Install gasket (STI 3002) between Stopper II frame and wall. A second gasket must be installed behind the spacer for surface mounting.
A conduit gasket (STI 3003) may be used to seal the conduit pipe.



IMPORTANT NOTICE

Adequate training and instruction must be provided to avoid the possibility that persons, in the event of a real fire, lift the Stopper II cover, hear the horn and think they have set off the fire alarm.

1. Explain the purpose of the Stopper II to authorized personnel.
2. Show them how it works.
3. Instruct them to, upon hearing the Stopper II horn, check for the presence of a fire, and act accordingly by either pulling the fire alarm or shutting off Stopper II by closing the cover.
4. Check with your local fire authorities.
5. When covering a pull station, UL requires stations to be listed for outdoor use.

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
*STI-1100	Stopper II with Horn (UL/ULC) — Flush	1.3 (0.6)
*STI-1130	Stopper II with Horn (UL/ULC) — Surface	
*STI-1200	Stopper II without Horn — Flush	
*STI-1230	Stopper II without Horn — Surface	
*STI-1250	WeatherStopper, flush c/w gasket (STI-3002)	1.3 (0.6)
*STI-3150	WeatherStopper, surface, c/w gaskets (STi-3002 x2), 2” Spacer (STI-3100) and conduit gasket kit	1.3 (0.6)
Accessories		
STI-3100	2 inch (50mm) Spacer	0.5 (0.2)
STI-3002	Weatherproofing Gasket	0.2 (0.1)
STI-3003	Weatherproofing Conduit Gasket	
STI-3004	Conduit Insert	
STI-1280	Black plate for rough wall mounting	

*Suffix “F” for French labelled model

LIFE SAFETY & INCIDENT MANAGEMENT

Contact us

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Email: edwards.fire@carrier.com
Website: edwardsfiresafety.com

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EDWARDS
United Technologies

LIFE SAFETY & INCIDENT MANAGEMENT

Bell-Strobe Plate

403-3A, -5A, -8A



403 Series c/w 439 - 6 inch Bell (bell ordered separately)

S5389

7125-1657: 0185

FM APPROVED

MEA

Overview

EDWARDS 403 Series Bell-Strobe Plates are specially designed for use with compatible life safety communication and control equipment to alert the hearing impaired of a life safety event. Strobes are available with 15 cd, 15/75 cd, 30 cd, and 110 cd effective flash intensity. They are fully compatible with Genesis signals.

As part of the Enhanced Integrity line of products, 403 series strobes exceed UL synchronization requirements (within 10 milliseconds other over a two-hour period) when used with a separately-installed G1M Signal Master or SIGA-CC1S Synchronization Module.

The flash from 403 series strobes can be noticed from almost any position in the room, corridor, or large open space. Light dispersion is controlled with a specially shaped reflector that directs a minimum of 12 per cent of rated light output above and below the strobe, and a minimum of 25 per cent of rated light straight out both sides.

403 Series strobes are designed for 16 to 33 Vdc operation and must be connected to signal circuits that output a constant (not pulsed) voltage. A diode is used to allow full signal circuit supervision and polarized connections are made to 7” (175 mm) wire lead.

The rugged steel plate with smooth bevelled edges is finished in a durable, high quality, baked red epoxy polyester powder-coat.

Standard Features

- **Converts EDWARDS 439 model bells**
  Ideal for renovation work; easily adapts to existing or new EDWARDS bells for conversion into Bell/Strobes. Mounts to North American one-gang, two-gang, octagon, and 4-inch square boxes.
- **UL 1971-listed synchronizing strobe**
  403 Series strobes synchronize to the latest UL 1971 requirements when used with an external control source.
- **Genesis-compatible**
  All Genesis and Integrity strobes on the same circuit meet UL 1971 synchronization requirements when used with an external control module.
- **Approved for public and private mode applications**
  UL 1971-listed as signaling devices for the hearing impaired and UL 1638-listed as protective visual signaling appliances.
- **Rugged steel plate**
  Strong CRS plate with durable baked red epoxy polyester powder-coat finish.
- **Field changeable field markings**
  Lens language or standard “FIRE” marking is easily changed with optional LKW series lens kits.

Application

NOTE: The installation of visible and audible signals are subject to national and local standards, codes, and ordinances. Consult your Authority Having Jurisdiction for device installation requirements, application standards, and minimum performance specifications.

Bells

Suggested sound pressure levels in each signaling zone for alarm or alert signals are at least 15 dB above the average ambient sound level or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 1500mm above the floor. The average ambient sound level is the RMS, A-weighted sound pressure measured over a 24-hour period.

Strobes

EDWARDS strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed specified levels, where occupants use hearing protection, and in areas of public accommodation. Consult with your Authority Having Jurisdiction for details.

As part of the Enhanced Integrity line of products, 403 Series strobes exceed UL synchronization requirements (within 10 milliseconds other over a two-hour period) when used with a synchronization source. Synchronization is important in order to avoid epileptic sensitivity.

Integrity strobes are fully compatible with EDWARDS Genesis signals.

NOTE: The flash intensity of some visible signals may not be adequate to alert or waken occupants in the protected area. Research indicates that the intensity of strobe needed to awaken 90% of sleeping persons is approximately 100 cd. EDWARDS recommends that strobes in sleeping rooms be rated at at least 110 cd.

WARNING: These devices will not operate without electrical power. As fires frequently cause power interruptions, further safeguards such as backup power supplies may be required.

Typical Wiring

SAME SIGNAL CIRCUIT

The bell and strobe can be connected to the same signal circuit (as shown) if the circuit is configured for continuous signal operation.

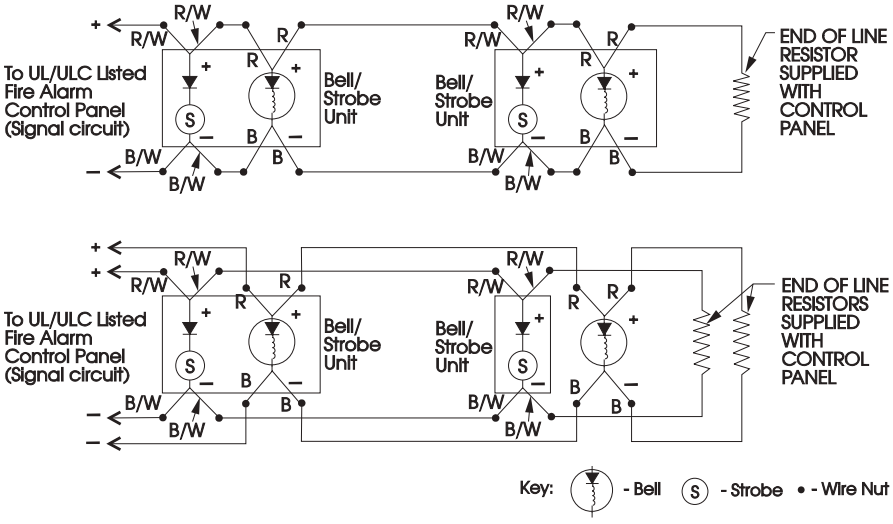
CAUTION: Electrical supervision requires wire run to be broken at each device.

Do not loop signal circuit field wires around the Bell/Strobe units leads.

SEPARATE SIGNAL CIRCUITS

The bell and strobe can be connected to different signal circuits (as shown). The strobe is designed to be used on circuits that output a constant voltage. Do not connect strobe to a coded or pulsating voltage.

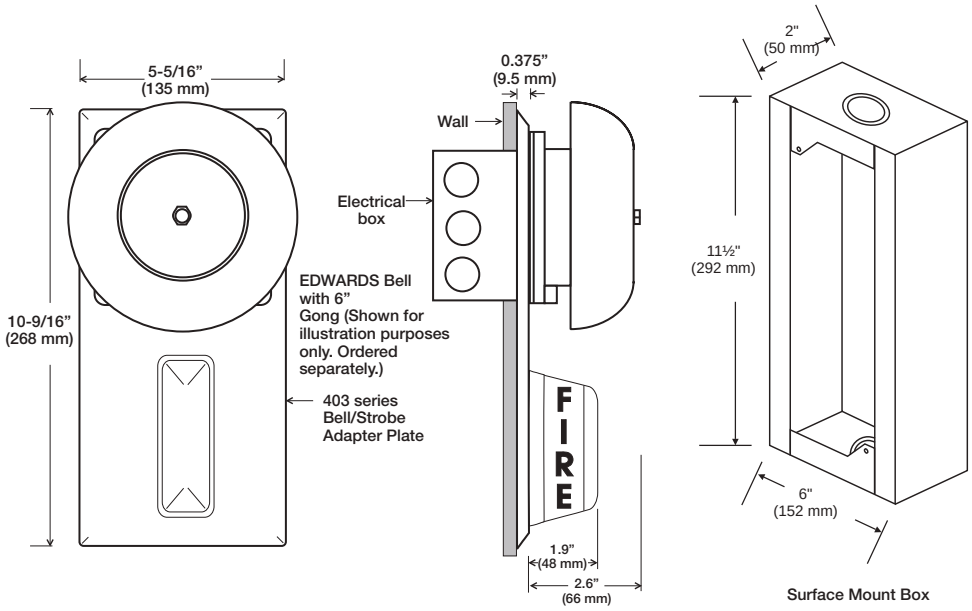
CAUTION: Electrical supervision requires wire run to be broken at each device. Do not loop signal circuit field wires around the Bell/Strobe units leads.



Installation and Mounting

The 403 series bell/strobe plates install to a variety of standard, flush mounted, North-American electrical boxes. This includes one-gang, two-gang, 3-1/2 inch & 4 inch octagon, and 4 inch square. The plate must be installed along with EDWARDS's model 439 series 6 inch (150 mm), 8 inch (200 mm), and 10 inch (250 mm) bells (order separately). The strobe must be connected to a signal circuit which outputs a constant (not pulsed) voltage; the bell can be connected to pulsed or continuous voltage circuits.

EDWARDS recommends that these fire alarm bell/strobes always be installed in accordance with the latest recognized edition of national and local fire alarm codes.

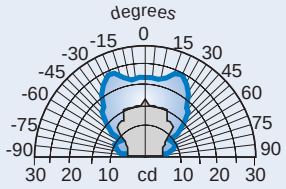


Light Distribution Patterns

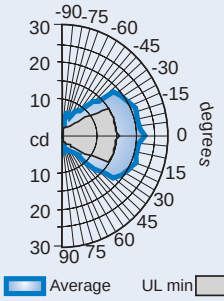
UL 1971 WALL MOUNTED STROBE LIGHT OUTPUT

15 cd (-5A) Series Strobes

Horizontal Output



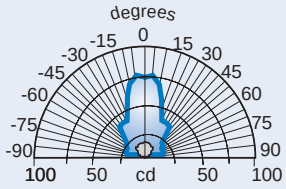
Vertical Output



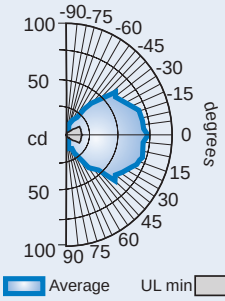
Average UL min

15/75 cd (-7A) Series Strobes

Horizontal Output



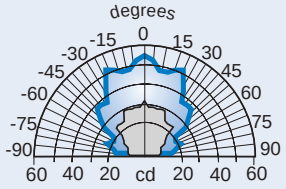
Vertical Output



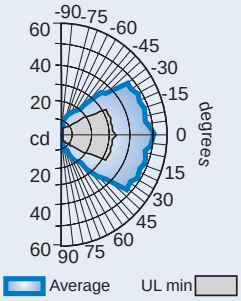
Average UL min

30 cd (-3A) Series Strobes

Horizontal Output



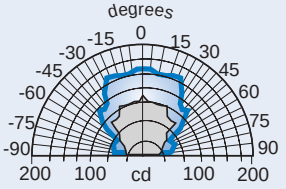
Vertical Output



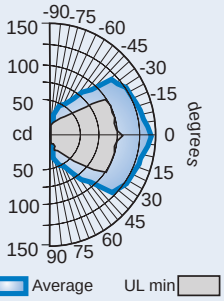
Average UL min

110 cd (-8A) Series Strobes

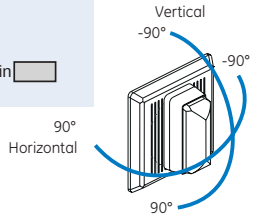
Horizontal Output



Vertical Output



Average UL min



Operating Current (RMS)

UL Rating	15 cd	15/75 cd	30 cd	110 cd
16 Vdc	109	150	130	329
16 Vfwr	150	210	189	420

Typical Current	15 cd	15/75 cd	30 cd	110 cd
24 Vdc	69	90	89	180
24 Vfwr	108	128	134	260

Vdc: Volts direct current, regulated and filtered
Vfwr: Volts full wave rectified

Current Draw Notes and Comments

1. Current values are shown in mA.
2. UL Nameplate Rating can vary from Typical Current due to measurement methods and instruments used.
3. EDWARDS recommends using the Typical Current for system design including NAC and Power Supply loading and voltage drop calculations.
4. Use the 16 Vdc RMS current ratings for filtered power supply and battery AH calculations. Use the 16 Vfwr RMS current ratings for unfiltered power supply calculations.
5. Fuses, circuit breakers and other overcurrent protection devices are typically rated for current in RMS values. Most of these devices operate based upon the heating affect of the current flowing through the device. The RMS current determines the heating affect and therefore, the trip and hold threshold for those devices.

Specifications

Catalog Number	403-5A-R	403-7A-R	403-3A-R	403-8A-R
UL 1638/ULC S526 Rated Strobe Output	15 cd	15/75 cd	30 cd	110 cd
UL 1971 Rated Strobe Output - candela (cd)	15 cd (wall mount only)	15 wall 15 ceiling	30 wall 15 ceiling	110 wall 60 ceiling
Strobe Flash Rate	Synchronized at one flash per second. External control module necessary to meet UL 1971 synchronization requirements of 10 milliseconds over a two-hour period.			
Synchronization Sources	G1M-RM, SIGA-CC1S, SIGA-MCC1S, BPS6A, BPS10A			
Strobe Operating Volts	16 to 33 Vdc (Continuous)			
Operating Environment	INDOOR: 32-120° F (0-49° C) ambient temperature. 85% relative humidity @ 30° C			
Lens Markings	Supplied with LKW-1 “FIRE” red letters, vertical both sides (Wall Mount) - see LKW series for optional markings			
Wire Connections	Strobe 7 in (175 mm) color-coded polarized leads - 2 INs/2 OUTs, Bell (see 439 series cat sheet)			
Flash Tube Enclosure	Clear LEXAN			
Strobe Plate, Finish	CRS Steel - 5-5/16 in x 10-9/16 in (135 mm x 268 mm), red baked epoxy polyester powder-coat finish			
Mounting	Fits over FLUSH mounted North-American boxes - One-gang & two-gang, 3-1/2 inch & 4 inch octagon, 4 inch square			
Agency Listings	UL 1971, UL 1638, ULC S526, CSFM, MEA, FM (All models comply with ADA Code of Federal Regulation Chapter 28 Part 36 Final Rule)			

Ordering Information

Cat. Number	Description	Ship Wt. lb (kg)
403-5A-R	Bell-Strobe Plate - 15 cd, Red	2.0 (0.9)
403-7A-R	Bell-Strobe Plate - 15/75 cd, Red	
403-3A-R	Bell-Strobe Plate - 30 cd, Red	
403-8A-R	Bell-Strobe Plate - 110 cd, Red	
403-SB	Surface box for 403, Red; 6" W x 11½" H x 2" D (152 x 292 x 50mm) -- Canada only.	
Synchronization Sources		
G1M-RM	Genesis Signal Master Remote Mount (1-gang)	0.2 (0.1)
SIGA-CC1S	Synchronization Output Module (Standard Mount) - UL/ULC Listed	0.5 (0.23)
SIGA-MCC1S	Synchronization Output Module (UIO Mount) - UL Listed	0.18 (0.08)
BPS6A	6.5 Amp Booster Power Supply	13 (5.9)
BPS10A	10 Amp Booster Power Supply	13 (5.9)
Lens Marking Kits (see note 1)		
LKW-1	"FIRE", Wall Orientation (supplied)	0.1 (.05)
LKW-1R	"FIRE", Wall Orientation, RED	
LKW-2	"FEU", Wall Orientation	
LKW-3	"FIRE/FEU", Wall Orientation	
LKW-4	"SMOKE", Wall Orientation	
LKW-5	"HALON", Wall Orientation	
LKW-6	"CO2", Wall Orientation	
LKW-7	"EMERGENCY", Wall Orientation	
LKW-8	"ALARM", Wall Orientation	
LKW-9	"FUEGO", Wall Orientation	

** Add Suffix "W" to catalog no. for WHITE. (e.g. 757-7A-TW)|*
Note 1 - Change "W" to "C" for CEILING mount. (e.g. LKC-1)

LIFE SAFETY & INCIDENT MANAGEMENT

Contact us...

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Web: *Edwards-fire.com*

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Mebane, NC 27302

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Effective: December 2015

Series 439D Vibrating Bells

K-75-010

FEATURES

- ***Agency approvals and listings: UL, FM, CSFM***
- ***6-inch and 10-inch shell sizes, 24 Vdc models***
- ***Mounting options for surface, semi-flush, outdoor, and concealed conduit installation***
- ***Red smooth finish to improve appearance and durability***

EXPORT INFORMATION (USA)

Jurisdiction: EAR
ECCN: EAR99
This document does not contain any export-controlled technical data.

DESCRIPTION

Edwards Signaling™ manufactured Vibrating Bells provide a superior engineered notification product for fire and life safety alarm systems. The vibrating bells are designed for public mode signaling in accordance with the latest edition of NFPA 72. These vibrating bells produce a long and continuous ringing sound.



MOUNTING

Bells may be easily surface mounted onto a wall mounting plate or mounted with an optional backbox. (See ordering information.) A mounting plate, insulator plate, lockwashers and nuts are provided for each bell body.

ORDERING INFORMATION

Part Number	Input Voltage	Shell Size	Min dBA @ 10 feet	Typical dBA @ 10 feet	Current (Amps)
439D-6AW-R	24	6 inch	75	82	0.085
439D-10AW-R	24	10 inch	75	85	0.085
SFP-R	semi-flush backbox				
BB-R	surface backbox				
AP-R	weatherproof backbox				

DIMENSIONS

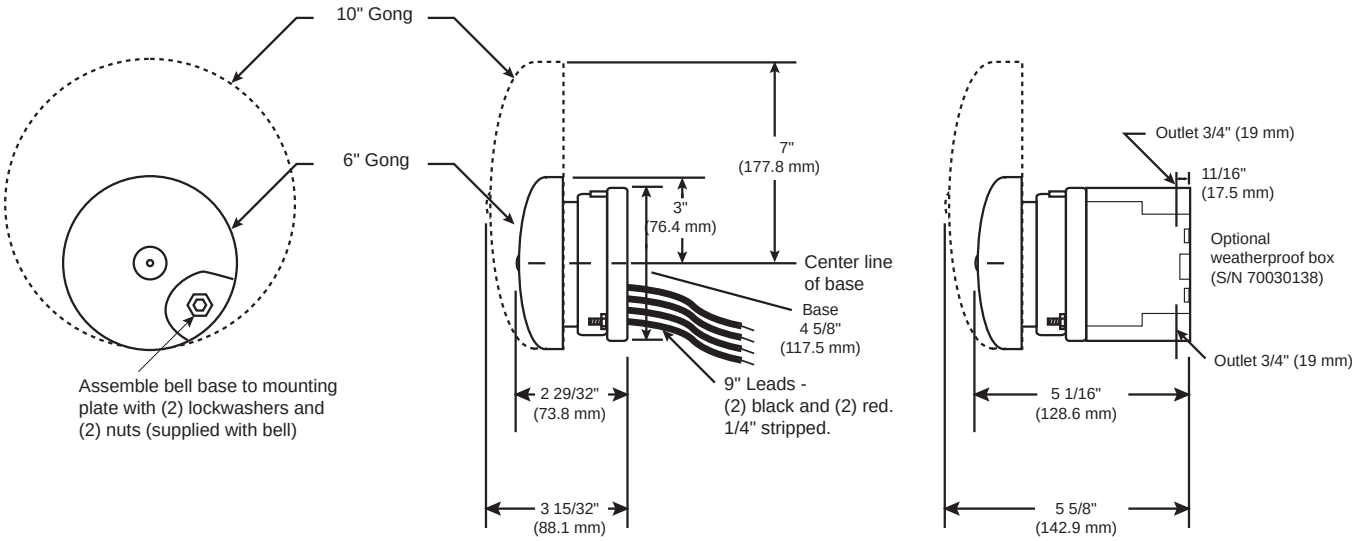


Figure 1. Series 439D Bell Dimensions

INSTALLATION

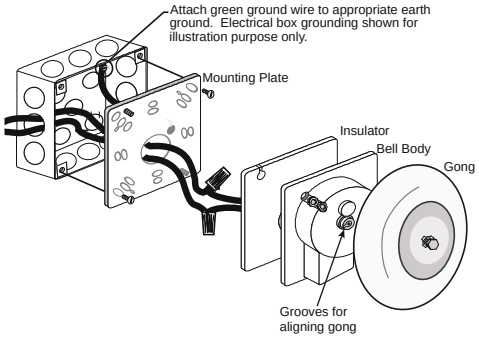


Figure 2. Wall Box Installation

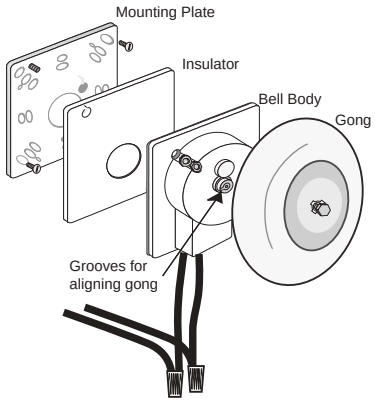


Figure 3. Wall Box Installation

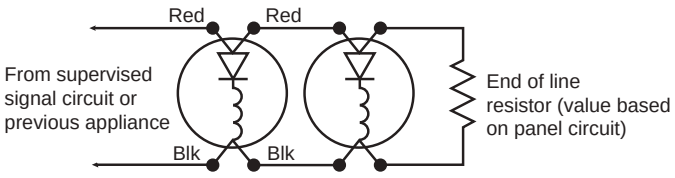


Figure 4. Bell Wiring Diagram

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Edwards Signaling is a trademark of Edwards.

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EDWARDS
United Technologies
LIFE SAFETY & INCIDENT MANAGEMENT

Genesis LED
G1 Series
Compact Notification Devices



c UL us
S218,
S5389

7125-1657:0506
7135-1657:0502

FC

FM
APPROVED

Overview

Genesis LED G1 Series horns and LED strobes feature a sleek low profile design and energy-efficient technology that makes them less expensive to install and operate by reducing overhead. High performance LEDs require fewer circuits and power supplies. These new appliances are designed with energy-efficiency and life safety in mind.

Genesis LED G1 Series uses high efficiency optics, combined with patented electronics, to deliver a highly controlled and efficiently focused light distribution pattern in exchange for lower current requirements. Strobes feature field-selectable 15, 30, or 75 cd light output.

Compared with Xenon-type strobes, Genesis LED G1 Series appliances need fewer power supplies and often smaller wire gauge, which lightens conduit requirements. They are also backwards compatible with legacy strobes, so there's no need to replace all your existing devices to upgrade to new LED technology. In fact, G1 strobes can be mixed on the same circuit and used in the same field of view as Xenon-based strobes. This makes Genesis LED G1 Series ideal for new installations and retrofits alike.

Field-configurable sound output levels provide the flexibility modern life safety projects demand, while the Genesis LED control protocol keeps multiple strobes on compatible NAC circuits synchronized to well within NFPA 72 requirements.

Serviceability is another area where G1 Series appliances shine. The innovative under-cover diagnostic test points provide easy access to device circuit testing while mounted.

Standard Features

- **High Performance LED Strobe Technology**
  - Ultra low device current consumption
  - High efficiency optics
  - Selectable 15, 30, or 75 cd light output
  - LED devices may be mixed with legacy Xenon strobes
- **Efficient Audible Output**
  - Selectable high or low dB horn output
  - Selectable temporal or steady horn output
  - Improved audio frequency range for better wall penetration
- **Low-profile Design**
  - Compact design... single gang mounting
  - Ultra-slim... protrudes about 1" from the mounting surface
  - Attractive appearance... no visible mounting screws
- **Multiple "FIRE" Marking Options**
  - Order English, French, Spanish or no FIRE markings
  - Change markings at any time with quick-swap covers
- **Easy to Install**
  - Diagnostic test points streamline device circuit testing
  - Fits standard 1-gang electrical boxes, no trim ring needed
  - Optional trim ring available for 4-inch square boxes
  - Slide switches for field configuration
  - 12 to 18 AWG in-out screw terminals for quick wiring

Application

Strobes

Genesis LED G1 Series strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed 105 dBA (87 dBA in Canada), where occupants use hearing protection, and in areas of public accommodation as defined in the *Americans with Disabilities Act*.

Synchronization is important in order to avoid epileptic sensitivity. All Genesis LED strobes exceed UL synchronization requirements (within 10 milliseconds over a two-hour period) when used with a synchronization source. See the specifications table for a list of compatible sources.

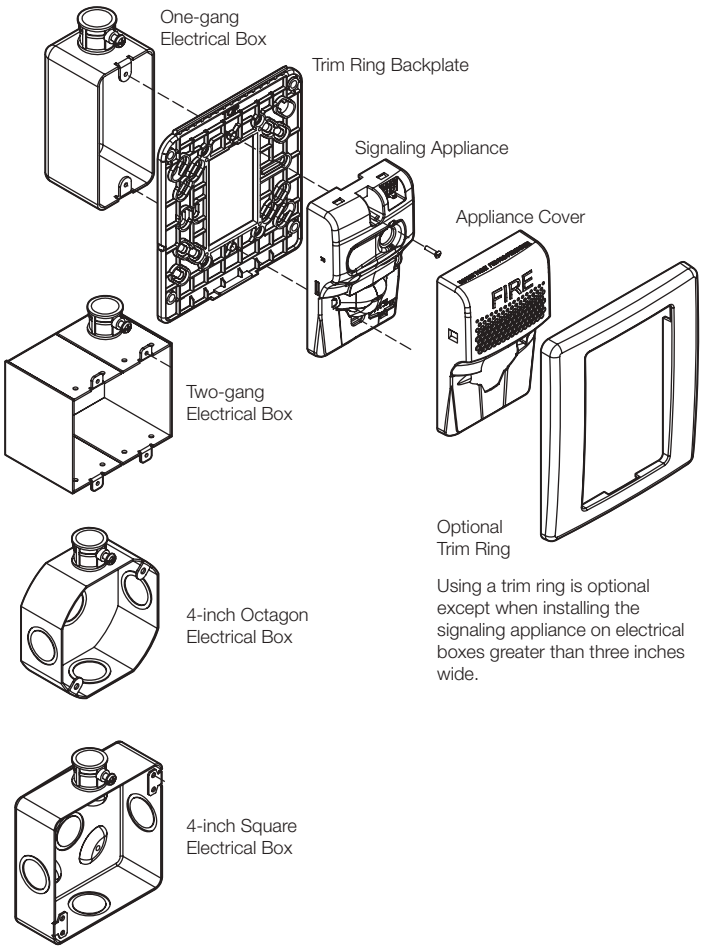
Horns

Genesis LED horn output reaches as high as 92 dBA and features an improved audio frequency range compared with other Genesis LED horns. This results in excellent sound penetration through walls and a clear warning of danger. They can also be set for high or low dBA output. This setting reduces horn output by about 6 dBA. Models may be ceiling-mounted or wall-mounted and may be configured for either coded or non-coded notification appliance circuits.

The suggested sound pressure level for each signaling zone used with alarm signals is at least 15 dBA above the average ambient sound level, or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater. These values are measured at five feet (1.5 m) above the floor. The average ambient sound level is A-weighted, fast response sound pressure measured over a 24-hour period.

Doubling the distance from the signal to the ear will theoretically result in a 6 dBA reduction of the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. A 3 dBA difference represents a barely noticeable change in volume.

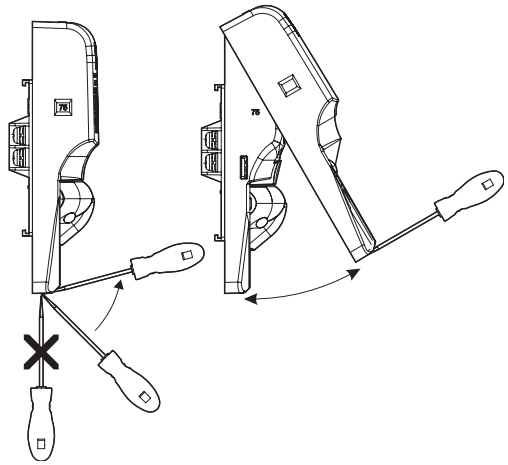
Genesis LED G1 Series horns and strobes mount to any standard one-gang surface or flush electrical box. Matching optional G1T trim rings are available to cover oversized openings and can accommodate one-gang or four-inch square boxes. Optional color matched single-gang surface boxes are also available.



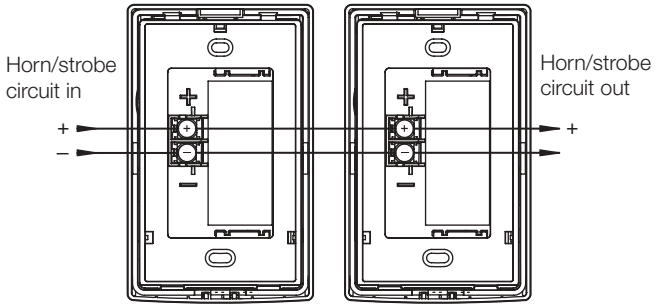
Using a trim ring is optional except when installing the signaling appliance on electrical boxes greater than three inches wide.

Installation

All Genesis LED devices come with mounting screws for easy installation. The tab at the bottom of the device unlocks the cover to reveal the mounting holes. The shallow depth of Genesis LED devices leaves ample room behind them for extra wiring. Once installed with the cover in place, no mounting screws are visible.



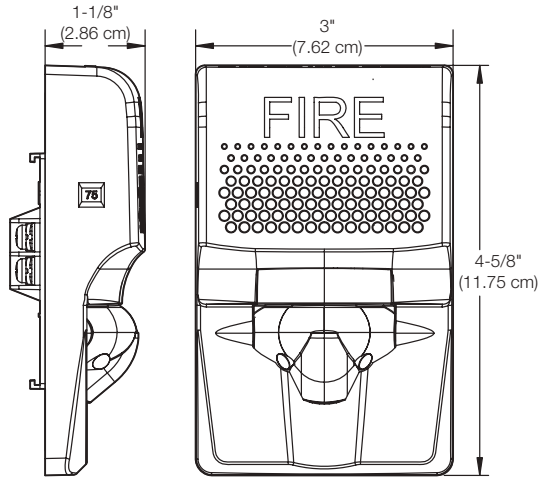
Wiring



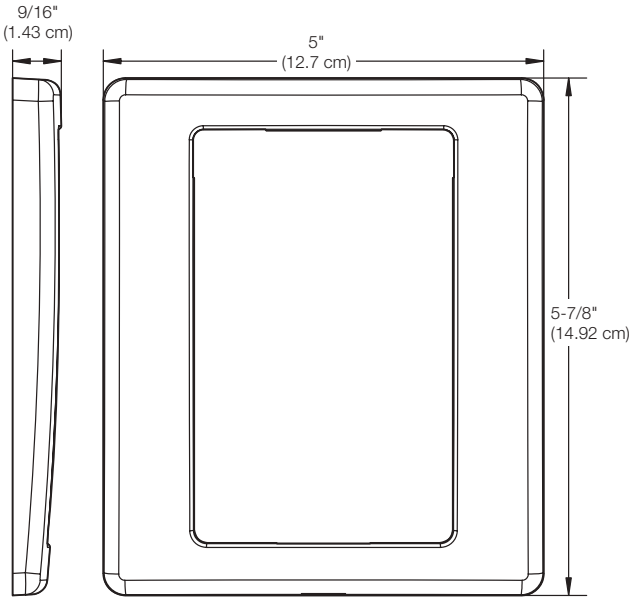
Signal polarity shown in the active condition.

Dimensions

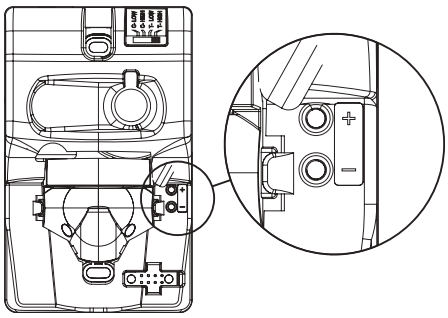
G1 Notification Appliances



G1T Trim Ring



Diagnostics



Test points indicated above are used to validate the Notification Appliance Circuit and verify device function.

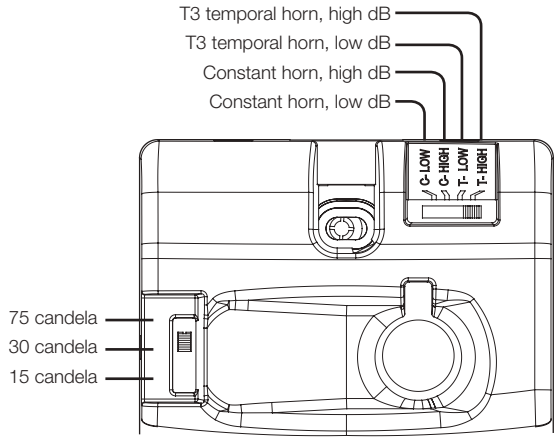
Field Configuration

Temporal horn and horn-strobe models are factory set to sound in a three-pulse temporal pattern. By sliding the tone selector switch, units may be configured for constant horn output that can be coded at precise intervals by EDWARDS control panels and control modules.

Note: Temporal 3 coding is the required output for fire notification devices per NFPA 72. Any device coding other than temporal 3 is at the discretion and approval of the local authority having jurisdiction (AHJ).

Horns and horn-strobes are factory set for high dB output. Low dB output may be selected by sliding the tone selector switch. This reduces the output by about 6 dBA.

Genesis LED clear strobes and horn-strobes may be set for 15, 30, or 75 candela output. The output setting is changed by simply removing the cover and sliding the candela switch to the desired setting. The device does not have to be removed from the wall to change the output setting. The setting remains visible through a small window on the left-hand side of the device after the cover is closed.



Operating current

Horns

Sound setting	16 to 33 VDC	16 to 33 VFWR
C-Low T-Low	13 mA	15 mA
C-High T-High	23 mA	29 mA

Strobes

Strobe setting	16 to 33 VDC	16 to 33 VFWR
15, 30, 75	24 mA	32 mA

Horn-Strobes

Strobe setting	Sound setting	16 to 33 VDC	16 to 33 VFWR
15, 30, 75	C-Low, T-Low	35 mA	43 mA
	C-High, T-High	45 mA	55 mA

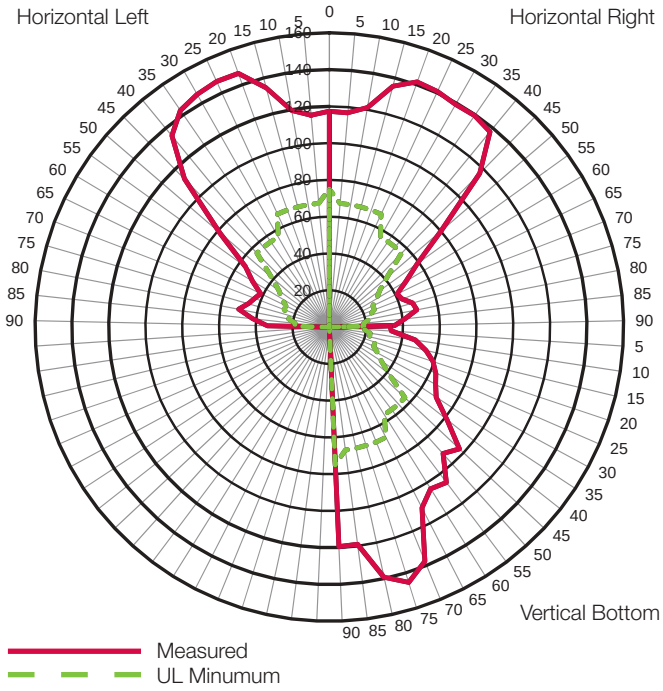
Sound Output

Sound setting	Reverberant (UL 464)	Anechoic (CAN/ULC S525)
C-Low T-Low	80 dBA	86 dBA
C-High T-High	85 dBA	92 dBA

Sound pattern (ULC)

Axis	Angle	Change in output
Horizontal	45° and 115°	-3 dBA
	5° and 130°	-6 dBA
Vertical	65° and 135°	-3 dBA
	45° and 140°	-6 dBA

Light Distribution



Specifications

Operating voltage	16 to 33 VDC, 16 to 33 VFWR
Horn signal type	Constant or T3 temporal
Light output	15, 30, or 75 candela
Strobe flash rate	1 fps (flash per second) approx.
Synchronization	20 Ω max. between any two devices. (To determine allowed wire resistance, refer to these specifications, and the specifications for the synchronized signal source.)
Synchronization sources	EDWARDS CC Series Signal Modules, Booster and Auxiliary Power Supplies, and Intelligent and Conventional Control Panels
Wire size	12 to 18 AWG (0.75 to 2.50 mm^2)
Dimensions (W×H×D)	3 × 4-5/8 × 1-1/8 in. (7.62 × 11.75 x 2.86 cm)
Strobe-to-box center offset	-0.71 inches (-1.8 cm)
Compatible electrical boxes [1]	1-gang, 2-gang, 4-inch octagon, 4-inch square
Trim rings	G1TR, G1TW - Dimensions 5 x 5-7/8 x 9/16 in. (12.7 x 14.92 x 1.43 cm)
Agency Listings	FCC, ICC, UL1971, UL1638, UL464, CSFM (All models comply with ADA code of federal regulation Chapter 28 Part 36 final rule)
Operating environment Temperature Relative humidity	 32 to 122°F (0 to 50°C) 0 to 93% noncondensing

[1] Electrical boxes must be at least 1-1/2 in. (3.81 cm) deep. Electrical boxes greater than three inches wide require a trim ring.

Ordering Information

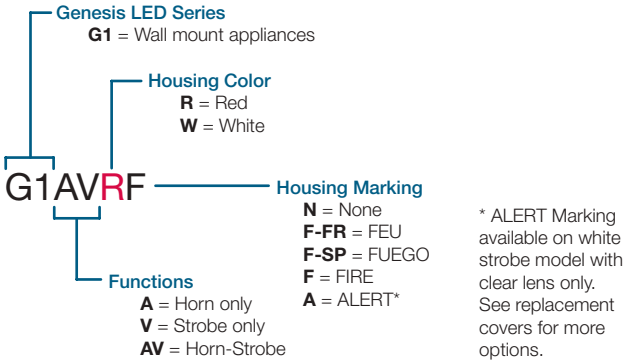
Notification Appliances		Color	Marking
 **Horns** Selectable High/low dB	G1ARF	Red	FIRE
	G1ARF-FR	Red	FEU
	G1ARF-SP	Red	FUEGO
	G1ARN	Red	None
	G1AWF	White	FIRE
	G1AWF-FR	White	FEU
	G1AWF-SP	White	FUEGO
	G1AWN	White	None
 **Strobes** Selectable 15, 30, 75 cd	G1VRF	Red	FIRE
	G1VRF-FR	Red	FEU
	G1VRF-SP	Red	FUEGO
	G1VRN	Red	None
	G1VWA*	White	ALERT
	G1VWF	White	FIRE
	G1VWF-FR	White	FEU
	G1VWF-SP	White	FUEGO
	G1VWN	White	None
 **Horn-strobes** Selectable 15, 30, 75 cd, High/low dB	G1AVRF	Red	FIRE
	G1AVRF-FR	Red	FEU
	G1AVRF-SP	Red	FUEGO
	G1AVRN	Red	None
	G1AVWF	White	FIRE
	G1AVWF-FR	White	FEU
	G1AVWF-SP	White	FUEGO
	G1AVWN	White	None

Replacement Appliance Covers		Color	Marking
 **Horn Covers**	G1ARA-CVR	Red	ALERT
	G1ARF-CVR	Red	FIRE
	G1ARF-FR-CVR	Red	FEU
	G1ARF-SP-CVR	Red	FUEGO
	G1ARN-CVR	Red	None
	G1AWA-CVR	White	ALERT
	G1AWF-CVR	White	FIRE
	G1AWF-FR-CVR	White	FEU
	G1AWF-SP-CVR	White	FUEGO
	G1AWN-CVR	White	None
 **Strobe Covers**	G1VRA-CVR	Red	ALERT
	G1VRF-CVR	Red	FIRE
	G1VRF-FR-CVR	Red	FEU
	G1VRF-SP-CVR	Red	FUEGO
	G1VRN-CVR	Red	None
	G1VWA-CVR	White	ALERT
	G1VWF-CVR	White	FIRE
	G1VWF-FR-CVR	White	FEU
	G1VWF-SP-CVR	White	FUEGO
	G1VWN-CVR	White	None
 **Horn-strobe Covers**	G1AVRA-CVR	Red	ALERT
	G1AVRF-CVR	Red	FIRE
	G1AVRF-FR-CVR	Red	FEU
	G1AVRF-SP-CVR	Red	FUEGO
	G1AVRN-CVR	Red	None
	G1AVWA-CVR	White	ALERT
	G1AVWF-CVR	White	FIRE
	G1AVWF-FR-CVR	White	FEU
	G1AVWF-SP-CVR	White	FUEGO
	G1AVWN-CVR	White	None

Accessories

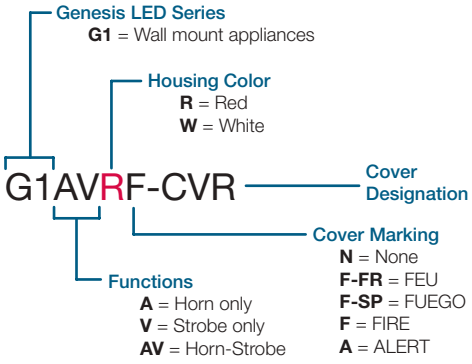
	G1TR	Trim ring, G1 Series, red		G1TW	Trim ring, G1 Series, white
	27193-11	One-gang surface mount box, red		27193-16	One-gang surface mount box, white

Model Number Syntax, Appliances



* ALERT Marking available on white strobe model with clear lens only. See replacement covers for more options.

Model Number Syntax, Replacement Covers



LIFE SAFETY & INCIDENT MANAGEMENT

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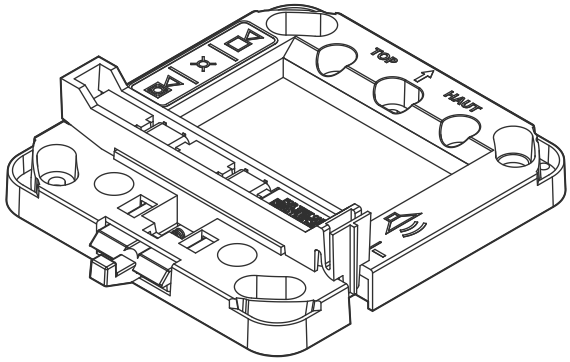
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Hoja de Instalación de Placa de Cableado del Lado de la Sala Genesis GRSW



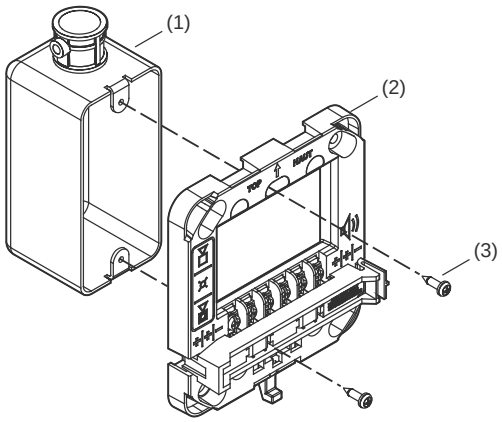
Descripción

Las placas de cableado del lado de la sala Genesis GRSW proporcionan terminales de cableado para los dispositivos de notificación enchufables serie Genesis LED. La placa de cableado Genesis GRSW incluye una presilla de cortocircuito que, cuando está instalada, le permite probar la continuidad del circuito del dispositivo de notificación antes de instalar los dispositivos de notificación.

Instalación

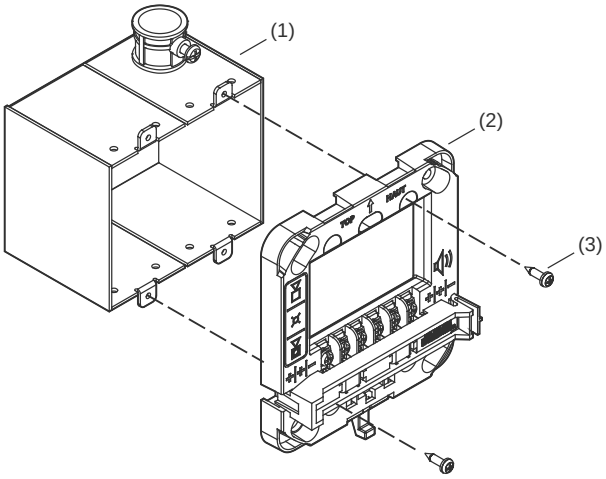
1. Conecte la placa de cableado a la caja eléctrica como se muestra en la Figura 1 a la Figura 3. No apriete en exceso los tornillos.
2. Conecte los cables de campo. Consulte la Figura 5.

Figura 1: Montaje típico en una caja eléctrica de una salida



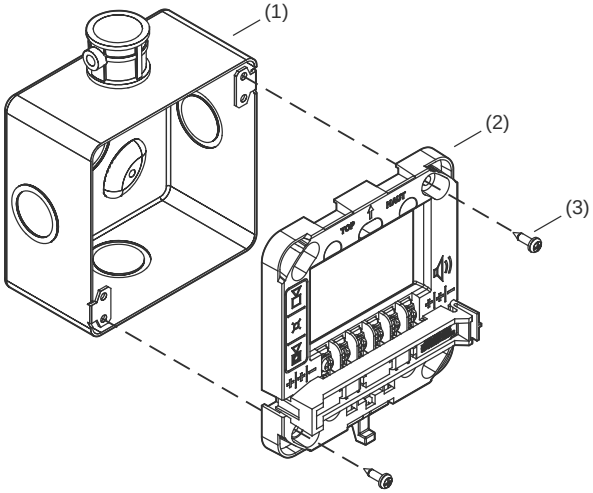
(1) Caja eléctrica
(2) Placa de cableado
(3) Tornillo de máquina suministrado con placa de cableado (2X)

Figura 2: Montaje típico en una caja eléctrica de dos salidas



(1) Caja eléctrica
(2) Placa de cableado
(3) Tornillo de máquina suministrado con placa de cableado (2X)

Figura 3: Montaje típico en una caja eléctrica de cuatro pulgadas cuadradas

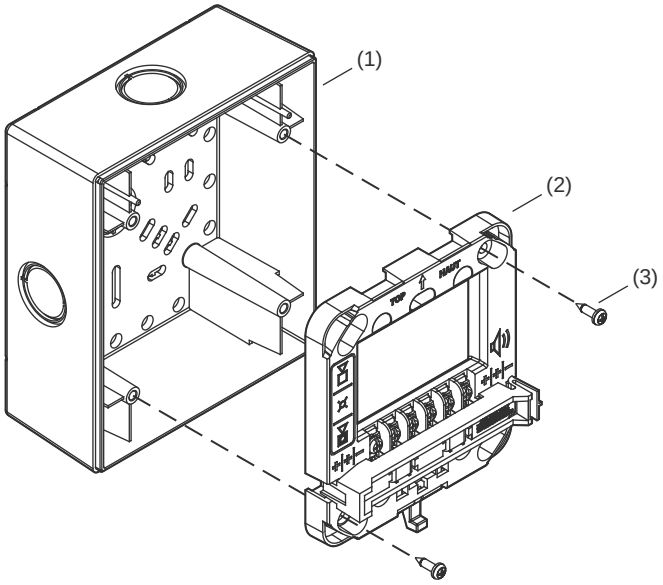


(1) Caja eléctrica
(2) Placa de cableado
(3) Tornillo de máquina suministrado con placa de cableado (2X)

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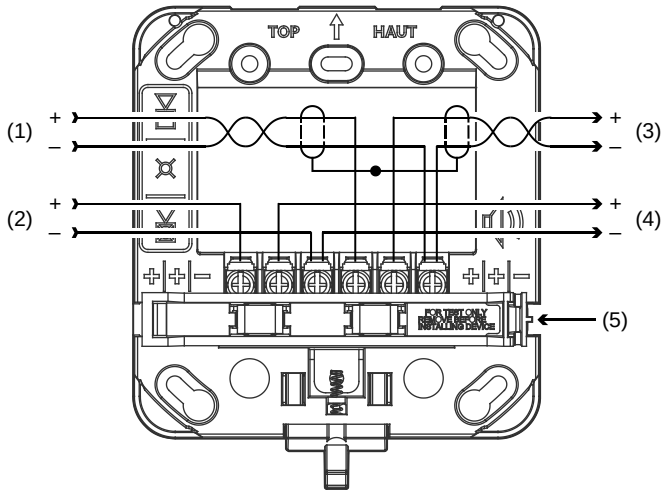
P/N 3102658-ES • REV 002 • ISS 31AUG20

Figure 4: Montaje típico en una caja de superficie



(1) Caja de superficie
(2) Placa de cableado
(3) Tornillo de plastite (2X, suministrado con la caja de montaje en superficie)

Figura 5: Cableado



(1) Circuito de altavoz de entrada (los protectores, si se usan, deben ser continuos y sin conexión a tierra, excepto en la fuente de señal)
(2) Entrada de circuito de bocina - impulso estroboscópico (la polaridad de señal se muestra en condición activa)
(3) Circuito del altavoz de salida
(4) Saluda de circuito de bocina - impulso estroboscópico
(5) Presilla de cortocircuito

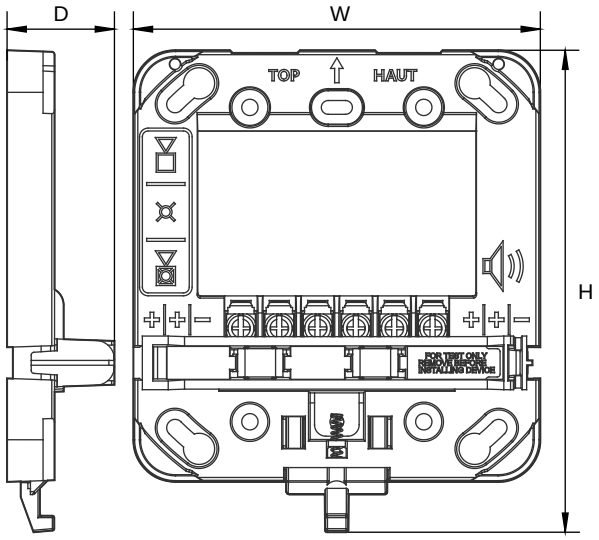
Nota: Para mantener la continuidad del circuito, no quite la presilla de cortocircuito (Figura 5, elemento 5) hasta que esté listo para instalar el dispositivo de señalización.

Especificaciones

Tamaño del cable	12 a 18 AWG (0,75 a 2,50 mm²)
Apriete de tornillos	
Tornillos de montaje	10 pie-libra-pulg. (1,2 N·m) máx.
Tornillos de terminal	12 pie-libra-pulg. (1,4 N·m) máx.
Dimensiones (W × H × D)	4,25 × 5,0 × 1,125 pulg. (10,8 × 12,7 × 2,86 cm) Consulte la Figura 6
Cajas eléctricas compatibles [1]	1 salida, 2 salidas, 4 pulgadas cuadradas, G4RSB, G4WSB
Entorno de funcionamiento	
Temperatura	0 a 50°C (32° a 122°F)
Humedad relativa	0 a 93% sin condensación

[1] No utilice cajas eléctricas de 1 salida con placas de cableado GRSW y dispositivos de altavoces serie Genesis LED.

Figura 6: Dimensiones



Información de contacto

Para información de contacto, visite www.edwardsfiresafety.com.

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Releasing Module
SIGA-REL



Patented

FM APPROVED 7300-1657: 0205
S3424

Overview

The SIGA-REL is an analog addressable module that communicates directly with the fire alarm panel Signature loop controller. The SIGA-REL controls sprinkler, pre-action and deluge systems, and may also be used to release extinguishing agents such as CO_2, Halon, or foam. The module is easily configured in the field and offers a wide range of options that ensure dependable service, while preventing the unnecessary release of extinguishing agent.

In addition to being an intelligent network component, the SIGA-REL interfaces with a number of conventional devices. These provide manual actuation of abort, release, and service disconnect functions. Together with the SIGA-REL, they comprise a complete fire suppression package. There is no need for a separate releasing panel because the SIGA-REL takes full advantage of the existing control panel communications infrastructure. This ensures low-cost installations with all the benefits of Signature Series analog initiation and control.

Seven on-board circuits provide added flexibility. Each SIGA-REL hosts:

- Two supervised Class B release circuits
- Two supervised Class B pre-release NACs
- One supervised Class B manual release input circuit (latching)
- One supervised Class B abort circuit for normally-open abort switch (non-latching)
- One first alarm output relay (Form C contact)

The SIGA-REL also includes a series of built-in timers that determine the duration of abort routines and release sequences. These timers are easily configured in the field and provide a highly flexible range of options.

Standard Features

- **Ideal for sprinkler, pre-action and deluge systems**
  Suitable a wide range of sprinkler applications and extinguishing agents such as CO2 and Halon.
- **Built-in timers**
  Selectable durations for abort, manual, and automatic delays.
- **Four abort modes**
  Field-configurable abort routines determine how the timers operate when the abort function is initiated.
- **Supervised circuitry you can rely on**
  Two Class B release circuits and two pre-release circuits provided.
- **Manual operation keeps ultimate control in plain view**
  The SIGA-REL features a manual release input circuit as well as a manual abort input circuit.
- **Fully automated response leaves nothing to chance**
  This module's Form C relay is ideal for room preparation routines.
- **Automatic device mapping simplifies installation**
  Signature modules transmit directly to the loop controller their circuit locations with respect to other Signature devices on the wire loop.

Application

Understanding fire suppression

Fire suppression today is an important part of a growing number of life safety installations. With an ever-increasing reliance on mission-critical computer systems and record high capital investment in high-tech production facilities, businesses large and small are looking for a means of protecting their investments and ensuring a fire won't cripple their operations.

While fire detection remains the first line of defense against the risks of fire to people, building owners are looking to fire suppression as a means of protecting their property and assets.

But it's a well known fact that fire suppression is a double-edged sword: water can snuff out a mission-critical computer system as easily as it can a fire. Alternatives to water, including carbon dioxide and other extinguishing agents can endanger lives, while the release of even the most inert extinguishing agents can disrupt operations and cost millions of dollars in down-time and lost production.

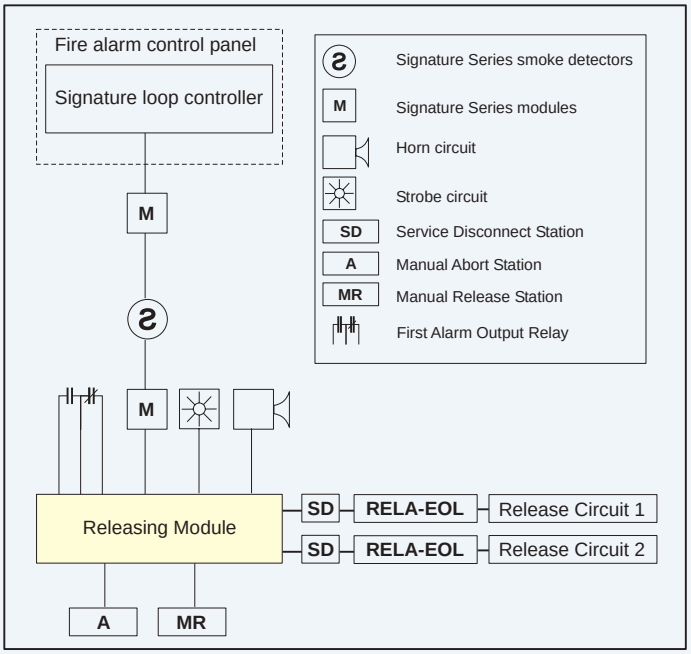
A primary goal of any fire suppression system is to prevent the release of extinguishing agent unless it is absolutely necessary. There is no margin for error. But no matter what measures are taken to prevent the unwanted release of extinguishing agent, the fact remains that no suppression system is any better than the detectors it relies on for input. The foundation of an effective suppression system, therefore, rests firmly on the quality and reliability of its smoke detectors.

Signature Series detectors form an integral part of the suppression system built around the SIGA-REL releasing module. These detectors provide unsurpassed reliability and immunity from false alarms. The SIGA-REL is engineered to the same exacting standards of quality and performance. With a robust set of features designed to eliminate any unwanted release of extinguishing agent, the SIGA-REL provides all the benefits of a dedicated releasing panel without the extra expense, and equally important, all the proven advantages of the Signature Series family of products.

Understanding the SIGA-REL

The SIGA-REL Releasing Module is a network component that provides control for fire suppression routines. It fulfils much the same purpose as a standalone releasing panel, but supports Signature Series detectors as an integral part of the suppression system. The SIGA-REL is easy to set up and accepts programming via the control panel's SDU Rules Editor.

The diagram below represents typical application of the SIGA-REL. The explanations that follow summarize each element of the module.



Release Circuits. The SIGA-REL includes two supervised release circuits, each of which provides fire suppression control to different areas of a protected space. The releasing circuits actuate solenoids on the suppression agent tanks according to pre-defined release routines. These solenoids release the agent into the protected area. Both circuits operate together.

First Alarm Relay. This on-board relay provides a Form C contact that activates at the first alarm input or manual release. The relay is typically used for room preparation such as controlling fans and dampers in advance of the release of suppression agent.

Pre-release. Pre-release circuits are used to provide power to notification appliances located within the protected are. Two supervised pre-release circuits are provided: one (steady) for visual notification appliances, and one (pulsed) for audible notification appliances. The pre-release circuits activate with the start of the automatic delay timer.

Manual Release. The manual release circuit is used to activate the suppression system by means of a connected normally-open release station. This initiates the manual release sequence according to a pre-defined routine. The manual release circuit is supervised and latching. Input from this circuit is processed at the module – communication with the control panel is not necessary.

Abort. The abort circuit is used to prevent the release of agent into the protected area after the release sequence has begun, but before the automatic delay timer expires. A connected normally-open release station provides manual control over this circuit. The abort circuit is supervised and non-latching.

Service Disconnect. The service disconnect switch is used to temporarily disable the fire suppression system. There is no dedicated circuit for this switch. Instead, it is installed on both release circuits between the SIGA-REL and the RELA-EOL end-of-line relay. Opening the Service Disconnect Switch allows the fire alarm system to be tested without activating the fire suppression system. The operation of this switch causes a trouble signal at the control panel.

Data. The Signature data circuit provides an input and an output to the data loop that communicates with the Signature loop controller at the control panel. The SIGA-REL resides on the same data loop as the Signature Series detectors that initiate the automatic release sequence. This close association offers the most reliable performance and ensures compliance with prevailing life safety codes.

Power. The SIGA-REL requires 24 Vdc (power limited). See the specification table for details.

Operation

The SIGA-REL has several built-in safeguards to prevent the unwanted release of extinguishing agent. All release sequences are subject to configurable delay timers that provide the opportunity for an occupant of the area to manually abort the release sequence. If no abort signal is received before the delay timer expires, the suppression agent is released.

The SIGA-REL includes three delay timers: one for manual release sequences (up to 30 seconds); one for automatic release sequences (up to 50 seconds); and one for abort sequences (10 seconds).

Note: Misapplication of the SIGA-REL can have serious consequences. Descriptions provided here are for information only, are subject to change, and should not be used as a guide to field installation of equipment. Always consult the SIGA-REL installation manual when setting up or configuring this component.

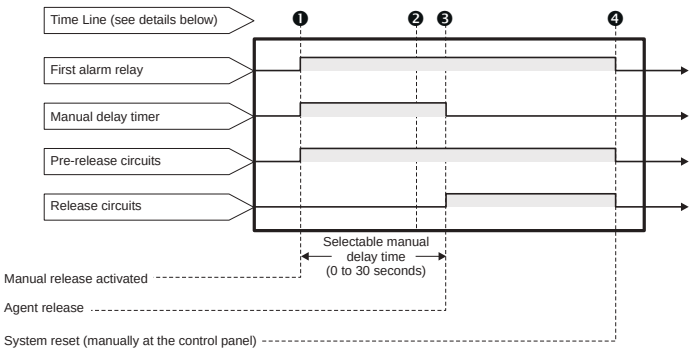
Normal State

In its normal operating state the SIGA-REL supervises both of its release circuits and both of its pre-release NAC circuits for faults. Should a short or open occur on any of these circuits, a Trouble condition is reported to the control panel.

A trouble condition on any of these circuits may prevent the operation of that circuit, but it won't inhibit the operation of any other fault-free circuit.

Manual Release Sequence

The operation of a manual release station initiates the manual release sequence. The diagram below outlines the manual release sequence.



Note: *A manual release sequence cannot be aborted.*

Manual Release Time Line

❶ An active manual release station disables automatic operation and the abort function and simultaneously activates the:
- Manual delay timer
- Pre-release circuit
- Pre-release strobe circuit (steady On)
- Pre-release horn circuit (60 pulses per minute)

❷ Ten seconds before the expiration of the manual delay timer, the pre-release horn changes from 60 pulses per minute to steady On.

❸ The manual delay timer expires and the release circuits activate.

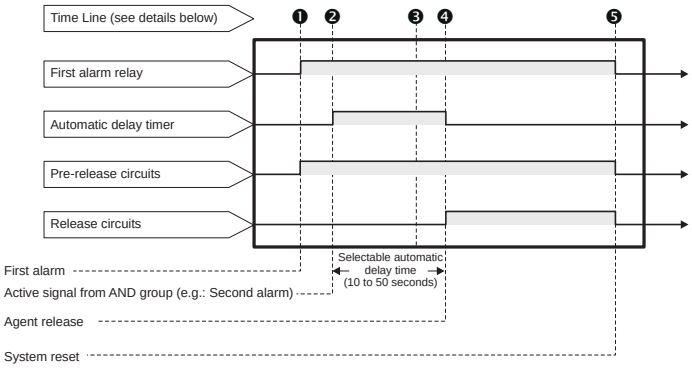
❹ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Automatic Release Sequence

The automatic release sequence requires an AND group (cross zone) or a matrix group (counting zone). AND groups and matrix groups require fire alarm signals from designated Signature Series devices. These logic groups are programmable through a laptop computer and the System Definition Utility (SDU).

Note: EST2 systems do not support matrix groups. See *Programming the SIGA-REL* for AND group rules. To create AND groups and matrix groups, see the *System Programming Manual* and the SDU *Online Help* for your system.

The diagram below outlines the automatic release sequence.



Automatic Release Time Line

❶ A detector signals the first alarm. This event simultaneously activates the:
- First alarm relay
- Pre-release strobe circuit (steady On)
- Pre-release horn circuit (15 pulses per minute)

❷ A detector in the protected area signals a second alarm and meets the AND group conditions.* The automatic delay timer then starts its countdown and the pre-release horn circuit changes to 60 pulses per minute.

* AND group and matrix group conditions depend on programming.

❸ 10 seconds before the automatic delay timer expires, the pre-release (horn) circuit changes to steady On.

❹ The automatic delay timer expires and the release circuits activate.

❺ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Abort Sequences

The SIGA-REL provides four abort modes. Aborts do not terminate the release of fire suppression agents. They merely offer a limited extension of the automatic timer delay period.

Abort Mode 1 (factory default)

If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will continue to run while the abort is active. When the abort switch is restored, the release will occur with the expiration of the automatic delay timer or the abort delay timer, whichever occurs last.

Abort Mode 2

If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort switch is restored, the automatic delay timer will continue from the stop point and the release will occur with the expiration of the timer.

Abort Mode 3

Industrial Risk Insurers (IRI) Mode: To be recognized as valid, the abort must be active when the second alarm is received. When the abort switch is restored, the release will occur with the expiration of the abort delay timer (set for 10 sec).

Abort Mode 4

International applications: If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort switch is restored, the automatic delay timer will reset and commence time from t = 0. The release will occur with the expiration of the timer setting minus 10 seconds.

Compatibility

Sprinkler systems

The SIGA-REL works with two types of sprinkler systems: deluge and pre-action. The primary difference between both systems is the type of sprinkler head (or nozzle) that terminates the pipes. Table1-1 outlines the Factory Mutual Research Corporation (FMRC) requirements for deluge and pre-action systems.

FM approval requirements for deluge and pre-action sprinkler systems

Standby operation	90 hours
Alarm operation	10 minutes
NFPA style	Class A (Style D or E) or Class A (Style 2, 5, 6, or 7)
FMRC documentation	FMRC Approval Guide (Volume 1)

Deluge sprinkler systems

In Deluge sprinkler systems, open-valve sprinkler heads terminate pipes connected to a water supply controlled by a single valve. When the system detects a fire it automatically opens the valve to allow the waterflow through all of the sprinkler heads. Deluge sprinklers are useful for applications that require the simultaneous discharge of water through every sprinkler.

The following fire detection systems meet FRMC requirements for deluge systems:

- Wet pilot sprinkler line
- Dry pilot sprinkler line
- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Pre-action sprinkler systems

In Pre-action sprinkler systems, closed-valve sprinkler heads terminate pipes connected directly to a water supply. The water supply is usually in the same area as the sprinklers and the pipes are supervised for air pressure. Pre-action sprinklers are useful where it is important to prevent the accidental discharge of water.

Warning! Improper applications of fire suppression agents can lead to property damage, injury, or loss of life. Consult the applicable NFPA documents and the authority having jurisdiction (AHJ) for more information.

The following fire detection systems meet FRMC requirements for pre-action systems:

- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Automatic fire extinguishing systems

Automatic fire extinguishing systems automatically detect and extinguish fires. They require no manual input because detectors automatically activate releasing solenoids or sprinkler valves. The table below provides a list of the fire suppression agents and the applicable NFPA documents.

Fire suppression agents and NFPA documentation

Agent	NFPA documentation
Low-expansion foam	NFPA 11
Medium- and high-expansion foam	NFPA 11A
CO2	NFPA 12
Sprinklers	NFPA 13
Water spray	NFPA 15
Foam-water	NFPA 16
Dry chemicals	NFPA 17

The table below outlines the FMRC requirements for automatic fire extinguishing systems.

FM approval requirements for automatic fire extinguishing systems

Standby operation	24 hours
Alarm operation	10 minutes
NFPA style	B or D
FMRC documentation	FMRC Approval Guide (Volume 1)

Compatible panels. The SIGA-REL is compatible with iO Series, EST3 and EST3X fire alarm control panels. You may install the SIGA-REL in any of the following enclosures:

- 2-WB(X) series
- 2-CAB series
- 3-CAB series
- RACCR series
- MFC-A
- APS6A/APS10A

Note: Maintain a 1-inch (25.4 mm) minimum clearance all around the SIGA-REL. The clearance space must also comply with the National Electrical Code.

Power supplies. The SIGA-REL is compatible with the following power supplies:

- 2-PPS(-220)
- 2-PPS/6A(-220)
- SIGA-APS(-220)
- 3-BPS/M
- 3-PPS/M
- BPS6*, BPS10*, APSxA

*Not compatible with FMRC sprinkler applications that require 90 hours of standby.

Solenoid polarizing relays. Use the RELA-EOL with the SIGA-REL. For more information, see the RELA-EOL installation sheet.

Abort stations. The SIGA-REL is only compatible with normally-open, momentary-action abort stations. Abort stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Service disconnect stations. The SIGA-REL is only compatible with service disconnect stations that are normally-closed (minimum 2.0 Amps). Service disconnect stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Releasing solenoid valves. Releasing solenoid valves must be listed with the appropriate agencies in your area. See *Listing agencies*.

Listing agencies. Listing agencies include:

- Factory Mutual Research Corporation (FMRC)
- Underwriters Laboratories, Inc. (UL)
- Underwriters Laboratories Canada (ULC)

Switch Settings

Abort mode and time delay settings are configured by means of dip switches on the module.

Abort mode

	Mode	SW1	SW2	
DEFAULT	1	0	0	*Routines that determine how the abort function interacts with the timers.*
	2	0	1	
	3	1	0	
	4	1	1	

Manual time delay (seconds)

	Delay	SW3	SW4	
	0	0	0	*The length of time that the deluge is inhibited when the releasing function is manually initiated.*
DEFAULT	10	0	1	
	20	1	0	
	30	1	1	

Automatic time delay (seconds)

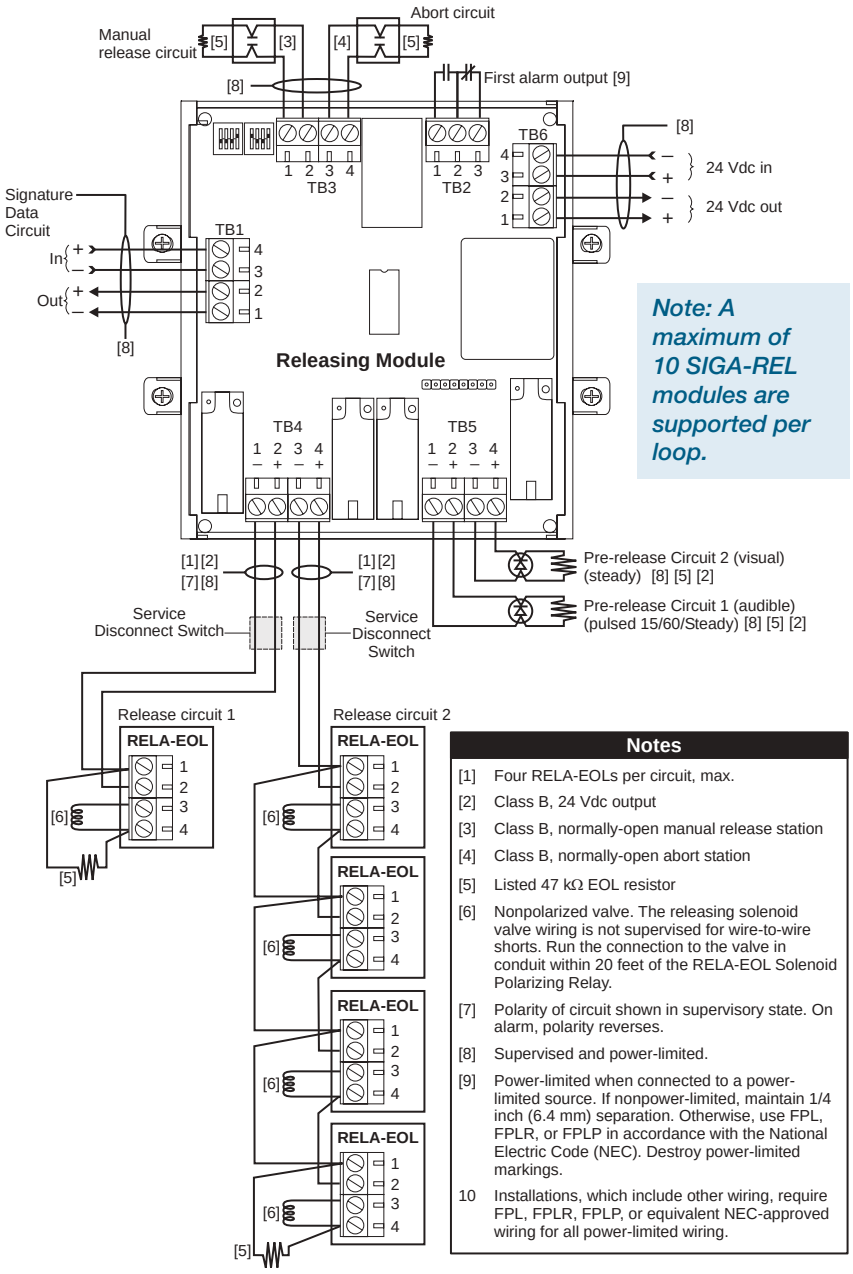
	Delay	SW5	SW6	SW7	
	10	0	0	0	*The length of time that the deluge is inhibited when the releasing function is initiated by the control panel (i.e.: after receiving an alarm).*
	20	0	0	1	
	30	0	1	0	
	40	0	1	1	
DEFAULT	50	1	0	0	

Abort time delay (seconds)

	Delay	SW8	
	0	0	*The length of time that the deluge is inhibited when the abort function is restored (i.e.: cancelled).*
DEFAULT	10	1	

DEFAULT Denotes default settings.

Wiring



Note: A maximum of 10 SIGA-REL modules are supported per loop.

Notes

[1] Four RELA-EOLs per circuit, max.

[2] Class B, 24 Vdc output

[3] Class B, normally-open manual release station

[4] Class B, normally-open abort station

[5] Listed 47 kΩ EOL resistor

[6] Nonpolarized valve. The releasing solenoid valve wiring is not supervised for wire-to-wire shorts. Run the connection to the valve in conduit within 20 feet of the RELA-EOL Solenoid Polarizing Relay.

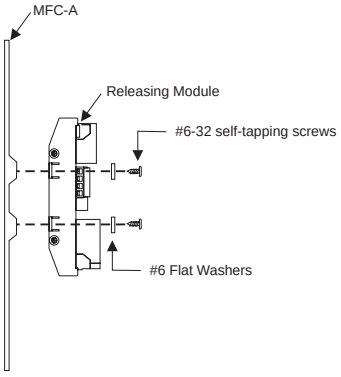
[7] Polarity of circuit shown in supervisory state. On alarm, polarity reverses.

[8] Supervised and power-limited.

[9] Power-limited when connected to a power-limited source. If nonpower-limited, maintain 1/4 inch (6.4 mm) separation. Otherwise, use FPL, FPLR, or FPLP in accordance with the National Electric Code (NEC). Destroy power-limited markings.

10 Installations, which include other wiring, require FPL, FPLR, FPLP, or equivalent NEC-approved wiring for all power-limited wiring.

Mounting

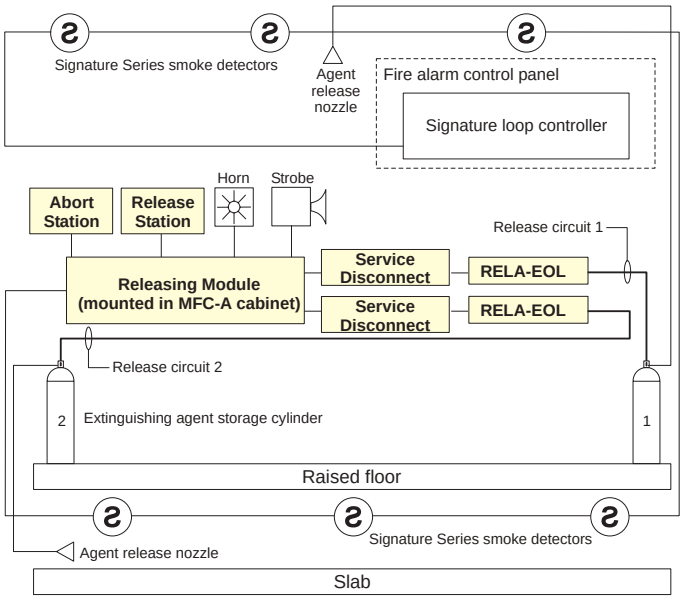


LED Operation

LED	Color	Pattern	Function
DS1	Red	Flashing	Data (alarm conditions)*
DS2	Green	Flashing	Data (normal conditions)*
DS3	Red	Steady	Alarm
DS4	Green	Steady	Power
DS5	Yellow	Steady	Abort
DS6	Yellow	Steady	Trouble
DS7	Red	Steady	Release Active

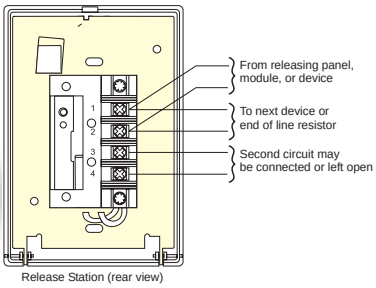
**Note: During a loss of communications, the Releasing Module will go into a standby condition, which will cause DS1 and DS2 to change to a steady pattern during an alarm condition.*

Typical application of SIGA-REL accessories (computer room)



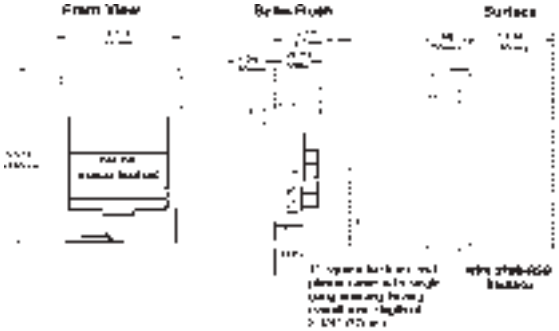
Manual Release Station





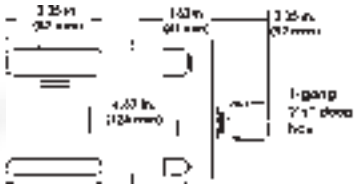
Release Station (rear view)

The manual release station is a normally-open, dry contact signal initiating device. The 276A-REL is a single-action station that requires the user to pull the release handle to initiate the release of a fire suppression agent. The 278A-REL (shown) is a double-action station that requires the user to raise the upper door, then pull the release handle to initiate the release.



Abort Station

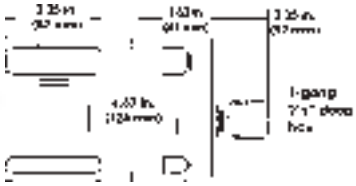




The abort station is a normally-open, non-latching device. It is used to prevent the release of agent into the protected area after the release sequence has begun.

Service Disconnect Switch

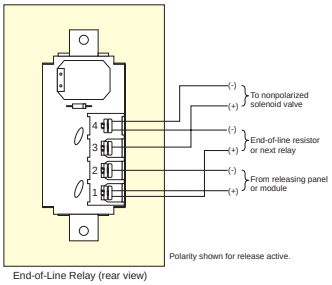




The service disconnect switch is used to temporarily disable the fire suppression system. One switch is installed on each of the two release circuits between the SIGA-REL and the RELA-EOL end-of-line relay. Opening the Service Disconnect Switch allows the fire alarm system to be tested without activating the fire suppression system. The operation of this switch causes a trouble signal at the control panel.

End-of-Line Relay





End-of-Line Relay (rear view)

The End-of-Line Relay facilitates the connection of a non-polarized releasing solenoid to a supervised, polarized releasing circuit. One relay is required per release solenoid.

Module Enclosure



The MFC-A cabinet is UL-listed for use with Signature modules. Shown here with plug-in style I/O modules, the MFC-A also meets UL requirements for spacing and clearance around the SIGA-REL Releasing Module. The cabinet features red epoxy finish with white “FIRE” markings.

Specifications

Power riser	Input voltage Supervisory current Riser input current Alarm	24 Vdc (power limited) 25 mA, max. 4 amps maximum 170 mA min.; 4 A max.
Release circuits	Output rating Valves per circuit Max. supervisory current Nominal supervisory current Supervisory voltage End of line device	2 A @ 24 Vdc (for each circuit) 4 valves, max. 0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm EOL
Pre-release alarm circuits	Output rating Max. supervisory current Nominal supervisory current Supervisory voltage End of line device	2 A @ 24 Vdc (for each circuit) 0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor
Manual release input circuit	Max. supervisory current Nominal supervisory current Supervisory voltage End of line device Circuit type Circuit capacitance	0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor Class B N.O. latching 0.1 µF, max
Abort circuit	Max. supervisory current Nominal supervisory current Supervisory voltage End of line device Circuit type Circuit capacitance	0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor Class B N.O. non- latching 0.1 µF, max
First alarm output relay	Contact rating	3 A @ 24 Vdc (0.6 power factor) Form C
Signature Data line	Operating voltage Supervisory current Alarm current	5.2 to 19.95 Vdc 1000 µA 1000 µA
Environmental condiitions	Operating temperature Storage temperature Humidity	32° F to 120° F (0° C to 49° C) -4° F to 140° F (-20° C to 60° C) 0 to 93% Non-condensing
Wiring Terminals	Suitable for #18 to #12 AWG (2.5 mm² to .75 mm²)	
Type Code	Factory Set	
Addressing Requirements	Uses six module addresses	
Agency Listings	UL, ULC, and FM	
Compatible Solenoids	Must be both UL/ULC-listed and FM-approved	

Note: *Output circuits are power-limited when the riser circuit is power-limited.*

Line Resistance

Power riser

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ohms per wire)
	#12 AWG	2.5 mm²	#14 AWG	1.5 mm²	
4.0	29 ft	8.84 m	20 ft	6.10 m	0.050
3.5	34 ft	10.36 m	23 ft	7.01 m	0.057
3.0	39 ft	11.89 m	27 ft	8.23 m	0.067
2.5	47 ft	14.33 m	32 ft	9.75 m	0.080
2.0	59 ft	17.98 m	40 ft	12.19 m	0.100
1.5	78 ft	23.77 m	53 ft	16.15 m	0.133
1.0	118 ft	35.97 m	80 ft	24.38 m	0.200

Pre-release and release circuits (per circuit)

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ohms per wire)
	#12 AWG	2.5 mm²	#14 AWG	1.5 mm²	
2.00	176 ft	53.64 m	120 ft	36.58 m	0.300
1.75	202 ft	61.57 m	137 ft	41.76 m	0.343
1.50	235 ft	71.63 m	160 ft	48.77 m	0.400
1.25	282 ft	85.95 m	192 ft	58.52 m	0.480
1.0	353 ft	107.59 m	240 ft	73.15 m	0.600
0.50	706 ft	215.19 m	480 ft	146.30 m	1.200

Ordering Information

Model	Description	Ship Wt. lb (kg)
SIGA-REL	Analog addressable releasing module	0.52 (0.23)
276A-REL	Manual releasing station (single-action). English markings, black text on yellow polycarbonate body.	1.0 (0.45)
278A-REL	Manual releasing station (double-action). English markings, black text on yellow polycarbonate body.	1.0 (0.45)
RELA-ABT	Manual Abort Station. English markings, black text on yellow polycarbonate body.	1.0 (0.45)
RELA-SRV-1	Service Disconnect Switch. One n/c contact and one n/o contact. English markings, white text on blue polycarbonate body.	1.0 (0.45)
RELA-EOL	Polarized end-of-line relay. English markings on stainless steel cover.	0.2 (0.1)
MFC-A	UL listed cabinet for mounting releasing modules, red with white “FIRE”. HWD: 8” x 14” x 3½” (203mm x 356mm x 89mm)	7.0 (3.1)

LIFE SAFETY & INCIDENT MANAGEMENT

Contact us...

Email: *edwards.fire@fs.utc.com*
Web: *edwards-fire.com*

1016 Corporate Park Drive
Mebane, NC 27302

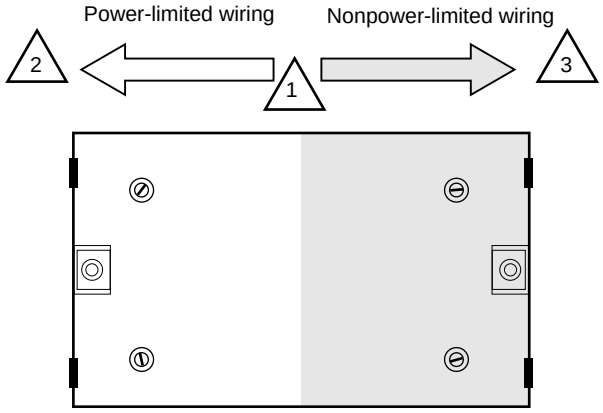
EDWARDS is a registered mark in the United States and other countries.

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Product Description

The MFC(A) enclosure houses remote fire alarm equipment. Four #6x32x ½ standoffs for mounting the enclosure options are included with the MFC(A).

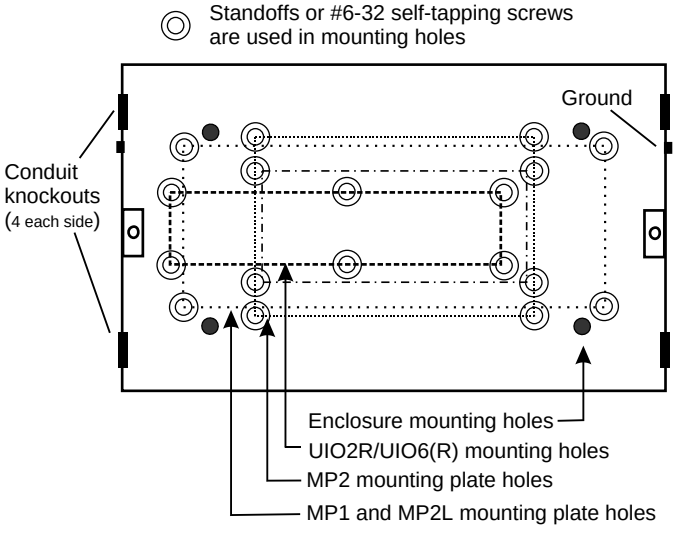
Internal Wiring



Notes

1. Maintain 1/4 in (6.4 mm) separation between power-limited and nonpower-limited wiring.
2. Group all power-limited wiring circuits to the left and route them through the left-hand knockouts.
3. Group all nonpower-limited wiring circuits to the right and route them through the right-hand knockouts.
4. All circuits in the MFC(A) are power-limited when connected to power-limited sources. If nonpower-limited sources are present in the MFC(A), follow the diagram above or use FPL, FPLR, or FPLP, in accordance with the National Electric Code. Eliminate the power-limited markings on all applicable modules.
5. Some applications limit wiring room; therefore, conductors larger than 14 AWG (1.5 mm²) are not recommended.

Mounting Points



Specifications

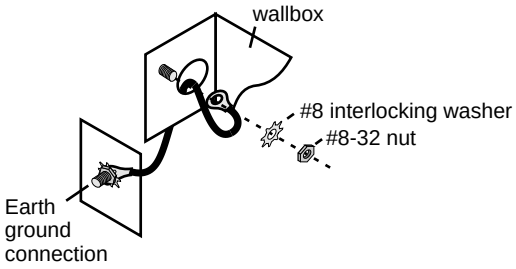
	Height	Width	Depth
Dimensions			
US	8 in	14 in	3.5 in
metric	20.32 cm	35.56 cm	8.89 cm

Door Finish Red textured enamel

Caution

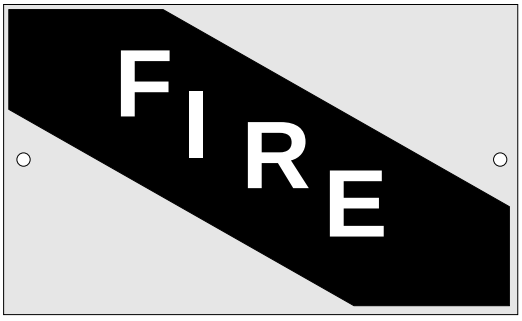
Observe static-sensitive material handling practices.

Earth Ground Connection



Warning

Disconnect power to cabinets before installing or removing components. Failure to do so may result in serious injury or loss of life.



INSTALLATION SHEET:

MFC(A) Accessory Enclosure

INSTALLATION SHEET P/N: 387453	FILE NAME: 387453.CDR
REVISION LEVEL: 1.0	APPROVED BY: K. Patterson
DATE: 05/10/99	CREATED BY: B. Graham

A UNIT OF GENERAL SIGNAL

GS BUILDING SYSTEMS CORPORATION

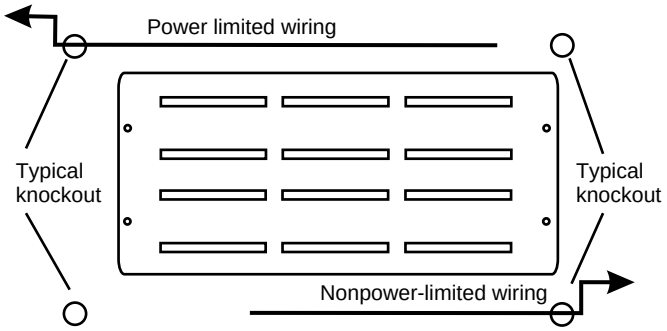
GS BUILDING SYSTEMS CORPORATION

6411 Parkland Drive
Sarasota, FL 34243
USA

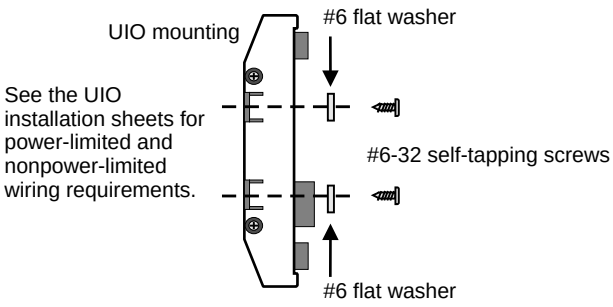
625 6th Street East
Owen Sound, Ontario
Canada N4K 5P8

Installation

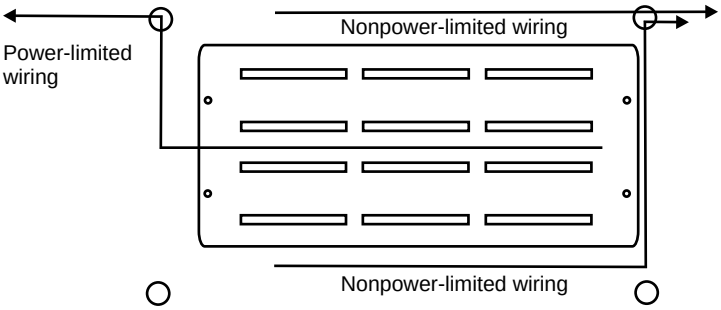
MP1 footprint: conventional modules



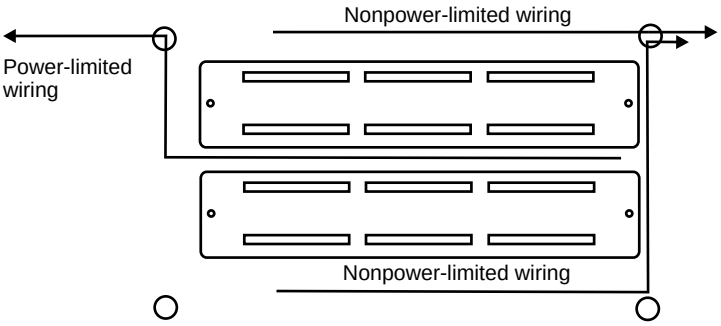
UIO Motherboards



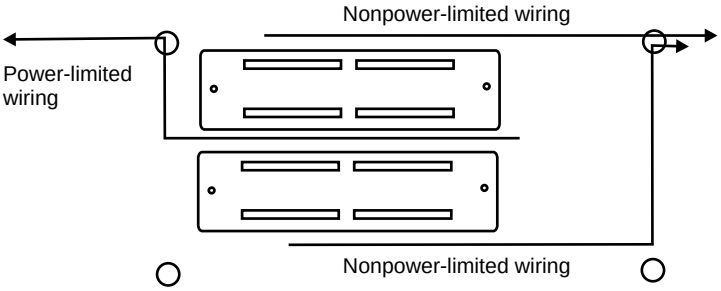
MP1 footprint: Signature Series modules



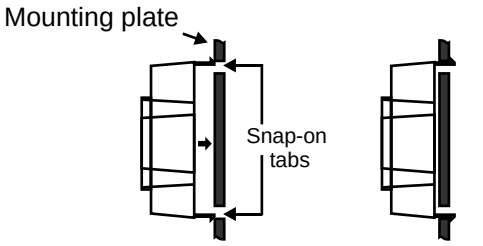
MP2L (half) footprint: Signature Series modules



MP2 (half) footprint: Signature Series modules



Signature series modules



Use standoff's behind mounting plates to provide clearance for snap-on tabs

OFFSET SPEC

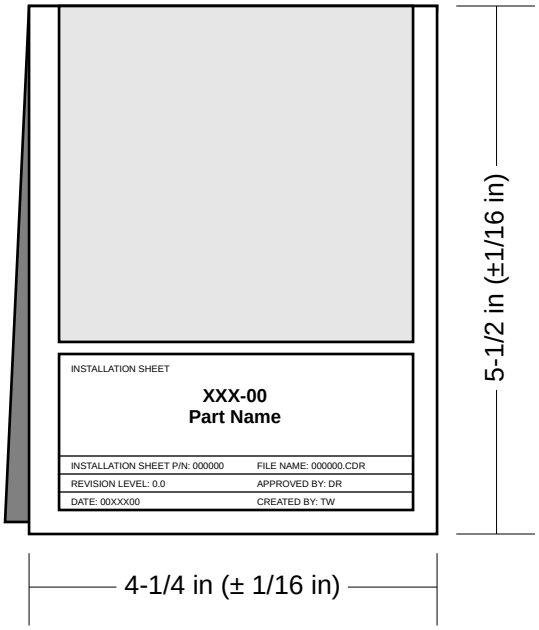
For: letter, portrait, duplex

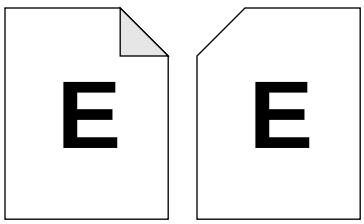
One 8-1/2 in x 11 in sheet printed on both sides.

Material is standard white offset stock.

Characters are black on white background.

Fold two times to the dimensions shown, with the part number on the outside.





INSTALLATION SHEET:

MFC(A)
Accessory Enclosure

INSTALLATION SHEET P/N: 387453	FILE NAME: 387453.CDR
REVISION LEVEL: 1.0	APPROVED BY: K. Patterson
DATE: 05/10/99	CREATED BY: B. Graham

ECN: 98-0334

EDWARDS
United Technologies
LIFE SAFETY & INCIDENT MANAGEMENT

Releasing Module
SIGA-REL



Patented

FM APPROVED 7300-1657: 0205
S3424

Overview

The SIGA-REL is an analog addressable module that communicates directly with the fire alarm panel Signature loop controller. The SIGA-REL controls sprinkler, pre-action and deluge systems, and may also be used to release extinguishing agents such as CO_2, Halon, or foam. The module is easily configured in the field and offers a wide range of options that ensure dependable service, while preventing the unnecessary release of extinguishing agent.

In addition to being an intelligent network component, the SIGA-REL interfaces with a number of conventional devices. These provide manual actuation of abort, release, and service disconnect functions. Together with the SIGA-REL, they comprise a complete fire suppression package. There is no need for a separate releasing panel because the SIGA-REL takes full advantage of the existing control panel communications infrastructure. This ensures low-cost installations with all the benefits of Signature Series analog initiation and control.

Seven on-board circuits provide added flexibility. Each SIGA-REL hosts:

- Two supervised Class B release circuits
- Two supervised Class B pre-release NACs
- One supervised Class B manual release input circuit (latching)
- One supervised Class B abort circuit for normally-open abort switch (non-latching)
- One first alarm output relay (Form C contact)

The SIGA-REL also includes a series of built-in timers that determine the duration of abort routines and release sequences. These timers are easily configured in the field and provide a highly flexible range of options.

Standard Features

- **Ideal for sprinkler, pre-action and deluge systems**
  Suitable a wide range of sprinkler applications and extinguishing agents such as CO2 and Halon.
- **Built-in timers**
  Selectable durations for abort, manual, and automatic delays.
- **Four abort modes**
  Field-configurable abort routines determine how the timers operate when the abort function is initiated.
- **Supervised circuitry you can rely on**
  Two Class B release circuits and two pre-release circuits provided.
- **Manual operation keeps ultimate control in plain view**
  The SIGA-REL features a manual release input circuit as well as a manual abort input circuit.
- **Fully automated response leaves nothing to chance**
  This module's Form C relay is ideal for room preparation routines.
- **Automatic device mapping simplifies installation**
  Signature modules transmit directly to the loop controller their circuit locations with respect to other Signature devices on the wire loop.

Application

Understanding fire suppression

Fire suppression today is an important part of a growing number of life safety installations. With an ever-increasing reliance on mission-critical computer systems and record high capital investment in high-tech production facilities, businesses large and small are looking for a means of protecting their investments and ensuring a fire won't cripple their operations.

While fire detection remains the first line of defense against the risks of fire to people, building owners are looking to fire suppression as a means of protecting their property and assets.

But it's a well known fact that fire suppression is a double-edged sword: water can snuff out a mission-critical computer system as easily as it can a fire. Alternatives to water, including carbon dioxide and other extinguishing agents can endanger lives, while the release of even the most inert extinguishing agents can disrupt operations and cost millions of dollars in down-time and lost production.

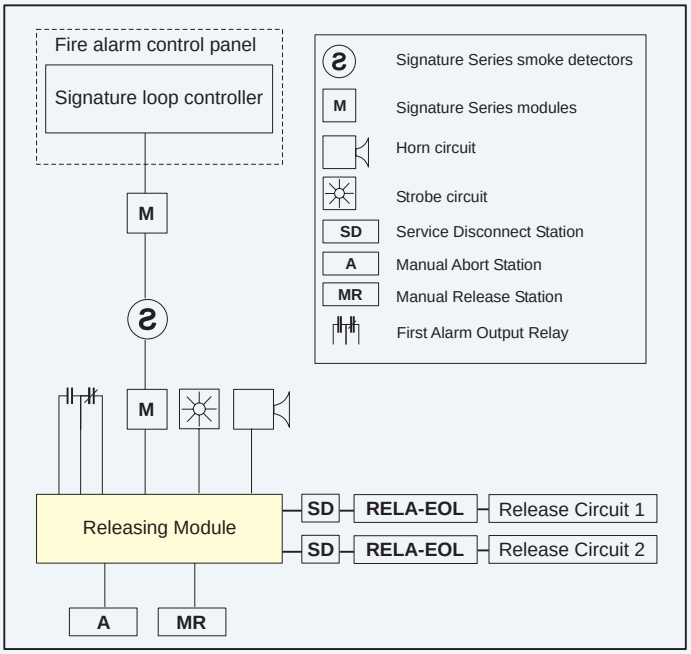
A primary goal of any fire suppression system is to prevent the release of extinguishing agent unless it is absolutely necessary. There is no margin for error. But no matter what measures are taken to prevent the unwanted release of extinguishing agent, the fact remains that no suppression system is any better than the detectors it relies on for input. The foundation of an effective suppression system, therefore, rests firmly on the quality and reliability of its smoke detectors.

Signature Series detectors form an integral part of the suppression system built around the SIGA-REL releasing module. These detectors provide unsurpassed reliability and immunity from false alarms. The SIGA-REL is engineered to the same exacting standards of quality and performance. With a robust set of features designed to eliminate any unwanted release of extinguishing agent, the SIGA-REL provides all the benefits of a dedicated releasing panel without the extra expense, and equally important, all the proven advantages of the Signature Series family of products.

Understanding the SIGA-REL

The SIGA-REL Releasing Module is a network component that provides control for fire suppression routines. It fulfils much the same purpose as a standalone releasing panel, but supports Signature Series detectors as an integral part of the suppression system. The SIGA-REL is easy to set up and accepts programming via the control panel's SDU Rules Editor.

The diagram below represents typical application of the SIGA-REL. The explanations that follow summarize each element of the module.



Release Circuits. The SIGA-REL includes two supervised release circuits, each of which provides fire suppression control to different areas of a protected space. The releasing circuits actuate solenoids on the suppression agent tanks according to pre-defined release routines. These solenoids release the agent into the protected area. Both circuits operate together.

First Alarm Relay. This on-board relay provides a Form C contact that activates at the first alarm input or manual release. The relay is typically used for room preparation such as controlling fans and dampers in advance of the release of suppression agent.

Pre-release. Pre-release circuits are used to provide power to notification appliances located within the protected are. Two supervised pre-release circuits are provided: one (steady) for visual notification appliances, and one (pulsed) for audible notification appliances. The pre-release circuits activate with the start of the automatic delay timer.

Manual Release. The manual release circuit is used to activate the suppression system by means of a connected normally-open release station. This initiates the manual release sequence according to a pre-defined routine. The manual release circuit is supervised and latching. Input from this circuit is processed at the module – communication with the control panel is not necessary.

Abort. The abort circuit is used to prevent the release of agent into the protected area after the release sequence has begun, but before the automatic delay timer expires. A connected normally-open release station provides manual control over this circuit. The abort circuit is supervised and non-latching.

Service Disconnect. The service disconnect switch is used to temporarily disable the fire suppression system. There is no dedicated circuit for this switch. Instead, it is installed on both release circuits between the SIGA-REL and the RELA-EOL end-of-line relay. Opening the Service Disconnect Switch allows the fire alarm system to be tested without activating the fire suppression system. The operation of this switch causes a trouble signal at the control panel.

Data. The Signature data circuit provides an input and an output to the data loop that communicates with the Signature loop controller at the control panel. The SIGA-REL resides on the same data loop as the Signature Series detectors that initiate the automatic release sequence. This close association offers the most reliable performance and ensures compliance with prevailing life safety codes.

Power. The SIGA-REL requires 24 Vdc (power limited). See the specification table for details.

Operation

The SIGA-REL has several built-in safeguards to prevent the unwanted release of extinguishing agent. All release sequences are subject to configurable delay timers that provide the opportunity for an occupant of the area to manually abort the release sequence. If no abort signal is received before the delay timer expires, the suppression agent is released.

The SIGA-REL includes three delay timers: one for manual release sequences (up to 30 seconds); one for automatic release sequences (up to 50 seconds); and one for abort sequences (10 seconds).

Note: Misapplication of the SIGA-REL can have serious consequences. Descriptions provided here are for information only, are subject to change, and should not be used as a guide to field installation of equipment. Always consult the SIGA-REL installation manual when setting up or configuring this component.

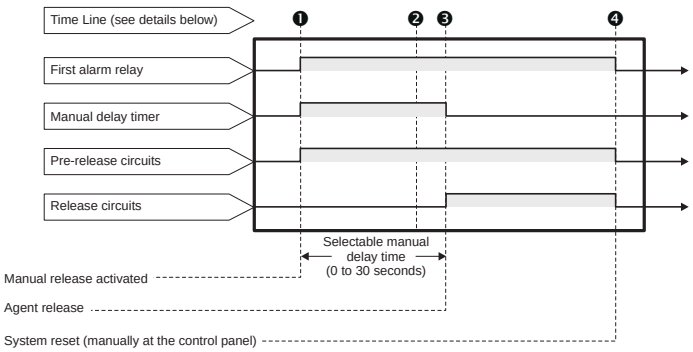
Normal State

In its normal operating state the SIGA-REL supervises both of its release circuits and both of its pre-release NAC circuits for faults. Should a short or open occur on any of these circuits, a Trouble condition is reported to the control panel.

A trouble condition on any of these circuits may prevent the operation of that circuit, but it won't inhibit the operation of any other fault-free circuit.

Manual Release Sequence

The operation of a manual release station initiates the manual release sequence. The diagram below outlines the manual release sequence.



Note: *A manual release sequence cannot be aborted.*

Manual Release Time Line

❶ An active manual release station disables automatic operation and the abort function and simultaneously activates the:
- Manual delay timer
- Pre-release circuit
- Pre-release strobe circuit (steady On)
- Pre-release horn circuit (60 pulses per minute)

❷ Ten seconds before the expiration of the manual delay timer, the pre-release horn changes from 60 pulses per minute to steady On.

❸ The manual delay timer expires and the release circuits activate.

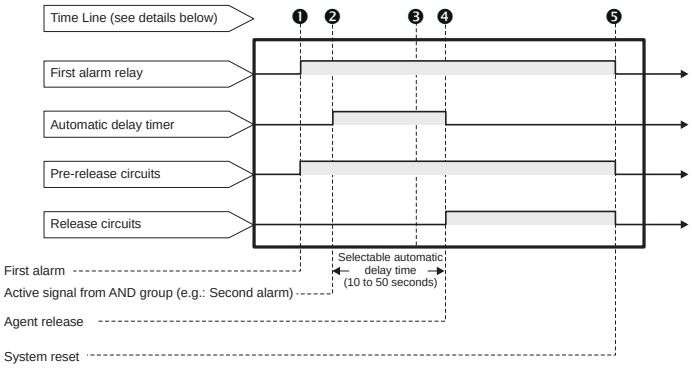
❹ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Automatic Release Sequence

The automatic release sequence requires an AND group (cross zone) or a matrix group (counting zone). AND groups and matrix groups require fire alarm signals from designated Signature Series devices. These logic groups are programmable through a laptop computer and the System Definition Utility (SDU).

Note: EST2 systems do not support matrix groups. See *Programming the SIGA-REL* for AND group rules. To create AND groups and matrix groups, see the *System Programming Manual* and the SDU *Online Help* for your system.

The diagram below outlines the automatic release sequence.



Automatic Release Time Line

❶ A detector signals the first alarm. This event simultaneously activates the:
- First alarm relay
- Pre-release strobe circuit (steady On)
- Pre-release horn circuit (15 pulses per minute)

❷ A detector in the protected area signals a second alarm and meets the AND group conditions.* The automatic delay timer then starts its countdown and the pre-release horn circuit changes to 60 pulses per minute.

* AND group and matrix group conditions depend on programming.

❸ 10 seconds before the automatic delay timer expires, the pre-release (horn) circuit changes to steady On.

❹ The automatic delay timer expires and the release circuits activate.

❺ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Abort Sequences

The SIGA-REL provides four abort modes. Aborts do not terminate the release of fire suppression agents. They merely offer a limited extension of the automatic timer delay period.

Abort Mode 1 (factory default)

If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will continue to run while the abort is active. When the abort switch is restored, the release will occur with the expiration of the automatic delay timer or the abort delay timer, whichever occurs last.

Abort Mode 2

If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort switch is restored, the automatic delay timer will continue from the stop point and the release will occur with the expiration of the timer.

Abort Mode 3

Industrial Risk Insurers (IRI) Mode: To be recognized as valid, the abort must be active when the second alarm is received. When the abort switch is restored, the release will occur with the expiration of the abort delay timer (set for 10 sec).

Abort Mode 4

International applications: If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort switch is restored, the automatic delay timer will reset and commence time from t = 0. The release will occur with the expiration of the timer setting minus 10 seconds.

Compatibility

Sprinkler systems

The SIGA-REL works with two types of sprinkler systems: deluge and pre-action. The primary difference between both systems is the type of sprinkler head (or nozzle) that terminates the pipes. Table1-1 outlines the Factory Mutual Research Corporation (FMRC) requirements for deluge and pre-action systems.

FM approval requirements for deluge and pre-action sprinkler systems

Standby operation	90 hours
Alarm operation	10 minutes
NFPA style	Class A (Style D or E) or Class A (Style 2, 5, 6, or 7)
FMRC documentation	FMRC Approval Guide (Volume 1)

Deluge sprinkler systems

In Deluge sprinkler systems, open-valve sprinkler heads terminate pipes connected to a water supply controlled by a single valve. When the system detects a fire it automatically opens the valve to allow the waterflow through all of the sprinkler heads. Deluge sprinklers are useful for applications that require the simultaneous discharge of water through every sprinkler.

The following fire detection systems meet FRMC requirements for deluge systems:

- Wet pilot sprinkler line
- Dry pilot sprinkler line
- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Pre-action sprinkler systems

In Pre-action sprinkler systems, closed-valve sprinkler heads terminate pipes connected directly to a water supply. The water supply is usually in the same area as the sprinklers and the pipes are supervised for air pressure. Pre-action sprinklers are useful where it is important to prevent the accidental discharge of water.

Warning! Improper applications of fire suppression agents can lead to property damage, injury, or loss of life. Consult the applicable NFPA documents and the authority having jurisdiction (AHJ) for more information.

The following fire detection systems meet FRMC requirements for pre-action systems:

- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Automatic fire extinguishing systems

Automatic fire extinguishing systems automatically detect and extinguish fires. They require no manual input because detectors automatically activate releasing solenoids or sprinkler valves. The table below provides a list of the fire suppression agents and the applicable NFPA documents.

Fire suppression agents and NFPA documentation

Agent	NFPA documentation
Low-expansion foam	NFPA 11
Medium- and high-expansion foam	NFPA 11A
CO2	NFPA 12
Sprinklers	NFPA 13
Water spray	NFPA 15
Foam-water	NFPA 16
Dry chemicals	NFPA 17

The table below outlines the FMRC requirements for automatic fire extinguishing systems.

FM approval requirements for automatic fire extinguishing systems

Standby operation	24 hours
Alarm operation	10 minutes
NFPA style	B or D
FMRC documentation	FMRC Approval Guide (Volume 1)

Compatible panels. The SIGA-REL is compatible with iO Series, EST3 and EST3X fire alarm control panels. You may install the SIGA-REL in any of the following enclosures:

- 2-WB(X) series
- 2-CAB series
- 3-CAB series
- RACCR series
- MFC-A
- APS6A/APS10A

Note: Maintain a 1-inch (25.4 mm) minimum clearance all around the SIGA-REL. The clearance space must also comply with the National Electrical Code.

Power supplies. The SIGA-REL is compatible with the following power supplies:

- 2-PPS(-220)
- 2-PPS/6A(-220)
- SIGA-APS(-220)
- 3-BPS/M
- 3-PPS/M
- BPS6*, BPS10*, APSxA

*Not compatible with FMRC sprinkler applications that require 90 hours of standby.

Solenoid polarizing relays. Use the RELA-EOL with the SIGA-REL. For more information, see the RELA-EOL installation sheet.

Abort stations. The SIGA-REL is only compatible with normally-open, momentary-action abort stations. Abort stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Service disconnect stations. The SIGA-REL is only compatible with service disconnect stations that are normally-closed (minimum 2.0 Amps). Service disconnect stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Releasing solenoid valves. Releasing solenoid valves must be listed with the appropriate agencies in your area. See *Listing agencies*.

Listing agencies. Listing agencies include:

- Factory Mutual Research Corporation (FMRC)
- Underwriters Laboratories, Inc. (UL)
- Underwriters Laboratories Canada (ULC)

Switch Settings

Abort mode and time delay settings are configured by means of dip switches on the module.

Abort mode

	Mode	SW1	SW2	
DEFAULT	1	0	0	*Routines that determine how the abort function interacts with the timers.*
	2	0	1	
	3	1	0	
	4	1	1	

Manual time delay (seconds)

	Delay	SW3	SW4	
	0	0	0	*The length of time that the deluge is inhibited when the releasing function is manually initiated.*
DEFAULT	10	0	1	
	20	1	0	
	30	1	1	

Automatic time delay (seconds)

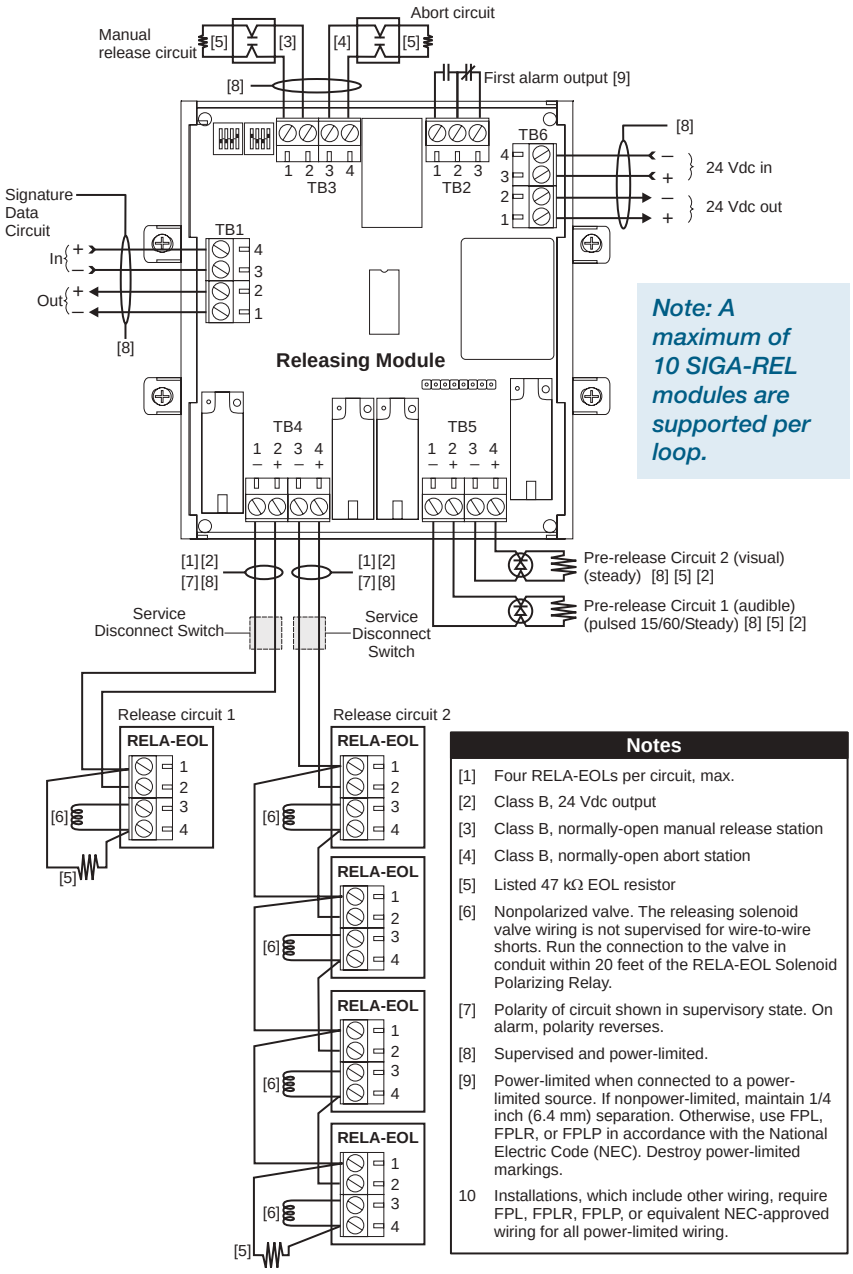
	Delay	SW5	SW6	SW7	
	10	0	0	0	*The length of time that the deluge is inhibited when the releasing function is initiated by the control panel (i.e.: after receiving an alarm).*
	20	0	0	1	
	30	0	1	0	
	40	0	1	1	
DEFAULT	50	1	0	0	

Abort time delay (seconds)

	Delay	SW8	
	0	0	*The length of time that the deluge is inhibited when the abort function is restored (i.e.: cancelled).*
DEFAULT	10	1	

DEFAULT Denotes default settings.

Wiring



Note: A maximum of 10 SIGA-REL modules are supported per loop.

Notes

[1] Four RELA-EOLs per circuit, max.

[2] Class B, 24 Vdc output

[3] Class B, normally-open manual release station

[4] Class B, normally-open abort station

[5] Listed 47 kΩ EOL resistor

[6] Nonpolarized valve. The releasing solenoid valve wiring is not supervised for wire-to-wire shorts. Run the connection to the valve in conduit within 20 feet of the RELA-EOL Solenoid Polarizing Relay.

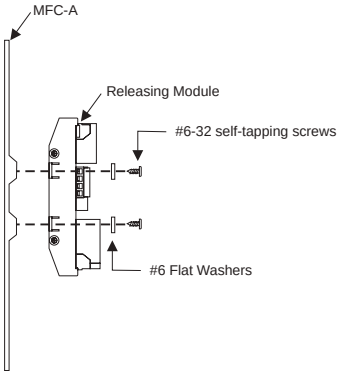
[7] Polarity of circuit shown in supervisory state. On alarm, polarity reverses.

[8] Supervised and power-limited.

[9] Power-limited when connected to a power-limited source. If nonpower-limited, maintain 1/4 inch (6.4 mm) separation. Otherwise, use FPL, FPLR, or FPLP in accordance with the National Electric Code (NEC). Destroy power-limited markings.

10 Installations, which include other wiring, require FPL, FPLR, FPLP, or equivalent NEC-approved wiring for all power-limited wiring.

Mounting

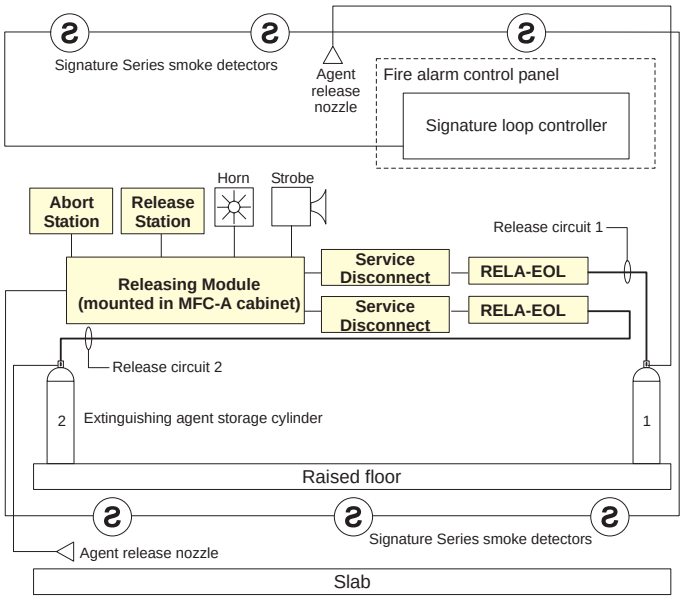


LED Operation

LED	Color	Pattern	Function
DS1	Red	Flashing	Data (alarm conditions)*
DS2	Green	Flashing	Data (normal conditions)*
DS3	Red	Steady	Alarm
DS4	Green	Steady	Power
DS5	Yellow	Steady	Abort
DS6	Yellow	Steady	Trouble
DS7	Red	Steady	Release Active

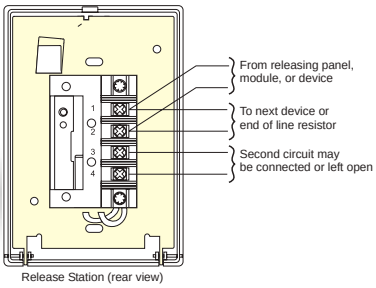
**Note: During a loss of communications, the Releasing Module will go into a standby condition, which will cause DS1 and DS2 to change to a steady pattern during an alarm condition.*

Typical application of SIGA-REL accessories (computer room)



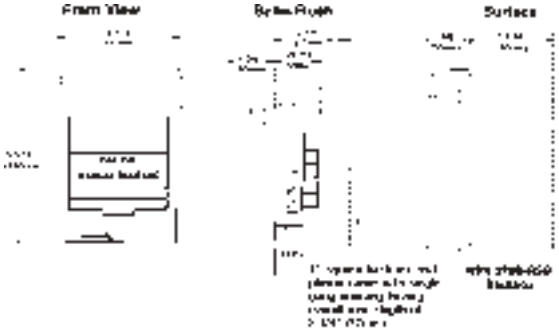
Manual Release Station





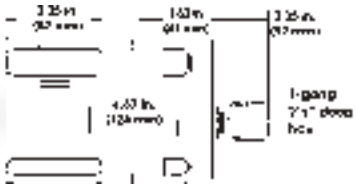
Release Station (rear view)

The manual release station is a normally-open, dry contact signal initiating device. The 276A-REL is a single-action station that requires the user to pull the release handle to initiate the release of a fire suppression agent. The 278A-REL (shown) is a double-action station that requires the user to raise the upper door, then pull the release handle to initiate the release.



Abort Station

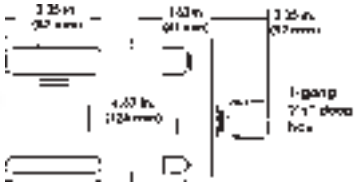




The abort station is a normally-open, non-latching device. It is used to prevent the release of agent into the protected area after the release sequence has begun.

Service Disconnect Switch

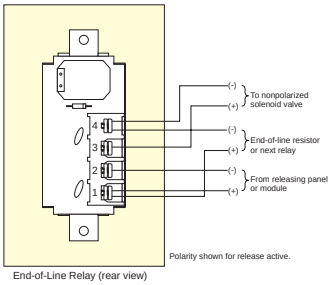




The service disconnect switch is used to temporarily disable the fire suppression system. One switch is installed on each of the two release circuits between the SIGA-REL and the RELA-EOL end-of-line relay. Opening the Service Disconnect Switch allows the fire alarm system to be tested without activating the fire suppression system. The operation of this switch causes a trouble signal at the control panel.

End-of-Line Relay





End-of-Line Relay (rear view)

The End-of-Line Relay facilitates the connection of a non-polarized releasing solenoid to a supervised, polarized releasing circuit. One relay is required per release solenoid.

Module Enclosure



The MFC-A cabinet is UL-listed for use with Signature modules. Shown here with plug-in style I/O modules, the MFC-A also meets UL requirements for spacing and clearance around the SIGA-REL Releasing Module. The cabinet features red epoxy finish with white “FIRE” markings.

Specifications

Power riser	Input voltage Supervisory current Riser input current Alarm	24 Vdc (power limited) 25 mA, max. 4 amps maximum 170 mA min.; 4 A max.
Release circuits	Output rating Valves per circuit Max. supervisory current Nominal supervisory current Supervisory voltage End of line device	2 A @ 24 Vdc (for each circuit) 4 valves, max. 0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm EOL
Pre-release alarm circuits	Output rating Max. supervisory current Nominal supervisory current Supervisory voltage End of line device	2 A @ 24 Vdc (for each circuit) 0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor
Manual release input circuit	Max. supervisory current Nominal supervisory current Supervisory voltage End of line device Circuit type Circuit capacitance	0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor Class B N.O. latching 0.1 µF, max
Abort circuit	Max. supervisory current Nominal supervisory current Supervisory voltage End of line device Circuit type Circuit capacitance	0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor Class B N.O. non- latching 0.1 µF, max
First alarm output relay	Contact rating	3 A @ 24 Vdc (0.6 power factor) Form C
Signature Data line	Operating voltage Supervisory current Alarm current	5.2 to 19.95 Vdc 1000 µA 1000 µA
Environmental condiitions	Operating temperature Storage temperature Humidity	32° F to 120° F (0° C to 49° C) -4° F to 140° F (-20° C to 60° C) 0 to 93% Non-condensing
Wiring Terminals	Suitable for #18 to #12 AWG (2.5 mm² to .75 mm²)	
Type Code	Factory Set	
Addressing Requirements	Uses six module addresses	
Agency Listings	UL, ULC, and FM	
Compatible Solenoids	Must be both UL/ULC-listed and FM-approved	

Note: *Output circuits are power-limited when the riser circuit is power-limited.*

Line Resistance

Power riser

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ohms per wire)
	#12 AWG	2.5 mm²	#14 AWG	1.5 mm²	
4.0	29 ft	8.84 m	20 ft	6.10 m	0.050
3.5	34 ft	10.36 m	23 ft	7.01 m	0.057
3.0	39 ft	11.89 m	27 ft	8.23 m	0.067
2.5	47 ft	14.33 m	32 ft	9.75 m	0.080
2.0	59 ft	17.98 m	40 ft	12.19 m	0.100
1.5	78 ft	23.77 m	53 ft	16.15 m	0.133
1.0	118 ft	35.97 m	80 ft	24.38 m	0.200

Pre-release and release circuits (per circuit)

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ohms per wire)
	#12 AWG	2.5 mm²	#14 AWG	1.5 mm²	
2.00	176 ft	53.64 m	120 ft	36.58 m	0.300
1.75	202 ft	61.57 m	137 ft	41.76 m	0.343
1.50	235 ft	71.63 m	160 ft	48.77 m	0.400
1.25	282 ft	85.95 m	192 ft	58.52 m	0.480
1.0	353 ft	107.59 m	240 ft	73.15 m	0.600
0.50	706 ft	215.19 m	480 ft	146.30 m	1.200

Ordering Information

Model	Description	Ship Wt. lb (kg)
SIGA-REL	Analog addressable releasing module	0.52 (0.23)
276A-REL	Manual releasing station (single-action). English markings, black text on yellow polycarbonate body.	1.0 (0.45)
278A-REL	Manual releasing station (double-action). English markings, black text on yellow polycarbonate body.	1.0 (0.45)
RELA-ABT	Manual Abort Station. English markings, black text on yellow polycarbonate body.	1.0 (0.45)
RELA-SRV-1	Service Disconnect Switch. One n/c contact and one n/o contact. English markings, white text on blue polycarbonate body.	1.0 (0.45)
RELA-EOL	Polarized end-of-line relay. English markings on stainless steel cover.	0.2 (0.1)
MFC-A	UL listed cabinet for mounting releasing modules, red with white “FIRE”. HWD: 8” x 14” x 3½” (203mm x 356mm x 89mm)	7.0 (3.1)

LIFE SAFETY & INCIDENT MANAGEMENT

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Releasing Module
SIGA-REL



Patented

FM APPROVED 7300-1657: 0205
S3424

Overview

The SIGA-REL is an analog addressable module that communicates directly with the fire alarm panel Signature loop controller. The SIGA-REL controls sprinkler, pre-action and deluge systems, and may also be used to release extinguishing agents such as CO_2, Halon, or foam. The module is easily configured in the field and offers a wide range of options that ensure dependable service, while preventing the unnecessary release of extinguishing agent.

In addition to being an intelligent network component, the SIGA-REL interfaces with a number of conventional devices. These provide manual actuation of abort, release, and service disconnect functions. Together with the SIGA-REL, they comprise a complete fire suppression package. There is no need for a separate releasing panel because the SIGA-REL takes full advantage of the existing control panel communications infrastructure. This ensures low-cost installations with all the benefits of Signature Series analog initiation and control.

Seven on-board circuits provide added flexibility. Each SIGA-REL hosts:

- Two supervised Class B release circuits
- Two supervised Class B pre-release NACs
- One supervised Class B manual release input circuit (latching)
- One supervised Class B abort circuit for normally-open abort switch (non-latching)
- One first alarm output relay (Form C contact)

The SIGA-REL also includes a series of built-in timers that determine the duration of abort routines and release sequences. These timers are easily configured in the field and provide a highly flexible range of options.

Standard Features

- **Ideal for sprinkler, pre-action and deluge systems**
  Suitable a wide range of sprinkler applications and extinguishing agents such as CO2 and Halon.
- **Built-in timers**
  Selectable durations for abort, manual, and automatic delays.
- **Four abort modes**
  Field-configurable abort routines determine how the timers operate when the abort function is initiated.
- **Supervised circuitry you can rely on**
  Two Class B release circuits and two pre-release circuits provided.
- **Manual operation keeps ultimate control in plain view**
  The SIGA-REL features a manual release input circuit as well as a manual abort input circuit.
- **Fully automated response leaves nothing to chance**
  This module's Form C relay is ideal for room preparation routines.
- **Automatic device mapping simplifies installation**
  Signature modules transmit directly to the loop controller their circuit locations with respect to other Signature devices on the wire loop.

Application

Understanding fire suppression

Fire suppression today is an important part of a growing number of life safety installations. With an ever-increasing reliance on mission-critical computer systems and record high capital investment in high-tech production facilities, businesses large and small are looking for a means of protecting their investments and ensuring a fire won't cripple their operations.

While fire detection remains the first line of defense against the risks of fire to people, building owners are looking to fire suppression as a means of protecting their property and assets.

But it's a well known fact that fire suppression is a double-edged sword: water can snuff out a mission-critical computer system as easily as it can a fire. Alternatives to water, including carbon dioxide and other extinguishing agents can endanger lives, while the release of even the most inert extinguishing agents can disrupt operations and cost millions of dollars in down-time and lost production.

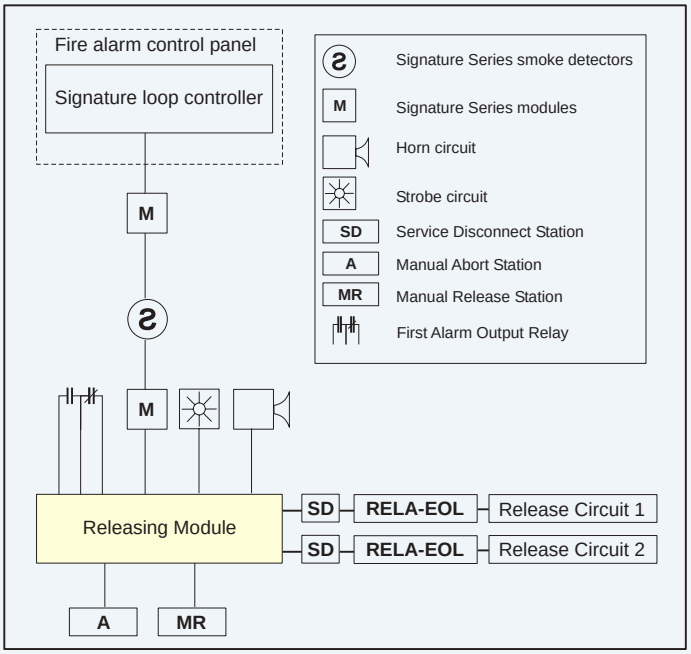
A primary goal of any fire suppression system is to prevent the release of extinguishing agent unless it is absolutely necessary. There is no margin for error. But no matter what measures are taken to prevent the unwanted release of extinguishing agent, the fact remains that no suppression system is any better than the detectors it relies on for input. The foundation of an effective suppression system, therefore, rests firmly on the quality and reliability of its smoke detectors.

Signature Series detectors form an integral part of the suppression system built around the SIGA-REL releasing module. These detectors provide unsurpassed reliability and immunity from false alarms. The SIGA-REL is engineered to the same exacting standards of quality and performance. With a robust set of features designed to eliminate any unwanted release of extinguishing agent, the SIGA-REL provides all the benefits of a dedicated releasing panel without the extra expense, and equally important, all the proven advantages of the Signature Series family of products.

Understanding the SIGA-REL

The SIGA-REL Releasing Module is a network component that provides control for fire suppression routines. It fulfils much the same purpose as a standalone releasing panel, but supports Signature Series detectors as an integral part of the suppression system. The SIGA-REL is easy to set up and accepts programming via the control panel's SDU Rules Editor.

The diagram below represents typical application of the SIGA-REL. The explanations that follow summarize each element of the module.



Release Circuits. The SIGA-REL includes two supervised release circuits, each of which provides fire suppression control to different areas of a protected space. The releasing circuits actuate solenoids on the suppression agent tanks according to pre-defined release routines. These solenoids release the agent into the protected area. Both circuits operate together.

First Alarm Relay. This on-board relay provides a Form C contact that activates at the first alarm input or manual release. The relay is typically used for room preparation such as controlling fans and dampers in advance of the release of suppression agent.

Pre-release. Pre-release circuits are used to provide power to notification appliances located within the protected are. Two supervised pre-release circuits are provided: one (steady) for visual notification appliances, and one (pulsed) for audible notification appliances. The pre-release circuits activate with the start of the automatic delay timer.

Manual Release. The manual release circuit is used to activate the suppression system by means of a connected normally-open release station. This initiates the manual release sequence according to a pre-defined routine. The manual release circuit is supervised and latching. Input from this circuit is processed at the module – communication with the control panel is not necessary.

Abort. The abort circuit is used to prevent the release of agent into the protected area after the release sequence has begun, but before the automatic delay timer expires. A connected normally-open release station provides manual control over this circuit. The abort circuit is supervised and non-latching.

Service Disconnect. The service disconnect switch is used to temporarily disable the fire suppression system. There is no dedicated circuit for this switch. Instead, it is installed on both release circuits between the SIGA-REL and the RELA-EOL end-of-line relay. Opening the Service Disconnect Switch allows the fire alarm system to be tested without activating the fire suppression system. The operation of this switch causes a trouble signal at the control panel.

Data. The Signature data circuit provides an input and an output to the data loop that communicates with the Signature loop controller at the control panel. The SIGA-REL resides on the same data loop as the Signature Series detectors that initiate the automatic release sequence. This close association offers the most reliable performance and ensures compliance with prevailing life safety codes.

Power. The SIGA-REL requires 24 Vdc (power limited). See the specification table for details.

Operation

The SIGA-REL has several built-in safeguards to prevent the unwanted release of extinguishing agent. All release sequences are subject to configurable delay timers that provide the opportunity for an occupant of the area to manually abort the release sequence. If no abort signal is received before the delay timer expires, the suppression agent is released.

The SIGA-REL includes three delay timers: one for manual release sequences (up to 30 seconds); one for automatic release sequences (up to 50 seconds); and one for abort sequences (10 seconds).

Note: Misapplication of the SIGA-REL can have serious consequences. Descriptions provided here are for information only, are subject to change, and should not be used as a guide to field installation of equipment. Always consult the SIGA-REL installation manual when setting up or configuring this component.

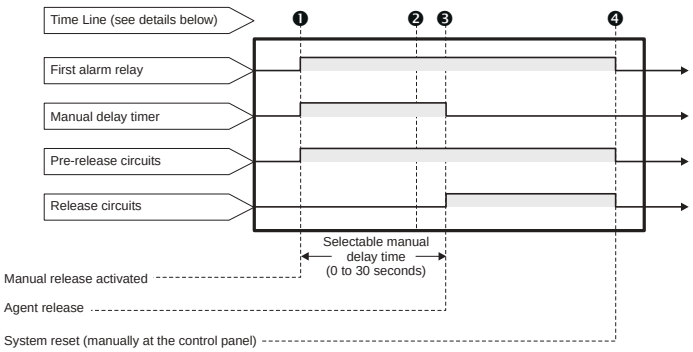
Normal State

In its normal operating state the SIGA-REL supervises both of its release circuits and both of its pre-release NAC circuits for faults. Should a short or open occur on any of these circuits, a Trouble condition is reported to the control panel.

A trouble condition on any of these circuits may prevent the operation of that circuit, but it won't inhibit the operation of any other fault-free circuit.

Manual Release Sequence

The operation of a manual release station initiates the manual release sequence. The diagram below outlines the manual release sequence.



Note: *A manual release sequence cannot be aborted.*

Manual Release Time Line

❶ An active manual release station disables automatic operation and the abort function and simultaneously activates the:
- Manual delay timer
- Pre-release circuit
- Pre-release strobe circuit (steady On)
- Pre-release horn circuit (60 pulses per minute)

❷ Ten seconds before the expiration of the manual delay timer, the pre-release horn changes from 60 pulses per minute to steady On.

❸ The manual delay timer expires and the release circuits activate.

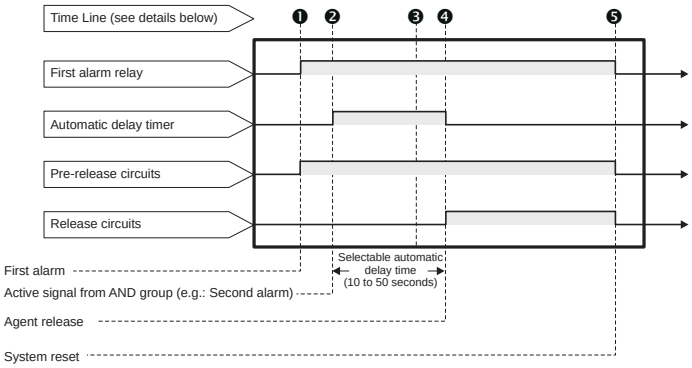
❹ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Automatic Release Sequence

The automatic release sequence requires an AND group (cross zone) or a matrix group (counting zone). AND groups and matrix groups require fire alarm signals from designated Signature Series devices. These logic groups are programmable through a laptop computer and the System Definition Utility (SDU).

Note: EST2 systems do not support matrix groups. See *Programming the SIGA-REL* for AND group rules. To create AND groups and matrix groups, see the *System Programming Manual* and the SDU *Online Help* for your system.

The diagram below outlines the automatic release sequence.



Automatic Release Time Line

❶ A detector signals the first alarm. This event simultaneously activates the:
- First alarm relay
- Pre-release strobe circuit (steady On)
- Pre-release horn circuit (15 pulses per minute)

❷ A detector in the protected area signals a second alarm and meets the AND group conditions.* The automatic delay timer then starts its countdown and the pre-release horn circuit changes to 60 pulses per minute.

* AND group and matrix group conditions depend on programming.

❸ 10 seconds before the automatic delay timer expires, the pre-release (horn) circuit changes to steady On.

❹ The automatic delay timer expires and the release circuits activate.

❺ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Abort Sequences

The SIGA-REL provides four abort modes. Aborts do not terminate the release of fire suppression agents. They merely offer a limited extension of the automatic timer delay period.

Abort Mode 1 (factory default)

If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will continue to run while the abort is active. When the abort switch is restored, the release will occur with the expiration of the automatic delay timer or the abort delay timer, whichever occurs last.

Abort Mode 2

If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort switch is restored, the automatic delay timer will continue from the stop point and the release will occur with the expiration of the timer.

Abort Mode 3

Industrial Risk Insurers (IRI) Mode: To be recognized as valid, the abort must be active when the second alarm is received. When the abort switch is restored, the release will occur with the expiration of the abort delay timer (set for 10 sec).

Abort Mode 4

International applications: If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort switch is restored, the automatic delay timer will reset and commence time from t = 0. The release will occur with the expiration of the timer setting minus 10 seconds.

Compatibility

Sprinkler systems

The SIGA-REL works with two types of sprinkler systems: deluge and pre-action. The primary difference between both systems is the type of sprinkler head (or nozzle) that terminates the pipes. Table1-1 outlines the Factory Mutual Research Corporation (FMRC) requirements for deluge and pre-action systems.

FM approval requirements for deluge and pre-action sprinkler systems

Standby operation	90 hours
Alarm operation	10 minutes
NFPA style	Class A (Style D or E) or Class A (Style 2, 5, 6, or 7)
FMRC documentation	FMRC Approval Guide (Volume 1)

Deluge sprinkler systems

In Deluge sprinkler systems, open-valve sprinkler heads terminate pipes connected to a water supply controlled by a single valve. When the system detects a fire it automatically opens the valve to allow the waterflow through all of the sprinkler heads. Deluge sprinklers are useful for applications that require the simultaneous discharge of water through every sprinkler.

The following fire detection systems meet FRMC requirements for deluge systems:

- Wet pilot sprinkler line
- Dry pilot sprinkler line
- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Pre-action sprinkler systems

In Pre-action sprinkler systems, closed-valve sprinkler heads terminate pipes connected directly to a water supply. The water supply is usually in the same area as the sprinklers and the pipes are supervised for air pressure. Pre-action sprinklers are useful where it is important to prevent the accidental discharge of water.

Warning! Improper applications of fire suppression agents can lead to property damage, injury, or loss of life. Consult the applicable NFPA documents and the authority having jurisdiction (AHJ) for more information.

The following fire detection systems meet FRMC requirements for pre-action systems:

- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Automatic fire extinguishing systems

Automatic fire extinguishing systems automatically detect and extinguish fires. They require no manual input because detectors automatically activate releasing solenoids or sprinkler valves. The table below provides a list of the fire suppression agents and the applicable NFPA documents.

Fire suppression agents and NFPA documentation

Agent	NFPA documentation
Low-expansion foam	NFPA 11
Medium- and high-expansion foam	NFPA 11A
CO2	NFPA 12
Sprinklers	NFPA 13
Water spray	NFPA 15
Foam-water	NFPA 16
Dry chemicals	NFPA 17

The table below outlines the FMRC requirements for automatic fire extinguishing systems.

FM approval requirements for automatic fire extinguishing systems

Standby operation	24 hours
Alarm operation	10 minutes
NFPA style	B or D
FMRC documentation	FMRC Approval Guide (Volume 1)

Compatible panels. The SIGA-REL is compatible with iO Series, EST3 and EST3X fire alarm control panels. You may install the SIGA-REL in any of the following enclosures:

- 2-WB(X) series
- 2-CAB series
- 3-CAB series
- RACCR series
- MFC-A
- APS6A/APS10A

Note: Maintain a 1-inch (25.4 mm) minimum clearance all around the SIGA-REL. The clearance space must also comply with the National Electrical Code.

Power supplies. The SIGA-REL is compatible with the following power supplies:

- 2-PPS(-220)
- 2-PPS/6A(-220)
- SIGA-APS(-220)
- 3-BPS/M
- 3-PPS/M
- BPS6*, BPS10*, APSxA

*Not compatible with FMRC sprinkler applications that require 90 hours of standby.

Solenoid polarizing relays. Use the RELA-EOL with the SIGA-REL. For more information, see the RELA-EOL installation sheet.

Abort stations. The SIGA-REL is only compatible with normally-open, momentary-action abort stations. Abort stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Service disconnect stations. The SIGA-REL is only compatible with service disconnect stations that are normally-closed (minimum 2.0 Amps). Service disconnect stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Releasing solenoid valves. Releasing solenoid valves must be listed with the appropriate agencies in your area. See *Listing agencies*.

Listing agencies. Listing agencies include:

- Factory Mutual Research Corporation (FMRC)
- Underwriters Laboratories, Inc. (UL)
- Underwriters Laboratories Canada (ULC)

Switch Settings

Abort mode and time delay settings are configured by means of dip switches on the module.

Abort mode

	Mode	SW1	SW2	
DEFAULT	1	0	0	*Routines that determine how the abort function interacts with the timers.*
	2	0	1	
	3	1	0	
	4	1	1	

Manual time delay (seconds)

	Delay	SW3	SW4	
	0	0	0	*The length of time that the deluge is inhibited when the releasing function is manually initiated.*
DEFAULT	10	0	1	
	20	1	0	
	30	1	1	

Automatic time delay (seconds)

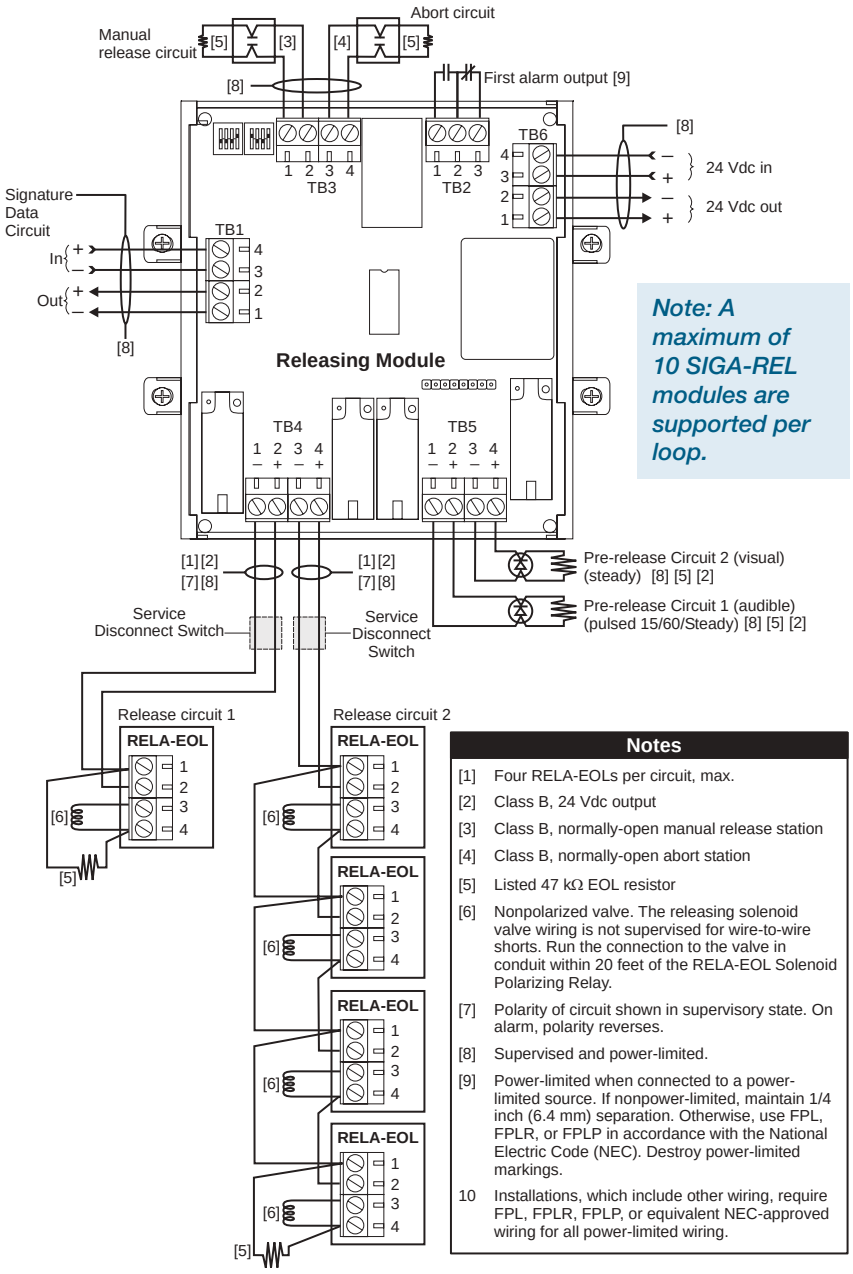
	Delay	SW5	SW6	SW7	
	10	0	0	0	*The length of time that the deluge is inhibited when the releasing function is initiated by the control panel (i.e.: after receiving an alarm).*
	20	0	0	1	
	30	0	1	0	
	40	0	1	1	
DEFAULT	50	1	0	0	

Abort time delay (seconds)

	Delay	SW8	
	0	0	*The length of time that the deluge is inhibited when the abort function is restored (i.e.: cancelled).*
DEFAULT	10	1	

DEFAULT Denotes default settings.

Wiring



Note: A maximum of 10 SIGA-REL modules are supported per loop.

Notes

[1] Four RELA-EOLs per circuit, max.

[2] Class B, 24 Vdc output

[3] Class B, normally-open manual release station

[4] Class B, normally-open abort station

[5] Listed 47 kΩ EOL resistor

[6] Nonpolarized valve. The releasing solenoid valve wiring is not supervised for wire-to-wire shorts. Run the connection to the valve in conduit within 20 feet of the RELA-EOL Solenoid Polarizing Relay.

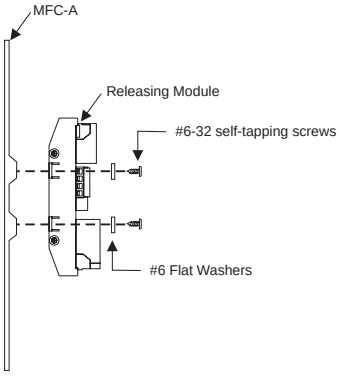
[7] Polarity of circuit shown in supervisory state. On alarm, polarity reverses.

[8] Supervised and power-limited.

[9] Power-limited when connected to a power-limited source. If nonpower-limited, maintain 1/4 inch (6.4 mm) separation. Otherwise, use FPL, FPLR, or FPLP in accordance with the National Electric Code (NEC). Destroy power-limited markings.

10 Installations, which include other wiring, require FPL, FPLR, FPLP, or equivalent NEC-approved wiring for all power-limited wiring.

Mounting

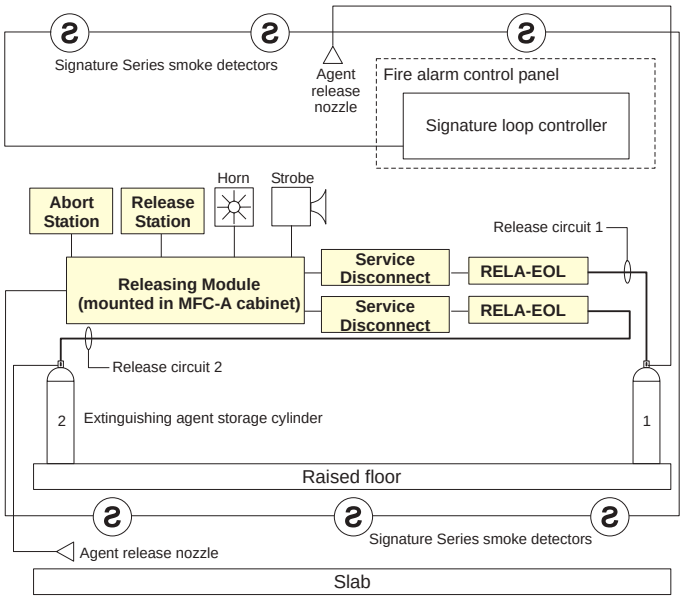


LED Operation

LED	Color	Pattern	Function
DS1	Red	Flashing	Data (alarm conditions)*
DS2	Green	Flashing	Data (normal conditions)*
DS3	Red	Steady	Alarm
DS4	Green	Steady	Power
DS5	Yellow	Steady	Abort
DS6	Yellow	Steady	Trouble
DS7	Red	Steady	Release Active

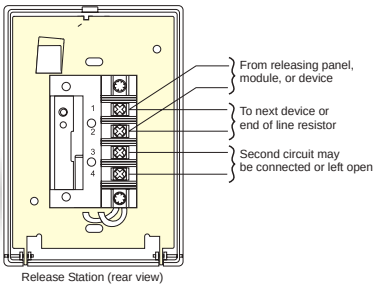
**Note: During a loss of communications, the Releasing Module will go into a standby condition, which will cause DS1 and DS2 to change to a steady pattern during an alarm condition.*

Typical application of SIGA-REL accessories (computer room)



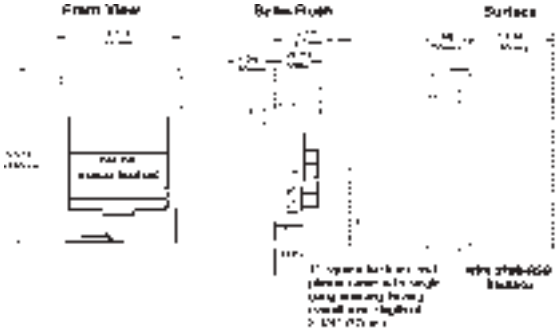
Manual Release Station





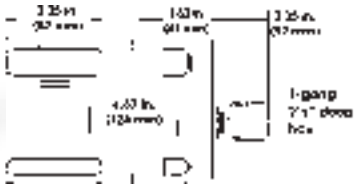
Release Station (rear view)

The manual release station is a normally-open, dry contact signal initiating device. The 276A-REL is a single-action station that requires the user to pull the release handle to initiate the release of a fire suppression agent. The 278A-REL (shown) is a double-action station that requires the user to raise the upper door, then pull the release handle to initiate the release.



Abort Station

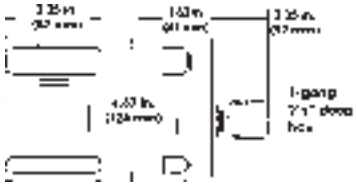




The abort station is a normally-open, non-latching device. It is used to prevent the release of agent into the protected area after the release sequence has begun.

Service Disconnect Switch

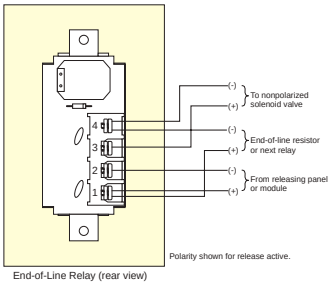




The service disconnect switch is used to temporarily disable the fire suppression system. One switch is installed on each of the two release circuits between the SIGA-REL and the RELA-EOL end-of-line relay. Opening the Service Disconnect Switch allows the fire alarm system to be tested without activating the fire suppression system. The operation of this switch causes a trouble signal at the control panel.

End-of-Line Relay





End-of-Line Relay (rear view)

The End-of-Line Relay facilitates the connection of a non-polarized releasing solenoid to a supervised, polarized releasing circuit. One relay is required per release solenoid.

Module Enclosure



The MFC-A cabinet is UL-listed for use with Signature modules. Shown here with plug-in style I/O modules, the MFC-A also meets UL requirements for spacing and clearance around the SIGA-REL Releasing Module. The cabinet features red epoxy finish with white “FIRE” markings.

Specifications

Power riser	Input voltage Supervisory current Riser input current Alarm	24 Vdc (power limited) 25 mA, max. 4 amps maximum 170 mA min.; 4 A max.
Release circuits	Output rating Valves per circuit Max. supervisory current Nominal supervisory current Supervisory voltage End of line device	2 A @ 24 Vdc (for each circuit) 4 valves, max. 0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm EOL
Pre-release alarm circuits	Output rating Max. supervisory current Nominal supervisory current Supervisory voltage End of line device	2 A @ 24 Vdc (for each circuit) 0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor
Manual release input circuit	Max. supervisory current Nominal supervisory current Supervisory voltage End of line device Circuit type Circuit capacitance	0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor Class B N.O. latching 0.1 µF, max
Abort circuit	Max. supervisory current Nominal supervisory current Supervisory voltage End of line device Circuit type Circuit capacitance	0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor Class B N.O. non- latching 0.1 µF, max
First alarm output relay	Contact rating	3 A @ 24 Vdc (0.6 power factor) Form C
Signature Data line	Operating voltage Supervisory current Alarm current	5.2 to 19.95 Vdc 1000 µA 1000 µA
Environmental condiitions	Operating temperature Storage temperature Humidity	32° F to 120° F (0° C to 49° C) -4° F to 140° F (-20° C to 60° C) 0 to 93% Non-condensing
Wiring Terminals	Suitable for #18 to #12 AWG (2.5 mm² to .75 mm²)	
Type Code	Factory Set	
Addressing Requirements	Uses six module addresses	
Agency Listings	UL, ULC, and FM	
Compatible Solenoids	Must be both UL/ULC-listed and FM-approved	

Note: *Output circuits are power-limited when the riser circuit is power-limited.*

Line Resistance

Power riser

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ohms per wire)
	#12 AWG	2.5 mm²	#14 AWG	1.5 mm²	
4.0	29 ft	8.84 m	20 ft	6.10 m	0.050
3.5	34 ft	10.36 m	23 ft	7.01 m	0.057
3.0	39 ft	11.89 m	27 ft	8.23 m	0.067
2.5	47 ft	14.33 m	32 ft	9.75 m	0.080
2.0	59 ft	17.98 m	40 ft	12.19 m	0.100
1.5	78 ft	23.77 m	53 ft	16.15 m	0.133
1.0	118 ft	35.97 m	80 ft	24.38 m	0.200

Pre-release and release circuits (per circuit)

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ohms per wire)
	#12 AWG	2.5 mm²	#14 AWG	1.5 mm²	
2.00	176 ft	53.64 m	120 ft	36.58 m	0.300
1.75	202 ft	61.57 m	137 ft	41.76 m	0.343
1.50	235 ft	71.63 m	160 ft	48.77 m	0.400
1.25	282 ft	85.95 m	192 ft	58.52 m	0.480
1.0	353 ft	107.59 m	240 ft	73.15 m	0.600
0.50	706 ft	215.19 m	480 ft	146.30 m	1.200

Ordering Information

Model	Description	Ship Wt. lb (kg)
SIGA-REL	Analog addressable releasing module	0.52 (0.23)
276A-REL	Manual releasing station (single-action). English markings, black text on yellow polycarbonate body.	1.0 (0.45)
278A-REL	Manual releasing station (double-action). English markings, black text on yellow polycarbonate body.	1.0 (0.45)
RELA-ABT	Manual Abort Station. English markings, black text on yellow polycarbonate body.	1.0 (0.45)
RELA-SRV-1	Service Disconnect Switch. One n/c contact and one n/o contact. English markings, white text on blue polycarbonate body.	1.0 (0.45)
RELA-EOL	Polarized end-of-line relay. English markings on stainless steel cover.	0.2 (0.1)
MFC-A	UL listed cabinet for mounting releasing modules, red with white “FIRE”. HWD: 8” x 14” x 3½” (203mm x 356mm x 89mm)	7.0 (3.1)

LIFE SAFETY & INCIDENT MANAGEMENT

Contact us...

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Releasing Module
SIGA-REL



Patented

FM APPROVED 7300-1657: 0205
S3424

Overview

The SIGA-REL is an analog addressable module that communicates directly with the fire alarm panel Signature loop controller. The SIGA-REL controls sprinkler, pre-action and deluge systems, and may also be used to release extinguishing agents such as CO_2, Halon, or foam. The module is easily configured in the field and offers a wide range of options that ensure dependable service, while preventing the unnecessary release of extinguishing agent.

In addition to being an intelligent network component, the SIGA-REL interfaces with a number of conventional devices. These provide manual actuation of abort, release, and service disconnect functions. Together with the SIGA-REL, they comprise a complete fire suppression package. There is no need for a separate releasing panel because the SIGA-REL takes full advantage of the existing control panel communications infrastructure. This ensures low-cost installations with all the benefits of Signature Series analog initiation and control.

Seven on-board circuits provide added flexibility. Each SIGA-REL hosts:

- Two supervised Class B release circuits
- Two supervised Class B pre-release NACs
- One supervised Class B manual release input circuit (latching)
- One supervised Class B abort circuit for normally-open abort switch (non-latching)
- One first alarm output relay (Form C contact)

The SIGA-REL also includes a series of built-in timers that determine the duration of abort routines and release sequences. These timers are easily configured in the field and provide a highly flexible range of options.

Standard Features

- **Ideal for sprinkler, pre-action and deluge systems**
  Suitable a wide range of sprinkler applications and extinguishing agents such as CO2 and Halon.
- **Built-in timers**
  Selectable durations for abort, manual, and automatic delays.
- **Four abort modes**
  Field-configurable abort routines determine how the timers operate when the abort function is initiated.
- **Supervised circuitry you can rely on**
  Two Class B release circuits and two pre-release circuits provided.
- **Manual operation keeps ultimate control in plain view**
  The SIGA-REL features a manual release input circuit as well as a manual abort input circuit.
- **Fully automated response leaves nothing to chance**
  This module's Form C relay is ideal for room preparation routines.
- **Automatic device mapping simplifies installation**
  Signature modules transmit directly to the loop controller their circuit locations with respect to other Signature devices on the wire loop.

Application

Understanding fire suppression

Fire suppression today is an important part of a growing number of life safety installations. With an ever-increasing reliance on mission-critical computer systems and record high capital investment in high-tech production facilities, businesses large and small are looking for a means of protecting their investments and ensuring a fire won't cripple their operations.

While fire detection remains the first line of defense against the risks of fire to people, building owners are looking to fire suppression as a means of protecting their property and assets.

But it's a well known fact that fire suppression is a double-edged sword: water can snuff out a mission-critical computer system as easily as it can a fire. Alternatives to water, including carbon dioxide and other extinguishing agents can endanger lives, while the release of even the most inert extinguishing agents can disrupt operations and cost millions of dollars in down-time and lost production.

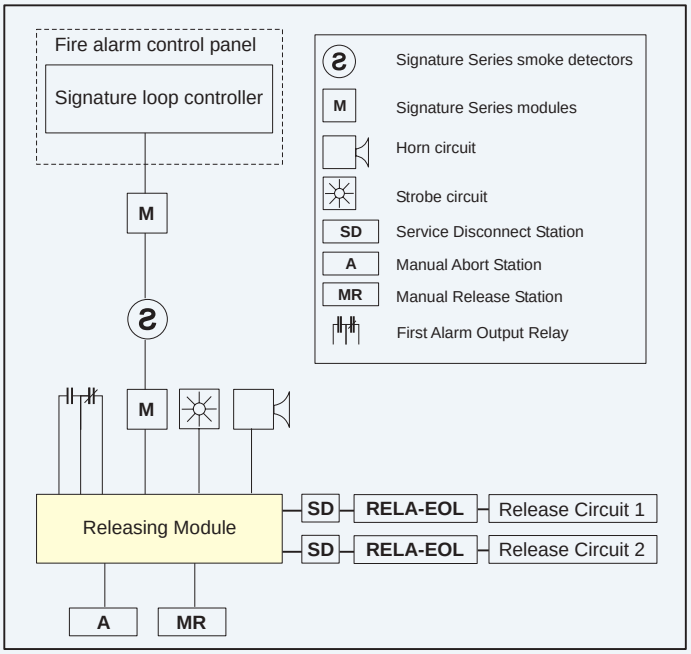
A primary goal of any fire suppression system is to prevent the release of extinguishing agent unless it is absolutely necessary. There is no margin for error. But no matter what measures are taken to prevent the unwanted release of extinguishing agent, the fact remains that no suppression system is any better than the detectors it relies on for input. The foundation of an effective suppression system, therefore, rests firmly on the quality and reliability of its smoke detectors.

Signature Series detectors form an integral part of the suppression system built around the SIGA-REL releasing module. These detectors provide unsurpassed reliability and immunity from false alarms. The SIGA-REL is engineered to the same exacting standards of quality and performance. With a robust set of features designed to eliminate any unwanted release of extinguishing agent, the SIGA-REL provides all the benefits of a dedicated releasing panel without the extra expense, and equally important, all the proven advantages of the Signature Series family of products.

Understanding the SIGA-REL

The SIGA-REL Releasing Module is a network component that provides control for fire suppression routines. It fulfils much the same purpose as a standalone releasing panel, but supports Signature Series detectors as an integral part of the suppression system. The SIGA-REL is easy to set up and accepts programming via the control panel's SDU Rules Editor.

The diagram below represents typical application of the SIGA-REL. The explanations that follow summarize each element of the module.



Release Circuits. The SIGA-REL includes two supervised release circuits, each of which provides fire suppression control to different areas of a protected space. The releasing circuits actuate solenoids on the suppression agent tanks according to pre-defined release routines. These solenoids release the agent into the protected area. Both circuits operate together.

First Alarm Relay. This on-board relay provides a Form C contact that activates at the first alarm input or manual release. The relay is typically used for room preparation such as controlling fans and dampers in advance of the release of suppression agent.

Pre-release. Pre-release circuits are used to provide power to notification appliances located within the protected are. Two supervised pre-release circuits are provided: one (steady) for visual notification appliances, and one (pulsed) for audible notification appliances. The pre-release circuits activate with the start of the automatic delay timer.

Manual Release. The manual release circuit is used to activate the suppression system by means of a connected normally-open release station. This initiates the manual release sequence according to a pre-defined routine. The manual release circuit is supervised and latching. Input from this circuit is processed at the module – communication with the control panel is not necessary.

Abort. The abort circuit is used to prevent the release of agent into the protected area after the release sequence has begun, but before the automatic delay timer expires. A connected normally-open release station provides manual control over this circuit. The abort circuit is supervised and non-latching.

Service Disconnect. The service disconnect switch is used to temporarily disable the fire suppression system. There is no dedicated circuit for this switch. Instead, it is installed on both release circuits between the SIGA-REL and the RELA-EOL end-of-line relay. Opening the Service Disconnect Switch allows the fire alarm system to be tested without activating the fire suppression system. The operation of this switch causes a trouble signal at the control panel.

Data. The Signature data circuit provides an input and an output to the data loop that communicates with the Signature loop controller at the control panel. The SIGA-REL resides on the same data loop as the Signature Series detectors that initiate the automatic release sequence. This close association offers the most reliable performance and ensures compliance with prevailing life safety codes.

Power. The SIGA-REL requires 24 Vdc (power limited). See the specification table for details.

Operation

The SIGA-REL has several built-in safeguards to prevent the unwanted release of extinguishing agent. All release sequences are subject to configurable delay timers that provide the opportunity for an occupant of the area to manually abort the release sequence. If no abort signal is received before the delay timer expires, the suppression agent is released.

The SIGA-REL includes three delay timers: one for manual release sequences (up to 30 seconds); one for automatic release sequences (up to 50 seconds); and one for abort sequences (10 seconds).

Note: Misapplication of the SIGA-REL can have serious consequences. Descriptions provided here are for information only, are subject to change, and should not be used as a guide to field installation of equipment. Always consult the SIGA-REL installation manual when setting up or configuring this component.

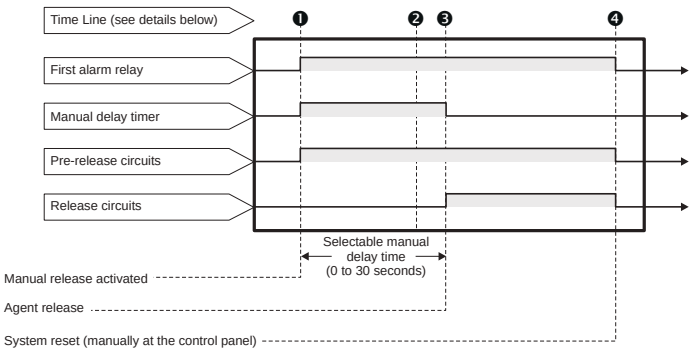
Normal State

In its normal operating state the SIGA-REL supervises both of its release circuits and both of its pre-release NAC circuits for faults. Should a short or open occur on any of these circuits, a Trouble condition is reported to the control panel.

A trouble condition on any of these circuits may prevent the operation of that circuit, but it won't inhibit the operation of any other fault-free circuit.

Manual Release Sequence

The operation of a manual release station initiates the manual release sequence. The diagram below outlines the manual release sequence.



Note: *A manual release sequence cannot be aborted.*

Manual Release Time Line

❶ An active manual release station disables automatic operation and the abort function and simultaneously activates the:
- Manual delay timer
- Pre-release circuit
- Pre-release strobe circuit (steady On)
- Pre-release horn circuit (60 pulses per minute)

❷ Ten seconds before the expiration of the manual delay timer, the pre-release horn changes from 60 pulses per minute to steady On.

❸ The manual delay timer expires and the release circuits activate.

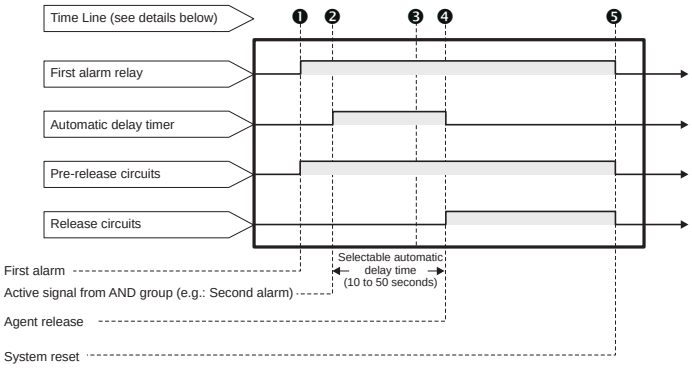
❹ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Automatic Release Sequence

The automatic release sequence requires an AND group (cross zone) or a matrix group (counting zone). AND groups and matrix groups require fire alarm signals from designated Signature Series devices. These logic groups are programmable through a laptop computer and the System Definition Utility (SDU).

Note: EST2 systems do not support matrix groups. See *Programming the SIGA-REL* for AND group rules. To create AND groups and matrix groups, see the *System Programming Manual* and the SDU *Online Help* for your system.

The diagram below outlines the automatic release sequence.



Automatic Release Time Line

❶ A detector signals the first alarm. This event simultaneously activates the:
- First alarm relay
- Pre-release strobe circuit (steady On)
- Pre-release horn circuit (15 pulses per minute)

❷ A detector in the protected area signals a second alarm and meets the AND group conditions.* The automatic delay timer then starts its countdown and the pre-release horn circuit changes to 60 pulses per minute.

* AND group and matrix group conditions depend on programming.

❸ 10 seconds before the automatic delay timer expires, the pre-release (horn) circuit changes to steady On.

❹ The automatic delay timer expires and the release circuits activate.

❺ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Abort Sequences

The SIGA-REL provides four abort modes. Aborts do not terminate the release of fire suppression agents. They merely offer a limited extension of the automatic timer delay period.

Abort Mode 1 (factory default)

If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will continue to run while the abort is active. When the abort switch is restored, the release will occur with the expiration of the automatic delay timer or the abort delay timer, whichever occurs last.

Abort Mode 2

If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort switch is restored, the automatic delay timer will continue from the stop point and the release will occur with the expiration of the timer.

Abort Mode 3

Industrial Risk Insurers (IRI) Mode: To be recognized as valid, the abort must be active when the second alarm is received. When the abort switch is restored, the release will occur with the expiration of the abort delay timer (set for 10 sec).

Abort Mode 4

International applications: If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort switch is restored, the automatic delay timer will reset and commence time from t = 0. The release will occur with the expiration of the timer setting minus 10 seconds.

Compatibility

Sprinkler systems

The SIGA-REL works with two types of sprinkler systems: deluge and pre-action. The primary difference between both systems is the type of sprinkler head (or nozzle) that terminates the pipes. Table1-1 outlines the Factory Mutual Research Corporation (FMRC) requirements for deluge and pre-action systems.

FM approval requirements for deluge and pre-action sprinkler systems

Standby operation	90 hours
Alarm operation	10 minutes
NFPA style	Class A (Style D or E) or Class A (Style 2, 5, 6, or 7)
FMRC documentation	FMRC Approval Guide (Volume 1)

Deluge sprinkler systems

In Deluge sprinkler systems, open-valve sprinkler heads terminate pipes connected to a water supply controlled by a single valve. When the system detects a fire it automatically opens the valve to allow the waterflow through all of the sprinkler heads. Deluge sprinklers are useful for applications that require the simultaneous discharge of water through every sprinkler.

The following fire detection systems meet FRMC requirements for deluge systems:

- Wet pilot sprinkler line
- Dry pilot sprinkler line
- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Pre-action sprinkler systems

In Pre-action sprinkler systems, closed-valve sprinkler heads terminate pipes connected directly to a water supply. The water supply is usually in the same area as the sprinklers and the pipes are supervised for air pressure. Pre-action sprinklers are useful where it is important to prevent the accidental discharge of water.

Warning! Improper applications of fire suppression agents can lead to property damage, injury, or loss of life. Consult the applicable NFPA documents and the authority having jurisdiction (AHJ) for more information.

The following fire detection systems meet FRMC requirements for pre-action systems:

- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Automatic fire extinguishing systems

Automatic fire extinguishing systems automatically detect and extinguish fires. They require no manual input because detectors automatically activate releasing solenoids or sprinkler valves. The table below provides a list of the fire suppression agents and the applicable NFPA documents.

Fire suppression agents and NFPA documentation

Agent	NFPA documentation
Low-expansion foam	NFPA 11
Medium- and high-expansion foam	NFPA 11A
CO2	NFPA 12
Sprinklers	NFPA 13
Water spray	NFPA 15
Foam-water	NFPA 16
Dry chemicals	NFPA 17

The table below outlines the FMRC requirements for automatic fire extinguishing systems.

FM approval requirements for automatic fire extinguishing systems

Standby operation	24 hours
Alarm operation	10 minutes
NFPA style	B or D
FMRC documentation	FMRC Approval Guide (Volume 1)

Compatible panels. The SIGA-REL is compatible with iO Series, EST3 and EST3X fire alarm control panels. You may install the SIGA-REL in any of the following enclosures:

- 2-WB(X) series
- 2-CAB series
- 3-CAB series
- RACCR series
- MFC-A
- APS6A/APS10A

Note: Maintain a 1-inch (25.4 mm) minimum clearance all around the SIGA-REL. The clearance space must also comply with the National Electrical Code.

Power supplies. The SIGA-REL is compatible with the following power supplies:

- 2-PPS(-220)
- 2-PPS/6A(-220)
- SIGA-APS(-220)
- 3-BPS/M
- 3-PPS/M
- BPS6*, BPS10*, APSxA

*Not compatible with FMRC sprinkler applications that require 90 hours of standby.

Solenoid polarizing relays. Use the RELA-EOL with the SIGA-REL. For more information, see the RELA-EOL installation sheet.

Abort stations. The SIGA-REL is only compatible with normally-open, momentary-action abort stations. Abort stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Service disconnect stations. The SIGA-REL is only compatible with service disconnect stations that are normally-closed (minimum 2.0 Amps). Service disconnect stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Releasing solenoid valves. Releasing solenoid valves must be listed with the appropriate agencies in your area. See *Listing agencies*.

Listing agencies. Listing agencies include:

- Factory Mutual Research Corporation (FMRC)
- Underwriters Laboratories, Inc. (UL)
- Underwriters Laboratories Canada (ULC)

Switch Settings

Abort mode and time delay settings are configured by means of dip switches on the module.

Abort mode

	Mode	SW1	SW2	
DEFAULT	1	0	0	*Routines that determine how the abort function interacts with the timers.*
	2	0	1	
	3	1	0	
	4	1	1	

Manual time delay (seconds)

	Delay	SW3	SW4	
	0	0	0	*The length of time that the deluge is inhibited when the releasing function is manually initiated.*
DEFAULT	10	0	1	
	20	1	0	
	30	1	1	

Automatic time delay (seconds)

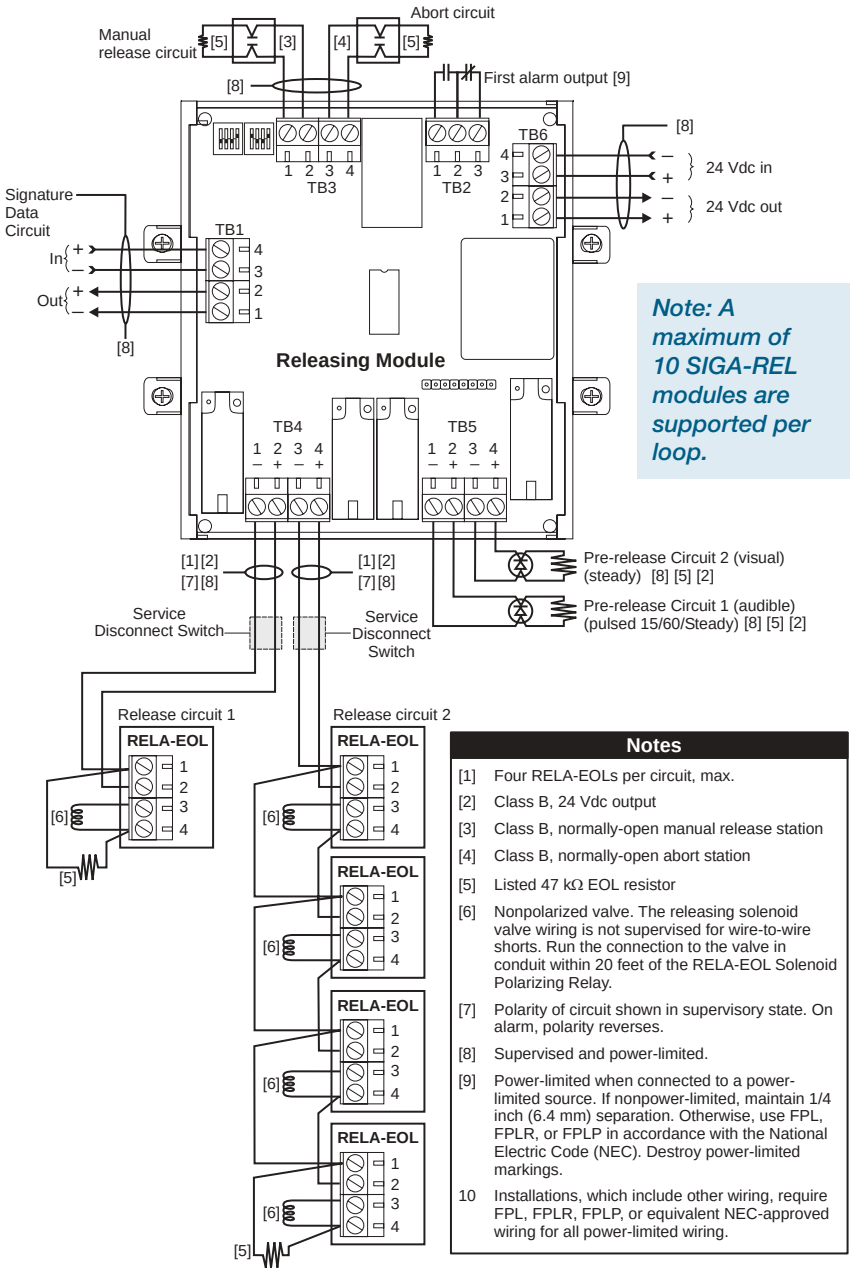
	Delay	SW5	SW6	SW7	
	10	0	0	0	*The length of time that the deluge is inhibited when the releasing function is initiated by the control panel (i.e.: after receiving an alarm).*
	20	0	0	1	
	30	0	1	0	
	40	0	1	1	
DEFAULT	50	1	0	0	

Abort time delay (seconds)

	Delay	SW8	
	0	0	*The length of time that the deluge is inhibited when the abort function is restored (i.e.: cancelled).*
DEFAULT	10	1	

DEFAULT Denotes default settings.

Wiring



Note: A maximum of 10 SIGA-REL modules are supported per loop.

Notes

[1] Four RELA-EOLs per circuit, max.

[2] Class B, 24 Vdc output

[3] Class B, normally-open manual release station

[4] Class B, normally-open abort station

[5] Listed 47 kΩ EOL resistor

[6] Nonpolarized valve. The releasing solenoid valve wiring is not supervised for wire-to-wire shorts. Run the connection to the valve in conduit within 20 feet of the RELA-EOL Solenoid Polarizing Relay.

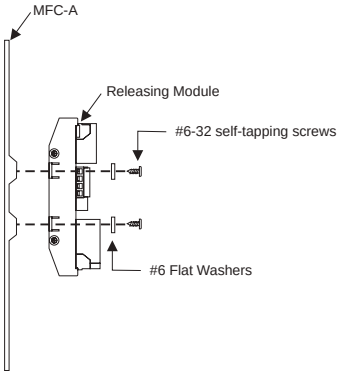
[7] Polarity of circuit shown in supervisory state. On alarm, polarity reverses.

[8] Supervised and power-limited.

[9] Power-limited when connected to a power-limited source. If nonpower-limited, maintain 1/4 inch (6.4 mm) separation. Otherwise, use FPL, FPLR, or FPLP in accordance with the National Electric Code (NEC). Destroy power-limited markings.

10 Installations, which include other wiring, require FPL, FPLR, FPLP, or equivalent NEC-approved wiring for all power-limited wiring.

Mounting

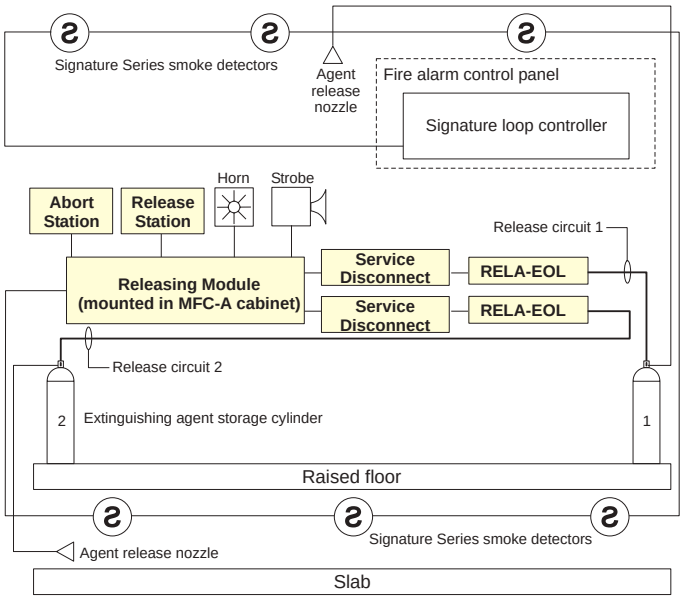


LED Operation

LED	Color	Pattern	Function
DS1	Red	Flashing	Data (alarm conditions)*
DS2	Green	Flashing	Data (normal conditions)*
DS3	Red	Steady	Alarm
DS4	Green	Steady	Power
DS5	Yellow	Steady	Abort
DS6	Yellow	Steady	Trouble
DS7	Red	Steady	Release Active

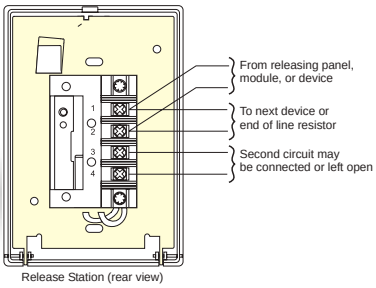
**Note: During a loss of communications, the Releasing Module will go into a standby condition, which will cause DS1 and DS2 to change to a steady pattern during an alarm condition.*

Typical application of SIGA-REL accessories (computer room)



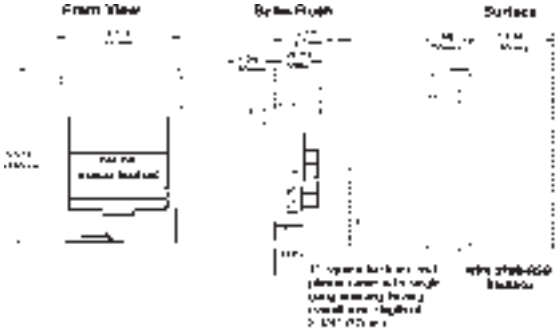
Manual Release Station





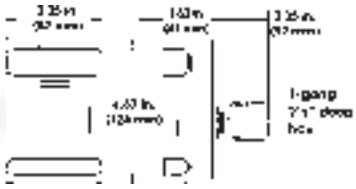
Release Station (rear view)

The manual release station is a normally-open, dry contact signal initiating device. The 276A-REL is a single-action station that requires the user to pull the release handle to initiate the release of a fire suppression agent. The 278A-REL (shown) is a double-action station that requires the user to raise the upper door, then pull the release handle to initiate the release.



Abort Station

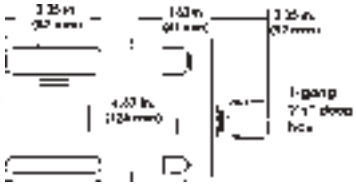




The abort station is a normally-open, non-latching device. It is used to prevent the release of agent into the protected area after the release sequence has begun.

Service Disconnect Switch

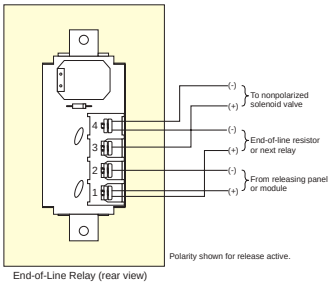




The service disconnect switch is used to temporarily disable the fire suppression system. One switch is installed on each of the two release circuits between the SIGA-REL and the RELA-EOL end-of-line relay. Opening the Service Disconnect Switch allows the fire alarm system to be tested without activating the fire suppression system. The operation of this switch causes a trouble signal at the control panel.

End-of-Line Relay





End-of-Line Relay (rear view)

The End-of-Line Relay facilitates the connection of a non-polarized releasing solenoid to a supervised, polarized releasing circuit. One relay is required per release solenoid.

Module Enclosure



The MFC-A cabinet is UL-listed for use with Signature modules. Shown here with plug-in style I/O modules, the MFC-A also meets UL requirements for spacing and clearance around the SIGA-REL Releasing Module. The cabinet features red epoxy finish with white “FIRE” markings.

Specifications

Power riser	Input voltage Supervisory current Riser input current Alarm	24 Vdc (power limited) 25 mA, max. 4 amps maximum 170 mA min.; 4 A max.
Release circuits	Output rating Valves per circuit Max. supervisory current Nominal supervisory current Supervisory voltage End of line device	2 A @ 24 Vdc (for each circuit) 4 valves, max. 0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm EOL
Pre-release alarm circuits	Output rating Max. supervisory current Nominal supervisory current Supervisory voltage End of line device	2 A @ 24 Vdc (for each circuit) 0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor
Manual release input circuit	Max. supervisory current Nominal supervisory current Supervisory voltage End of line device Circuit type Circuit capacitance	0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor Class B N.O. latching 0.1 µF, max
Abort circuit	Max. supervisory current Nominal supervisory current Supervisory voltage End of line device Circuit type Circuit capacitance	0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor Class B N.O. non- latching 0.1 µF, max
First alarm output relay	Contact rating	3 A @ 24 Vdc (0.6 power factor) Form C
Signature Data line	Operating voltage Supervisory current Alarm current	5.2 to 19.95 Vdc 1000 µA 1000 µA
Environmental condiitions	Operating temperature Storage temperature Humidity	32° F to 120° F (0° C to 49° C) -4° F to 140° F (-20° C to 60° C) 0 to 93% Non-condensing
Wiring Terminals	Suitable for #18 to #12 AWG (2.5 mm² to .75 mm²)	
Type Code	Factory Set	
Addressing Requirements	Uses six module addresses	
Agency Listings	UL, ULC, and FM	
Compatible Solenoids	Must be both UL/ULC-listed and FM-approved	

Note: *Output circuits are power-limited when the riser circuit is power-limited.*

Line Resistance

Power riser

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ohms per wire)
	#12 AWG	2.5 mm²	#14 AWG	1.5 mm²	
4.0	29 ft	8.84 m	20 ft	6.10 m	0.050
3.5	34 ft	10.36 m	23 ft	7.01 m	0.057
3.0	39 ft	11.89 m	27 ft	8.23 m	0.067
2.5	47 ft	14.33 m	32 ft	9.75 m	0.080
2.0	59 ft	17.98 m	40 ft	12.19 m	0.100
1.5	78 ft	23.77 m	53 ft	16.15 m	0.133
1.0	118 ft	35.97 m	80 ft	24.38 m	0.200

Pre-release and release circuits (per circuit)

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ohms per wire)
	#12 AWG	2.5 mm²	#14 AWG	1.5 mm²	
2.00	176 ft	53.64 m	120 ft	36.58 m	0.300
1.75	202 ft	61.57 m	137 ft	41.76 m	0.343
1.50	235 ft	71.63 m	160 ft	48.77 m	0.400
1.25	282 ft	85.95 m	192 ft	58.52 m	0.480
1.0	353 ft	107.59 m	240 ft	73.15 m	0.600
0.50	706 ft	215.19 m	480 ft	146.30 m	1.200

Ordering Information

Model	Description	Ship Wt. lb (kg)
SIGA-REL	Analog addressable releasing module	0.52 (0.23)
276A-REL	Manual releasing station (single-action). English markings, black text on yellow polycarbonate body.	1.0 (0.45)
278A-REL	Manual releasing station (double-action). English markings, black text on yellow polycarbonate body.	1.0 (0.45)
RELA-ABT	Manual Abort Station. English markings, black text on yellow polycarbonate body.	1.0 (0.45)
RELA-SRV-1	Service Disconnect Switch. One n/c contact and one n/o contact. English markings, white text on blue polycarbonate body.	1.0 (0.45)
RELA-EOL	Polarized end-of-line relay. English markings on stainless steel cover.	0.2 (0.1)
MFC-A	UL listed cabinet for mounting releasing modules, red with white “FIRE”. HWD: 8” x 14” x 3½” (203mm x 356mm x 89mm)	7.0 (3.1)

LIFE SAFETY & INCIDENT MANAGEMENT

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Releasing Module
SIGA-REL



Patented

FM APPROVED 7300-1657: 0205
S3424

Overview

The SIGA-REL is an analog addressable module that communicates directly with the fire alarm panel Signature loop controller. The SIGA-REL controls sprinkler, pre-action and deluge systems, and may also be used to release extinguishing agents such as CO_2, Halon, or foam. The module is easily configured in the field and offers a wide range of options that ensure dependable service, while preventing the unnecessary release of extinguishing agent.

In addition to being an intelligent network component, the SIGA-REL interfaces with a number of conventional devices. These provide manual actuation of abort, release, and service disconnect functions. Together with the SIGA-REL, they comprise a complete fire suppression package. There is no need for a separate releasing panel because the SIGA-REL takes full advantage of the existing control panel communications infrastructure. This ensures low-cost installations with all the benefits of Signature Series analog initiation and control.

Seven on-board circuits provide added flexibility. Each SIGA-REL hosts:

- Two supervised Class B release circuits
- Two supervised Class B pre-release NACs
- One supervised Class B manual release input circuit (latching)
- One supervised Class B abort circuit for normally-open abort switch (non-latching)
- One first alarm output relay (Form C contact)

The SIGA-REL also includes a series of built-in timers that determine the duration of abort routines and release sequences. These timers are easily configured in the field and provide a highly flexible range of options.

Standard Features

- **Ideal for sprinkler, pre-action and deluge systems**
  Suitable a wide range of sprinkler applications and extinguishing agents such as CO2 and Halon.
- **Built-in timers**
  Selectable durations for abort, manual, and automatic delays.
- **Four abort modes**
  Field-configurable abort routines determine how the timers operate when the abort function is initiated.
- **Supervised circuitry you can rely on**
  Two Class B release circuits and two pre-release circuits provided.
- **Manual operation keeps ultimate control in plain view**
  The SIGA-REL features a manual release input circuit as well as a manual abort input circuit.
- **Fully automated response leaves nothing to chance**
  This module's Form C relay is ideal for room preparation routines.
- **Automatic device mapping simplifies installation**
  Signature modules transmit directly to the loop controller their circuit locations with respect to other Signature devices on the wire loop.

Application

Understanding fire suppression

Fire suppression today is an important part of a growing number of life safety installations. With an ever-increasing reliance on mission-critical computer systems and record high capital investment in high-tech production facilities, businesses large and small are looking for a means of protecting their investments and ensuring a fire won't cripple their operations.

While fire detection remains the first line of defense against the risks of fire to people, building owners are looking to fire suppression as a means of protecting their property and assets.

But it's a well known fact that fire suppression is a double-edged sword: water can snuff out a mission-critical computer system as easily as it can a fire. Alternatives to water, including carbon dioxide and other extinguishing agents can endanger lives, while the release of even the most inert extinguishing agents can disrupt operations and cost millions of dollars in down-time and lost production.

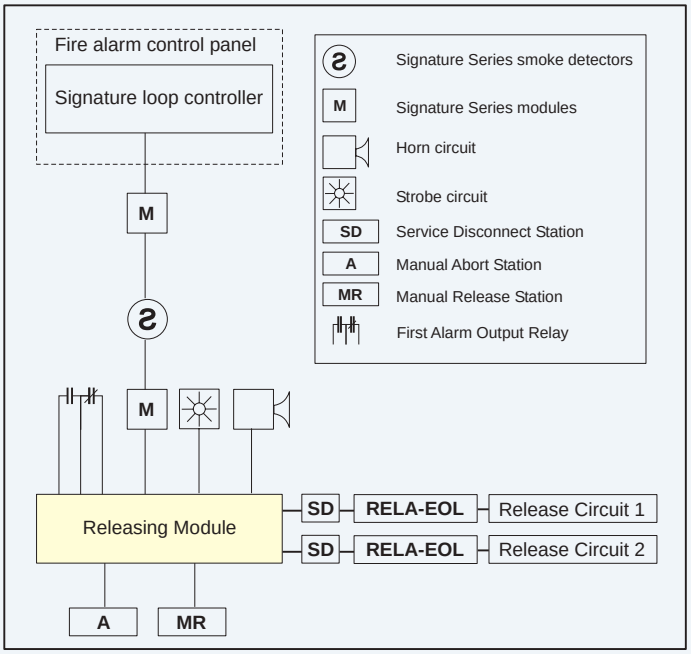
A primary goal of any fire suppression system is to prevent the release of extinguishing agent unless it is absolutely necessary. There is no margin for error. But no matter what measures are taken to prevent the unwanted release of extinguishing agent, the fact remains that no suppression system is any better than the detectors it relies on for input. The foundation of an effective suppression system, therefore, rests firmly on the quality and reliability of its smoke detectors.

Signature Series detectors form an integral part of the suppression system built around the SIGA-REL releasing module. These detectors provide unsurpassed reliability and immunity from false alarms. The SIGA-REL is engineered to the same exacting standards of quality and performance. With a robust set of features designed to eliminate any unwanted release of extinguishing agent, the SIGA-REL provides all the benefits of a dedicated releasing panel without the extra expense, and equally important, all the proven advantages of the Signature Series family of products.

Understanding the SIGA-REL

The SIGA-REL Releasing Module is a network component that provides control for fire suppression routines. It fulfils much the same purpose as a standalone releasing panel, but supports Signature Series detectors as an integral part of the suppression system. The SIGA-REL is easy to set up and accepts programming via the control panel's SDU Rules Editor.

The diagram below represents typical application of the SIGA-REL. The explanations that follow summarize each element of the module.



Release Circuits. The SIGA-REL includes two supervised release circuits, each of which provides fire suppression control to different areas of a protected space. The releasing circuits actuate solenoids on the suppression agent tanks according to pre-defined release routines. These solenoids release the agent into the protected area. Both circuits operate together.

First Alarm Relay. This on-board relay provides a Form C contact that activates at the first alarm input or manual release. The relay is typically used for room preparation such as controlling fans and dampers in advance of the release of suppression agent.

Pre-release. Pre-release circuits are used to provide power to notification appliances located within the protected are. Two supervised pre-release circuits are provided: one (steady) for visual notification appliances, and one (pulsed) for audible notification appliances. The pre-release circuits activate with the start of the automatic delay timer.

Manual Release. The manual release circuit is used to activate the suppression system by means of a connected normally-open release station. This initiates the manual release sequence according to a pre-defined routine. The manual release circuit is supervised and latching. Input from this circuit is processed at the module – communication with the control panel is not necessary.

Abort. The abort circuit is used to prevent the release of agent into the protected area after the release sequence has begun, but before the automatic delay timer expires. A connected normally-open release station provides manual control over this circuit. The abort circuit is supervised and non-latching.

Service Disconnect. The service disconnect switch is used to temporarily disable the fire suppression system. There is no dedicated circuit for this switch. Instead, it is installed on both release circuits between the SIGA-REL and the RELA-EOL end-of-line relay. Opening the Service Disconnect Switch allows the fire alarm system to be tested without activating the fire suppression system. The operation of this switch causes a trouble signal at the control panel.

Data. The Signature data circuit provides an input and an output to the data loop that communicates with the Signature loop controller at the control panel. The SIGA-REL resides on the same data loop as the Signature Series detectors that initiate the automatic release sequence. This close association offers the most reliable performance and ensures compliance with prevailing life safety codes.

Power. The SIGA-REL requires 24 Vdc (power limited). See the specification table for details.

Operation

The SIGA-REL has several built-in safeguards to prevent the unwanted release of extinguishing agent. All release sequences are subject to configurable delay timers that provide the opportunity for an occupant of the area to manually abort the release sequence. If no abort signal is received before the delay timer expires, the suppression agent is released.

The SIGA-REL includes three delay timers: one for manual release sequences (up to 30 seconds); one for automatic release sequences (up to 50 seconds); and one for abort sequences (10 seconds).

Note: Misapplication of the SIGA-REL can have serious consequences. Descriptions provided here are for information only, are subject to change, and should not be used as a guide to field installation of equipment. Always consult the SIGA-REL installation manual when setting up or configuring this component.

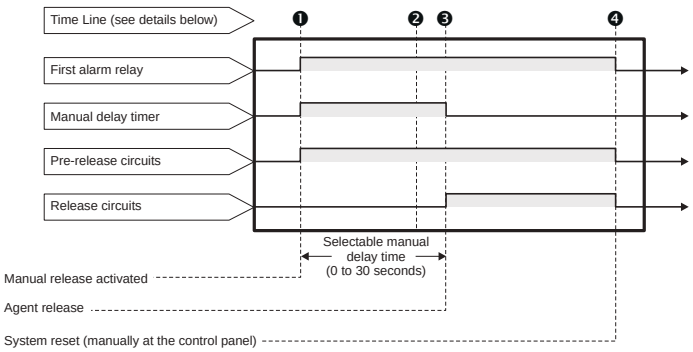
Normal State

In its normal operating state the SIGA-REL supervises both of its release circuits and both of its pre-release NAC circuits for faults. Should a short or open occur on any of these circuits, a Trouble condition is reported to the control panel.

A trouble condition on any of these circuits may prevent the operation of that circuit, but it won't inhibit the operation of any other fault-free circuit.

Manual Release Sequence

The operation of a manual release station initiates the manual release sequence. The diagram below outlines the manual release sequence.



Note: *A manual release sequence cannot be aborted.*

Manual Release Time Line

❶ An active manual release station disables automatic operation and the abort function and simultaneously activates the:
- Manual delay timer
- Pre-release circuit
- Pre-release strobe circuit (steady On)
- Pre-release horn circuit (60 pulses per minute)

❷ Ten seconds before the expiration of the manual delay timer, the pre-release horn changes from 60 pulses per minute to steady On.

❸ The manual delay timer expires and the release circuits activate.

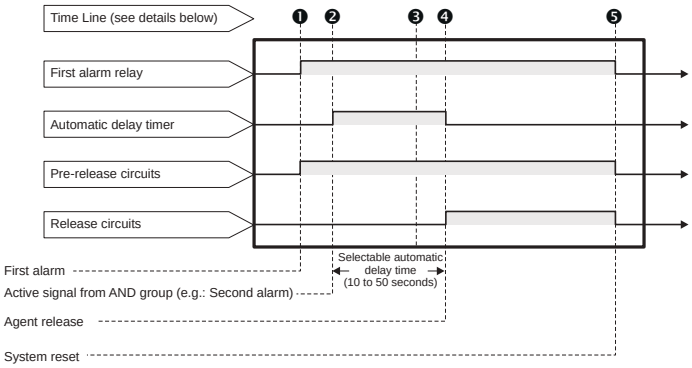
❹ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Automatic Release Sequence

The automatic release sequence requires an AND group (cross zone) or a matrix group (counting zone). AND groups and matrix groups require fire alarm signals from designated Signature Series devices. These logic groups are programmable through a laptop computer and the System Definition Utility (SDU).

Note: EST2 systems do not support matrix groups. See *Programming the SIGA-REL* for AND group rules. To create AND groups and matrix groups, see the *System Programming Manual* and the SDU *Online Help* for your system.

The diagram below outlines the automatic release sequence.



Automatic Release Time Line

❶ A detector signals the first alarm. This event simultaneously activates the:
- First alarm relay
- Pre-release strobe circuit (steady On)
- Pre-release horn circuit (15 pulses per minute)

❷ A detector in the protected area signals a second alarm and meets the AND group conditions.* The automatic delay timer then starts its countdown and the pre-release horn circuit changes to 60 pulses per minute.

* AND group and matrix group conditions depend on programming.

❸ 10 seconds before the automatic delay timer expires, the pre-release (horn) circuit changes to steady On.

❹ The automatic delay timer expires and the release circuits activate.

❺ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Abort Sequences

The SIGA-REL provides four abort modes. Aborts do not terminate the release of fire suppression agents. They merely offer a limited extension of the automatic timer delay period.

Abort Mode 1 (factory default)

If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will continue to run while the abort is active. When the abort switch is restored, the release will occur with the expiration of the automatic delay timer or the abort delay timer, whichever occurs last.

Abort Mode 2

If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort switch is restored, the automatic delay timer will continue from the stop point and the release will occur with the expiration of the timer.

Abort Mode 3

Industrial Risk Insurers (IRI) Mode: To be recognized as valid, the abort must be active when the second alarm is received. When the abort switch is restored, the release will occur with the expiration of the abort delay timer (set for 10 sec).

Abort Mode 4

International applications: If the abort is initiated before the automatic time delay expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort switch is restored, the automatic delay timer will reset and commence time from t = 0. The release will occur with the expiration of the timer setting minus 10 seconds.

Compatibility

Sprinkler systems

The SIGA-REL works with two types of sprinkler systems: deluge and pre-action. The primary difference between both systems is the type of sprinkler head (or nozzle) that terminates the pipes. Table1-1 outlines the Factory Mutual Research Corporation (FMRC) requirements for deluge and pre-action systems.

FM approval requirements for deluge and pre-action sprinkler systems

Standby operation	90 hours
Alarm operation	10 minutes
NFPA style	Class A (Style D or E) or Class A (Style 2, 5, 6, or 7)
FMRC documentation	FMRC Approval Guide (Volume 1)

Deluge sprinkler systems

In Deluge sprinkler systems, open-valve sprinkler heads terminate pipes connected to a water supply controlled by a single valve. When the system detects a fire it automatically opens the valve to allow the waterflow through all of the sprinkler heads. Deluge sprinklers are useful for applications that require the simultaneous discharge of water through every sprinkler.

The following fire detection systems meet FRMC requirements for deluge systems:

- Wet pilot sprinkler line
- Dry pilot sprinkler line
- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Pre-action sprinkler systems

In Pre-action sprinkler systems, closed-valve sprinkler heads terminate pipes connected directly to a water supply. The water supply is usually in the same area as the sprinklers and the pipes are supervised for air pressure. Pre-action sprinklers are useful where it is important to prevent the accidental discharge of water.

Warning! Improper applications of fire suppression agents can lead to property damage, injury, or loss of life. Consult the applicable NFPA documents and the authority having jurisdiction (AHJ) for more information.

The following fire detection systems meet FRMC requirements for pre-action systems:

- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Automatic fire extinguishing systems

Automatic fire extinguishing systems automatically detect and extinguish fires. They require no manual input because detectors automatically activate releasing solenoids or sprinkler valves. The table below provides a list of the fire suppression agents and the applicable NFPA documents.

Fire suppression agents and NFPA documentation

Agent	NFPA documentation
Low-expansion foam	NFPA 11
Medium- and high-expansion foam	NFPA 11A
CO2	NFPA 12
Sprinklers	NFPA 13
Water spray	NFPA 15
Foam-water	NFPA 16
Dry chemicals	NFPA 17

The table below outlines the FMRC requirements for automatic fire extinguishing systems.

FM approval requirements for automatic fire extinguishing systems

Standby operation	24 hours
Alarm operation	10 minutes
NFPA style	B or D
FMRC documentation	FMRC Approval Guide (Volume 1)

Compatible panels. The SIGA-REL is compatible with iO Series, EST3 and EST3X fire alarm control panels. You may install the SIGA-REL in any of the following enclosures:

- 2-WB(X) series
- 2-CAB series
- 3-CAB series
- RACCR series
- MFC-A
- APS6A/APS10A

Note: Maintain a 1-inch (25.4 mm) minimum clearance all around the SIGA-REL. The clearance space must also comply with the National Electrical Code.

Power supplies. The SIGA-REL is compatible with the following power supplies:

- 2-PPS(-220)
- 2-PPS/6A(-220)
- SIGA-APS(-220)
- 3-BPS/M
- 3-PPS/M
- BPS6*, BPS10*, APSxA

*Not compatible with FMRC sprinkler applications that require 90 hours of standby.

Solenoid polarizing relays. Use the RELA-EOL with the SIGA-REL. For more information, see the RELA-EOL installation sheet.

Abort stations. The SIGA-REL is only compatible with normally-open, momentary-action abort stations. Abort stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Service disconnect stations. The SIGA-REL is only compatible with service disconnect stations that are normally-closed (minimum 2.0 Amps). Service disconnect stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Releasing solenoid valves. Releasing solenoid valves must be listed with the appropriate agencies in your area. See *Listing agencies*.

Listing agencies. Listing agencies include:

- Factory Mutual Research Corporation (FMRC)
- Underwriters Laboratories, Inc. (UL)
- Underwriters Laboratories Canada (ULC)

Switch Settings

Abort mode and time delay settings are configured by means of dip switches on the module.

Abort mode

	Mode	SW1	SW2	
DEFAULT	1	0	0	*Routines that determine how the abort function interacts with the timers.*
	2	0	1	
	3	1	0	
	4	1	1	

Manual time delay (seconds)

	Delay	SW3	SW4	
	0	0	0	*The length of time that the deluge is inhibited when the releasing function is manually initiated.*
DEFAULT	10	0	1	
	20	1	0	
	30	1	1	

Automatic time delay (seconds)

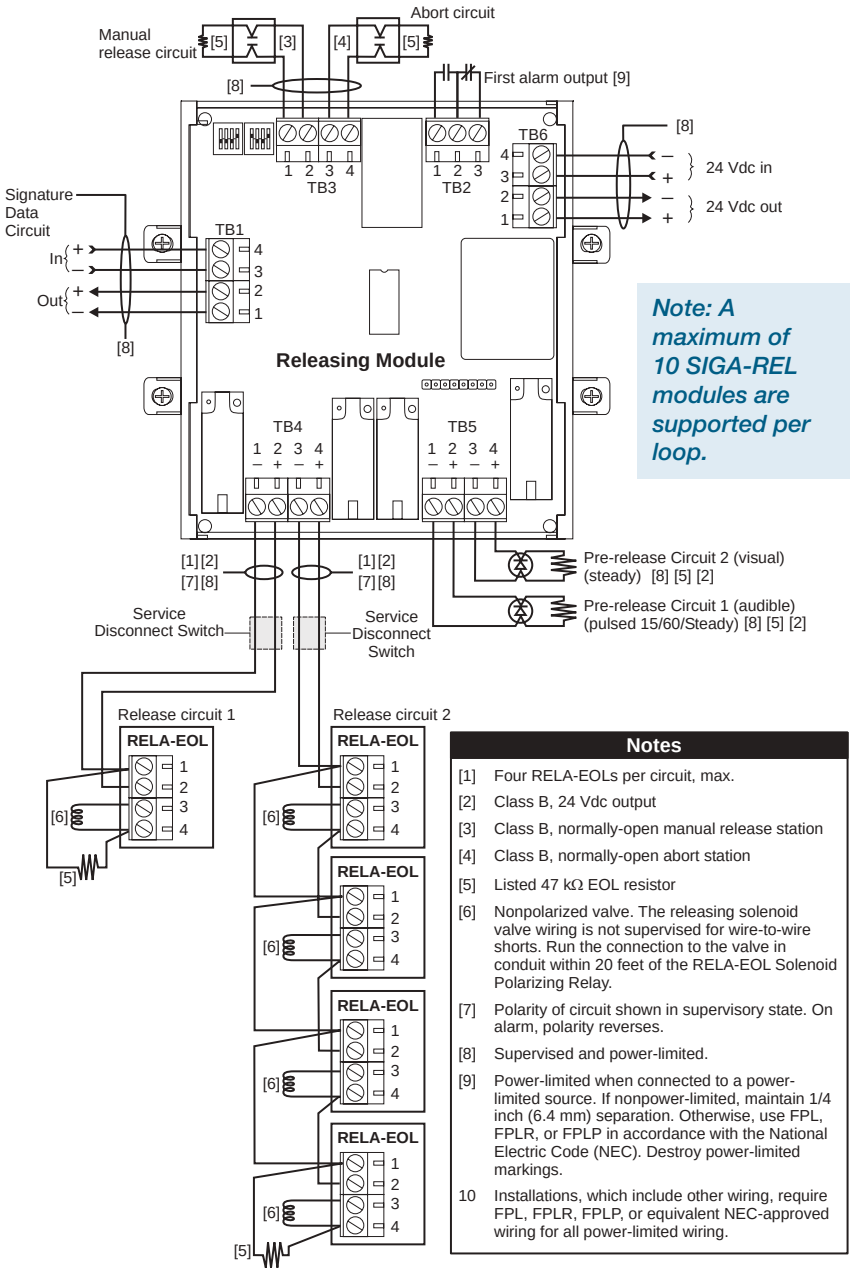
	Delay	SW5	SW6	SW7	
	10	0	0	0	*The length of time that the deluge is inhibited when the releasing function is initiated by the control panel (i.e.: after receiving an alarm).*
	20	0	0	1	
	30	0	1	0	
	40	0	1	1	
DEFAULT	50	1	0	0	

Abort time delay (seconds)

	Delay	SW8	
	0	0	*The length of time that the deluge is inhibited when the abort function is restored (i.e.: cancelled).*
DEFAULT	10	1	

DEFAULT Denotes default settings.

Wiring



Note: A maximum of 10 SIGA-REL modules are supported per loop.

Notes

[1] Four RELA-EOLs per circuit, max.

[2] Class B, 24 Vdc output

[3] Class B, normally-open manual release station

[4] Class B, normally-open abort station

[5] Listed 47 kΩ EOL resistor

[6] Nonpolarized valve. The releasing solenoid valve wiring is not supervised for wire-to-wire shorts. Run the connection to the valve in conduit within 20 feet of the RELA-EOL Solenoid Polarizing Relay.

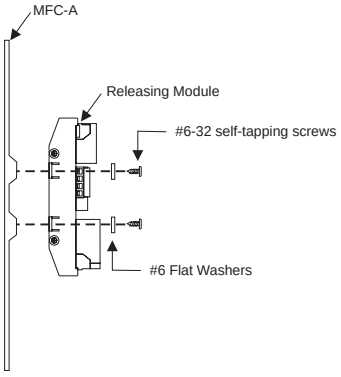
[7] Polarity of circuit shown in supervisory state. On alarm, polarity reverses.

[8] Supervised and power-limited.

[9] Power-limited when connected to a power-limited source. If nonpower-limited, maintain 1/4 inch (6.4 mm) separation. Otherwise, use FPL, FPLR, or FPLP in accordance with the National Electric Code (NEC). Destroy power-limited markings.

10 Installations, which include other wiring, require FPL, FPLR, FPLP, or equivalent NEC-approved wiring for all power-limited wiring.

Mounting

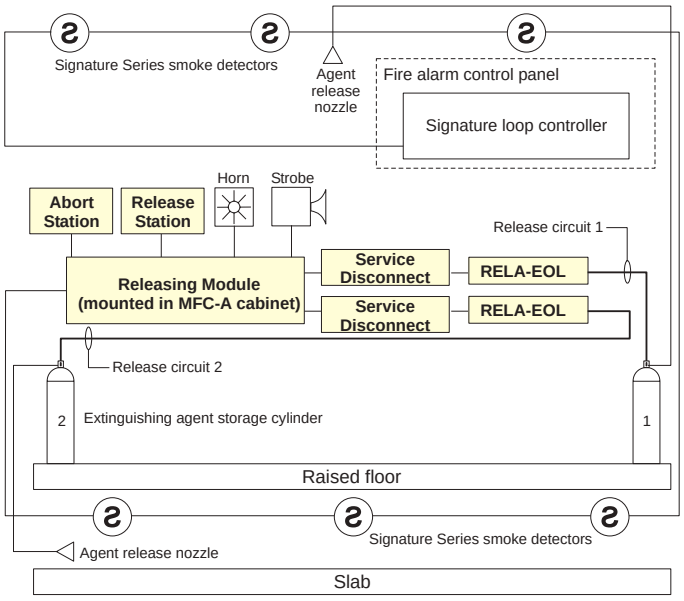


LED Operation

LED	Color	Pattern	Function
DS1	Red	Flashing	Data (alarm conditions)*
DS2	Green	Flashing	Data (normal conditions)*
DS3	Red	Steady	Alarm
DS4	Green	Steady	Power
DS5	Yellow	Steady	Abort
DS6	Yellow	Steady	Trouble
DS7	Red	Steady	Release Active

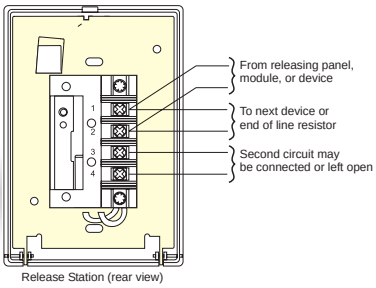
**Note: During a loss of communications, the Releasing Module will go into a standby condition, which will cause DS1 and DS2 to change to a steady pattern during an alarm condition.*

Typical application of SIGA-REL accessories (computer room)



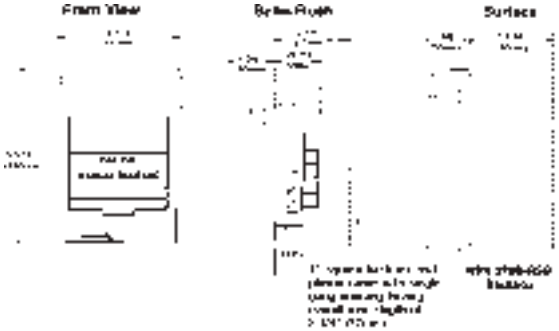
Manual Release Station





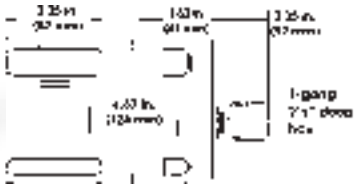
Release Station (rear view)

The manual release station is a normally-open, dry contact signal initiating device. The 276A-REL is a single-action station that requires the user to pull the release handle to initiate the release of a fire suppression agent. The 278A-REL (shown) is a double-action station that requires the user to raise the upper door, then pull the release handle to initiate the release.



Abort Station

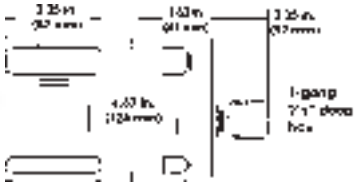




The abort station is a normally-open, non-latching device. It is used to prevent the release of agent into the protected area after the release sequence has begun.

Service Disconnect Switch

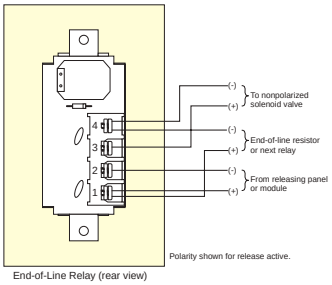




The service disconnect switch is used to temporarily disable the fire suppression system. One switch is installed on each of the two release circuits between the SIGA-REL and the RELA-EOL end-of-line relay. Opening the Service Disconnect Switch allows the fire alarm system to be tested without activating the fire suppression system. The operation of this switch causes a trouble signal at the control panel.

End-of-Line Relay





End-of-Line Relay (rear view)

The End-of-Line Relay facilitates the connection of a non-polarized releasing solenoid to a supervised, polarized releasing circuit. One relay is required per release solenoid.

Module Enclosure



The MFC-A cabinet is UL-listed for use with Signature modules. Shown here with plug-in style I/O modules, the MFC-A also meets UL requirements for spacing and clearance around the SIGA-REL Releasing Module. The cabinet features red epoxy finish with white “FIRE” markings.

Specifications

Power riser	Input voltage Supervisory current Riser input current Alarm	24 Vdc (power limited) 25 mA, max. 4 amps maximum 170 mA min.; 4 A max.
Release circuits	Output rating Valves per circuit Max. supervisory current Nominal supervisory current Supervisory voltage End of line device	2 A @ 24 Vdc (for each circuit) 4 valves, max. 0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm EOL
Pre-release alarm circuits	Output rating Max. supervisory current Nominal supervisory current Supervisory voltage End of line device	2 A @ 24 Vdc (for each circuit) 0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor
Manual release input circuit	Max. supervisory current Nominal supervisory current Supervisory voltage End of line device Circuit type Circuit capacitance	0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor Class B N.O. latching 0.1 µF, max
Abort circuit	Max. supervisory current Nominal supervisory current Supervisory voltage End of line device Circuit type Circuit capacitance	0.4 mA (short circuit) 0.18 mA 26 Vdc, max. (open circuit) 47k Ohm resistor Class B N.O. non- latching 0.1 µF, max
First alarm output relay	Contact rating	3 A @ 24 Vdc (0.6 power factor) Form C
Signature Data line	Operating voltage Supervisory current Alarm current	5.2 to 19.95 Vdc 1000 µA 1000 µA
Environmental condiitions	Operating temperature Storage temperature Humidity	32° F to 120° F (0° C to 49° C) -4° F to 140° F (-20° C to 60° C) 0 to 93% Non-condensing
Wiring Terminals	Suitable for #18 to #12 AWG (2.5 mm² to .75 mm²)	
Type Code	Factory Set	
Addressing Requirements	Uses six module addresses	
Agency Listings	UL, ULC, and FM	
Compatible Solenoids	Must be both UL/ULC-listed and FM-approved	

Note: *Output circuits are power-limited when the riser circuit is power-limited.*

Line Resistance

Power riser

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ohms per wire)
	#12 AWG	2.5 mm²	#14 AWG	1.5 mm²	
4.0	29 ft	8.84 m	20 ft	6.10 m	0.050
3.5	34 ft	10.36 m	23 ft	7.01 m	0.057
3.0	39 ft	11.89 m	27 ft	8.23 m	0.067
2.5	47 ft	14.33 m	32 ft	9.75 m	0.080
2.0	59 ft	17.98 m	40 ft	12.19 m	0.100
1.5	78 ft	23.77 m	53 ft	16.15 m	0.133
1.0	118 ft	35.97 m	80 ft	24.38 m	0.200

Pre-release and release circuits (per circuit)

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ohms per wire)
	#12 AWG	2.5 mm²	#14 AWG	1.5 mm²	
2.00	176 ft	53.64 m	120 ft	36.58 m	0.300
1.75	202 ft	61.57 m	137 ft	41.76 m	0.343
1.50	235 ft	71.63 m	160 ft	48.77 m	0.400
1.25	282 ft	85.95 m	192 ft	58.52 m	0.480
1.0	353 ft	107.59 m	240 ft	73.15 m	0.600
0.50	706 ft	215.19 m	480 ft	146.30 m	1.200

Ordering Information

Model	Description	Ship Wt. lb (kg)
SIGA-REL	Analog addressable releasing module	0.52 (0.23)
276A-REL	Manual releasing station (single-action). English markings, black text on yellow polycarbonate body.	1.0 (0.45)
278A-REL	Manual releasing station (double-action). English markings, black text on yellow polycarbonate body.	1.0 (0.45)
RELA-ABT	Manual Abort Station. English markings, black text on yellow polycarbonate body.	1.0 (0.45)
RELA-SRV-1	Service Disconnect Switch. One n/c contact and one n/o contact. English markings, white text on blue polycarbonate body.	1.0 (0.45)
RELA-EOL	Polarized end-of-line relay. English markings on stainless steel cover.	0.2 (0.1)
MFC-A	UL listed cabinet for mounting releasing modules, red with white “FIRE”. HWD: 8” x 14” x 3½” (203mm x 356mm x 89mm)	7.0 (3.1)

LIFE SAFETY & INCIDENT MANAGEMENT

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EDWARDS

LIFE SAFETY & INCIDENT MANAGEMENT

Control Relay Modules

SIGA-CR, SIGA-MCR, SIGA-CRR, SIGA-MCRR



SIGA-MCR



SIGA-CR

FM APPROVED MEA 7300-1657: 0121 S3424

Overview

The Control Relay Module and the Polarity Reversal Relay Module are part of the Signature Series system. They are intelligent analog addressable devices available in either plug-in (UIO) versions, or standard 1-gang mount versions.

The SIGA-CR/MCR Control Relay Module provides a Form "C" dry relay contact to control external appliances such as door closers, fans, dampers etc. This device does not provide supervision of the state of the relay contact. Instead, the on-board microprocessor ensures that the relay is in the proper ON/OFF state. Upon command from the loop controller, the SIGA-CR/MCR relay activates the normally open or normally-closed contact.

The SIGA-CRR/MCRR Polarity Reversal Relay Module provides a Form "C" dry relay contact to power and activate a series of SIGA-AB4G Audible Sounder Bases. Upon command from the Signature loop controller, the SIGA-CRR reverses the polarity of its 24 Vdc output, thus activating all Sounder Bases on the data loop.

Standard-mount versions (SIGA-CR and SIGA-CRR) are installed to standard North American 1-gang electrical boxes, making them ideal for locations where only one module is required. Separate I/O and data loop connections are made to each module.

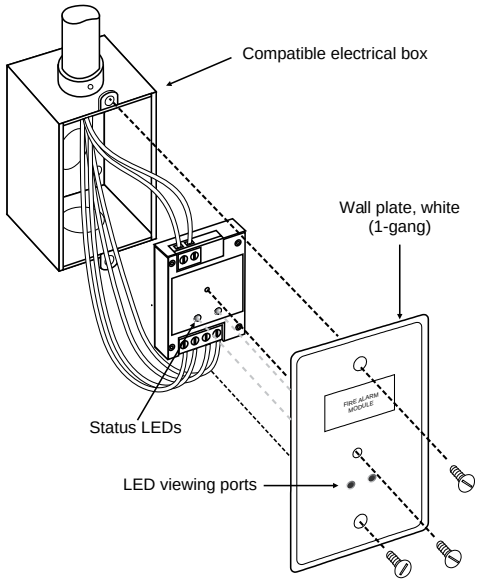
Plug-in UIO versions (SIGA-MCR and SIGA-MCRR) are part of the UIO family of plug-in Signature Series modules. They function identically to the standard mount versions, but take advantage of the modular flexibility and easy installation that characterizes all UIO modules. Two- and six-module UIO motherboards are available. All wiring connections are made to terminal blocks on the motherboard. UIO assemblies may be mounted in EDWARDS enclosures.

Standard Features

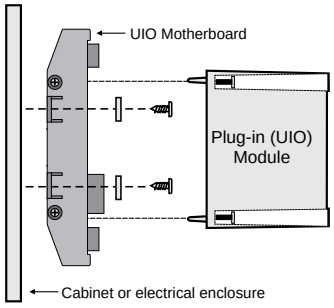
- **Provides one no/nc contact (SIGA-CR/MCR)**
  Form "C" dry relay contact can be used to control external appliances such as door closers, fans, dampers etc.
- **Allows group operation of sounder bases**
  The SIGA-CRR/MCRR reverses the polarity of its 24 Vdc output, thus activating all Sounder Bases on the data loop.
- **Plug-in (UIO) or standard 1-gang mount**
  UIO versions allow quick installation where multiple modules are required. The 1-gang mount version is ideal for remote locations that require a single module.
- **Automatic device mapping**
  Signature modules transmit information to the loop controller regarding their circuit locations with respect to other Signature devices on the wire loop.
- **Electronic addressing**
  Programmable addresses are downloaded from the loop controller, a PC, or the SIGA-PRO Signature Program/Service Tool; there are no switches or dials to set.
- **Intelligent device with microprocessor**
  All decisions are made at the module to allow lower communication speed with substantially improved control panel response time and less sensitivity to line noise and loop wiring properties; twisted or shielded wire is not required.

Installation

SIGA-CR and SIGA-CRR: modules mount to North American 2½ inch (64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates. The terminals are suited for #12 to #18 AWG (2.5 mm^2 to 0.75 mm^2) wire size.



SIGA-MCR and SIGA-MCRR: mount the UIO motherboard inside a suitable EDWARDS enclosure with screws and washers provided. Plug the module into any available position on the motherboard and secure the module to the motherboard with the captive screws. Wiring connections are made to the terminals on the motherboard (see wiring diagram). UIO motherboard terminals are suited for #12 to #18 AWG (2.5 mm^2 to 0.75 mm^2) wire size.



Electronic Addressing - The loop controller electronically addresses each module, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each module has its own unique serial number stored in its on-board memory. The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the modules can be addressed using the SIGA-PRO Signature Program/Service Tool.

EDWARDS recommends that this module be installed according to latest recognized edition of national and local fire alarm codes.

Application

The operation of Signature Series control relays is determined by their sub-type code or "Personality Code."

Personality Code 8: CONTROL RELAY (SIGA-CR/MCR) - Dry Contact Output. This setting configures the module to provide one Form "C" DRY RELAY CONTACT to control Door Closers, Fans, Dampers, etc. Contact rating is 2.0 amp @ 24 Vdc; 0.5 amp @ 120 Vac (or 0.25A @ 220 Vac for non-UL applications). Personality Code 8 is assigned at the factory. No user configuration is required.

Personality Code 8: POLARITY REVERSAL RELAY MODULE (SIGA-CRR/MCRR). This setting configures the module to reverse the polarity of its 24 Vdc output. Contact rating is 2.0 amp @ 24 Vdc (pilot duty). Personality Code 8 is assigned at the factory. No user configuration is required.

Compatibility

These modules are part of EDWARDS's Signature Series intelligent processing and control platform. They are compatible with EST3, EST3X and iO Series control panels.

Warnings & Cautions

This module will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your local fire protection specialist.

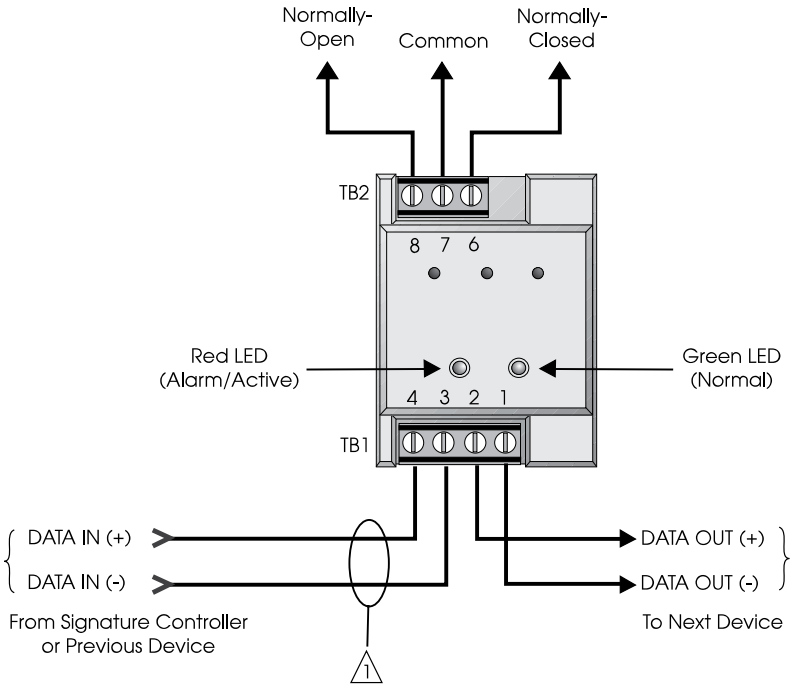
Testing & Maintenance

The module's automatic self-diagnosis identifies when it is defective and causes a trouble message. The user-friendly maintenance program shows the current state of each module and other pertinent messages. Single modules may be turned off (deactivated) temporarily, from the control panel. Availability of maintenance features is dependent on the fire alarm system used. Scheduled maintenance (Regular or Selected) for proper system operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72 and ULC CAN/ULC 536 standards.

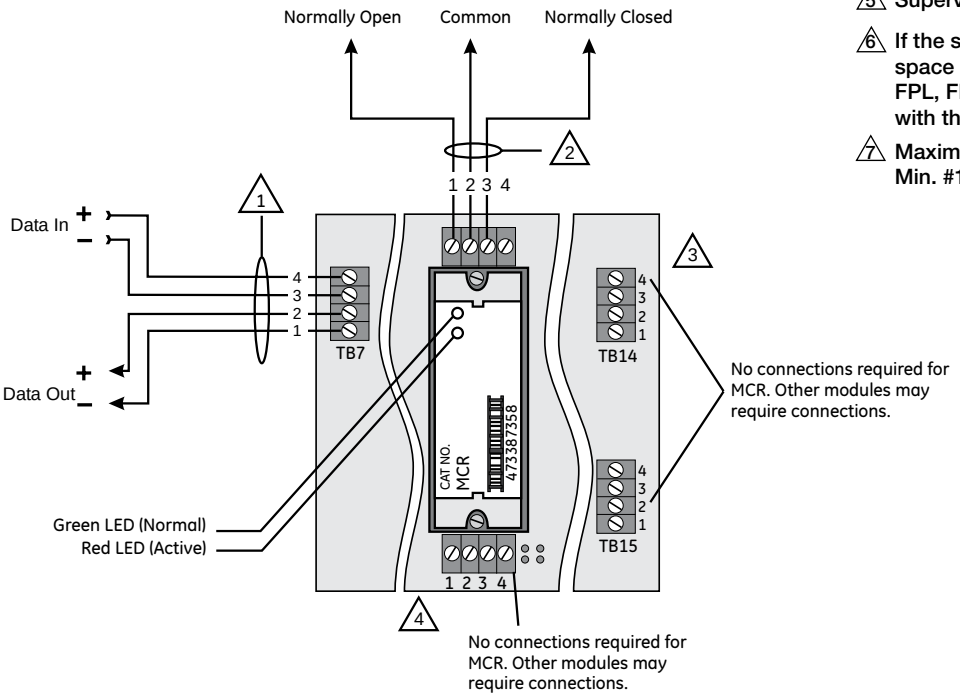
Typical Wiring

Modules will accept #18 AWG (0.75mm^2), #16 (1.0mm^2), #14 AWG (1.50mm^2) and #12 AWG (2.5mm^2) wire sizes.

Note: Sizes #16 AWG (1.0mm^2) and #18 AWG (0.75mm^2) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.



SIGA-CR Control Relay



SIGA-MCR Control Relay

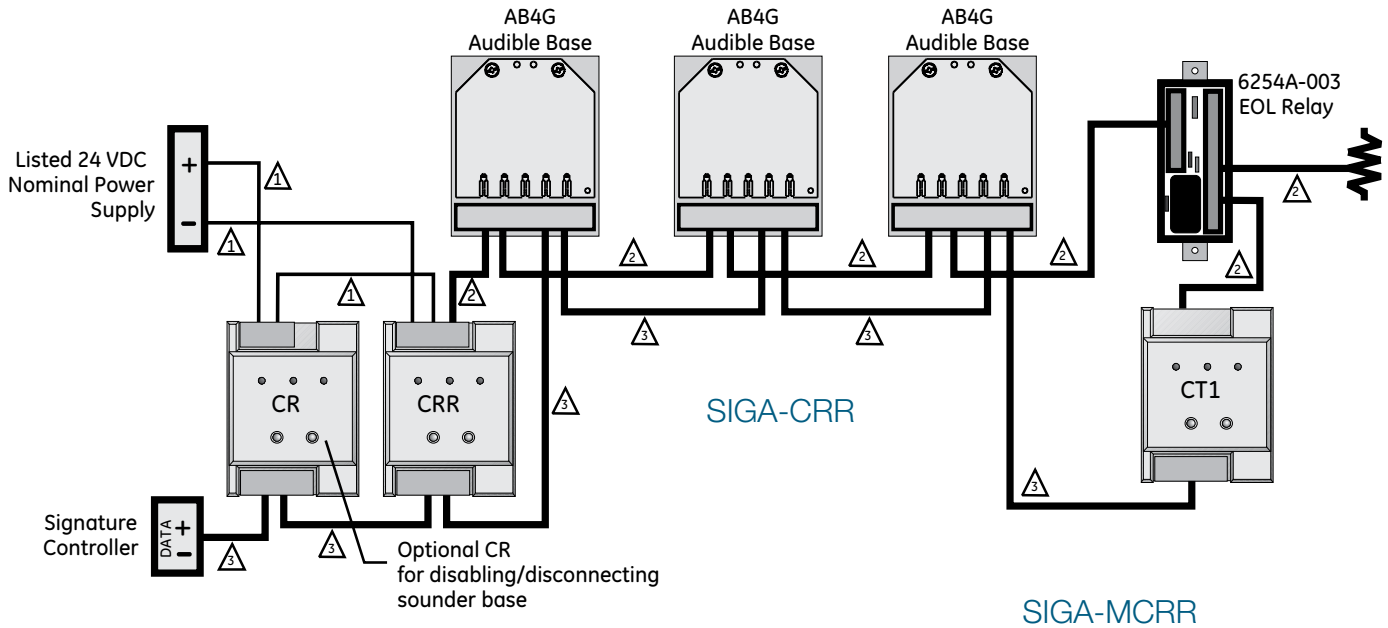
Notes

1. Refer to Signature Loop Controller Installation Sheet for wiring specifications.
2. NFPA 72 requires that the SIGA-CR/SIGA-MCR be installed in the same room as the device it is controlling. This requirement may not apply in all markets. Check with your local AHJ for details.
3. The SIGA-UIO6R and the SIGA-UIO2R do not come with TB14.
4. The SIGA-UIO6 does not come with TB8 through TB13.
5. Supervised and power-limited.
6. If the source is nonpower-limited, maintain a space of 1/4 inch from power-limited wiring or use FPL, FPLP, FPLR, or an equivalent in accordance with the National Electrical Code.
7. Maximum #12 AWG (2.5mm^2) wire. Min. #18 (0.75mm^2).

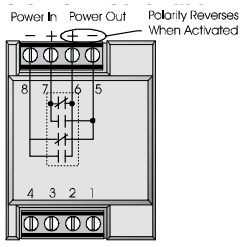
Typical Wiring

Modules will accept #18 AWG (0.75mm^2), #16 (1.0mm^2), #14 AWG (1.50mm^2) and #12 AWG (2.50mm^2) wire sizes.

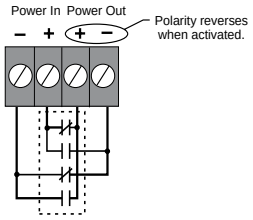
Note: Sizes #16 AWG (1.0mm^2) and #18 AWG (0.75mm^2) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.



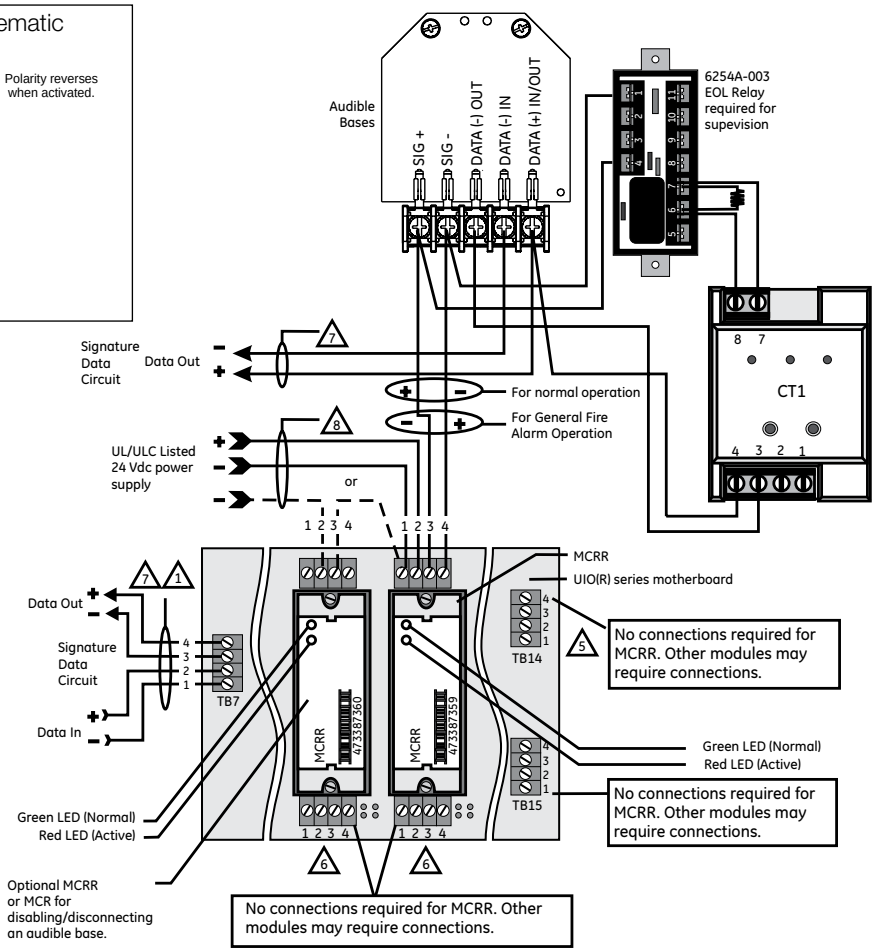
SIGA-CRR Schematic



SIGA-MCRR Schematic



SIGA-MCRR



Notes

1. Refer to the Signature controller installation sheet for wiring.
2. One Pair of Wires (24 Vdc power).
3. One Pair of Wires (Signature Data).
4. Single Wire (24 Vdc power).
5. The SIGA-UIO6R and the SIGA-UIO2R do not come with TB14.
6. The SIGA-UIO6 does not come with TB8 through TB13.
7. Supervised and power-limited.
8. If the source is nonpower-limited, maintain a space of 1/4 inch from power-limited wiring or use FPL, FPLP, FPLR, or an equivalent in accordance with the National Electrical Code.
9. Maximum #12 AWG (2.5 mm^2) wire; Minimum #18 AWG (0.75 mm^2).
10. End-of-Line Relay must monitor and report power supply trouble to control panel.
11. Class B Data wiring may be “T-tapped.”

Specifications

Catalog Number	SIGA-CR	SIGA-MCR	SIGA-CRR	SIGA-MCRR
Description	Control Relay		Polarity Reversal Relay	
Type Code	Personality Code 8 (Factory Set)		Personality Code 8 (Factory Set)	
Address Requirements	Uses 1 Module Address			
Operating Current	Standby = 75 µA Activated = 75 µA			
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)			
Relay Type and Rating	Form C, 2 Amps @ 24 Vdc (pilot duty), 0.5 Amps @ 120 Vac and 0.25 Amps @ 220 Vac (220 Vac is non-UL) Not rated for capacitive loads.			
Mounting	North American 2½ inch (64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates	Plugs into UIO2R, UIO6R or UIO6 Motherboards	North American 2½ inch (64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates	Plugs into UIO2R, UIO6R or UIO6 Motherboards
Construction & Finish	High Impact Engineering Polymer			
Storage and Operating Environment	Operating Temperature: 32°F to 120°F (0°C to 49°C) Storage Temperature: -4°F to 140°F (-20°C to 60°C) Humidity: 0 to 93% RH			
LED Operation	On-board Green LED - Flashes when polled On-board Red LED - Flashes when in alarm/active			
Compatibility	Use With: Signature Loop Controller			
Agency Listings	UL, ULC, CSFM, MEA			

Ordering Information

Catalog Number	Description	Ship Weight - lbs (kg)
SIGA-CR	Control Relay Module (Standard Mount)	0.4 (0.15)
SIGA-MCR	Control Relay Module (UIO Mount)	0.18 (0.08)
SIGA-CRR	Polarity Reversal Relay Module (Standard Mount)	0.4 (0.15)
SIGA-MCRR	Polarity Reversal Relay Module (UIO Mount)	0.18 (0.08)
Related Equipment		
27193-11	Surface Mount Box - Red, 1-gang	1 (0.6)
27193-16	Surface Mount Box - White, 1-gang	1 (0.6)
SIGA-UIO2R	Universal Input-Output Module Board w/Riser Inputs - Two Module Positions	0.32 (0.15)
SIGA-UIO6R	Universal Input-Output Module Board w/Riser Inputs - Six Module Positions	0.62 (0.28)
SIGA-UIO6	Universal Input-Output Module Board - Six Module Positions	0.56 (0.25)
SIGA-AB4G	Audible (Sounder) Detector Base	0.3 (0.15)
Accessories		
MFC-A	Multifunction Fire Cabinet - Red, supports Signature Module Mounting Plates	7.0 (3.1)
SIGA-MB4	Transponder Mounting Bracket (allows for mounting two 1-gang modules in a 2-gang box)	0.4 (0.15)
SIGA-MP1	Signature Module Mounting Plate, 1 footprint	1.5 (0.70)
SIGA-MP2	Signature Module Mounting Plate, 1/2 footprint	0.5 (0.23)
SIGA-MP2L	Signature Module Mounting Plate, 1/2 extended footprint	1.02 (0.46)

LIFE SAFETY & INCIDENT MANAGEMENT

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Signature Series Overview

The Signature Series intelligent analog-addressable system from EDWARDS is an entire family of multi-sensor detectors and mounting bases, multiple-function input and output modules, network and non-network control panels, and user-friendly maintenance and service tools. Analog information from equipment connected to Signature devices is gathered and converted into digital signals. An onboard microprocessor in each Signature device measures and analyzes the signal and decides whether or not to input an alarm. The microprocessor in each Signature device provides four additional benefits – Self-diagnostics and History Log, Automatic Device Mapping, and Fast, Stable Communication.

Self-diagnostics and History Log – Each Signature Series device constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in its non-volatile memory. This information is accessible for review any time at the control panel, PC, or using the SIGA-PRO Signature Program/Service Tool. The information stored in device memory includes:

- Device serial number, address, and type
- Time and date of last alarm
- Most recent trouble code logged by the detector — 32 possible trouble codes may be used to diagnose faults.

Automatic Device Mapping –The Signature Data Controller (SDC) learns where each device's serial number address is installed relative to other devices on the circuit. The SDC keeps a map of all Signature Series devices connected to it. The Signature Series Data Entry Program also uses the mapping feature. With interactive menus and graphic support, the wired circuits between each device can be examined. Layout or "as-built" drawing information showing branch wiring (T-taps), device types and their address are stored on disk for printing hard copy. This takes the mystery out of the installation. The preparation of as-built drawings is fast and efficient.

Device mapping allows the Signature Data Controller to discover:

- Unexpected additional device addresses
- Missing device addresses
- Changes to the wiring in the circuit.

Most Signature modules use a personality code selected by the installer to determine their actual function. Personality codes are downloaded from the SDC during system configuration and are indicated during device mapping.

EDWARDS
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LIFE SAFETY & INCIDENT MANAGEMENT

Input Modules

SIGA-CT1, SIGA-CT1HT, SIGA-CT2, SIGA-MCT2


SIGA-MCT2


SIGA-CT1/2

FM APPROVED MEA

7300-1657: 0121

S3424

Overview

The SIGA-CT1 Single Input Module, SIGA-CT1HT High Temperature Single Input Module and SIGA-CT2/SIGA-MCT2 Dual Input Modules are intelligent analog addressable devices used to connect one or two Class B normally-open Alarm, Supervisory, or Monitor type dry contact Initiating Device Circuits (IDC).

The actual function of these modules is determined by the "personality code" selected by the installer. This code is downloaded to the module from the Signature loop controller during system configuration.

The input modules gather analog information from the initiating devices connected to them and convert it into digital signals. The module's on-board microprocessor analyzes the signal and decides whether or not to input an alarm.

The SIGA-CT1, SIGA-CT1HT and SIGA-CT2 mount to standard North American 1-gang electrical boxes, making them ideal for locations where only one module is required. Separate I/O and data loop connections are made to each module.

The SIGA-CT1HT module operates at an expanded temperature range of 32 ºF to 158 ºF (0 ºC to 70 ºC) for those applications requiring more extreme environmental temperature variation.

The SIGA-MCT2 is part of the UIO family of plug-in Signature Series modules. It functions identically to the SIGA-CT2, but takes advantage of the modular flexibility and easy installation that characterizes all UIO modules. Two- and six-module UIO motherboards are available. All wiring connections are made to terminal blocks on the motherboard. UIO assemblies may be mounted in EDWARDS enclosures.

Standard Features

- **Multiple applications**
  Including Alarm, Alarm with delayed latching (retard) for waterflow applications, Supervisory, and Monitor. The installer selects one of four "personality codes" to be downloaded to the module through the loop controller.
- **SIGA-CT1HT rated for high temperature environments**
  Suitable for attic installation and monitoring high temperature heat detectors.
- **Plug-in (UIO) or standard 1-gang mount**
  UIO versions allow quick installation where multiple modules are required. The 1-gang mount version is ideal for remote locations that require a single module.
- **Automatic device mapping**
  Signature modules transmit information to the loop controller regarding their circuit locations with respect to other Signature devices on the wire loop.
- **Electronic addressing**
  Programmable addresses are downloaded from the loop controller, a PC, or the SIGA-PRO Signature Program/Service Tool. There are no switches or dials to set.
- **Ground fault detection by address**
  Detects ground faults right down to the device level.

Signature Series Overview

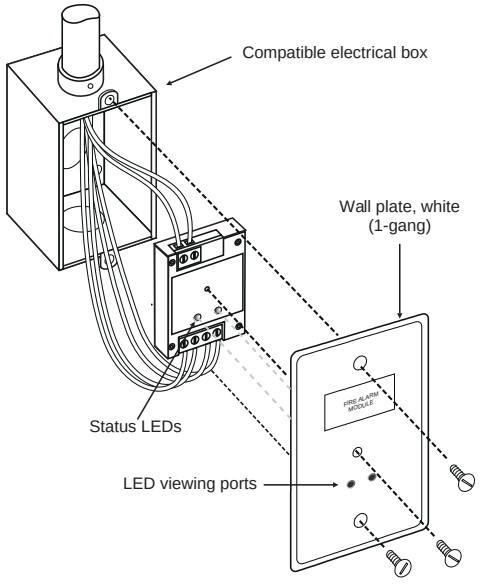
The Signature Series intelligent analog-addressable system from EDWARDS Security is an entire family of multi-sensor detectors and mounting bases, multiple-function input and output modules, network and non-network control panels, and user-friendly maintenance and service tools. Analog information from equipment connected to Signature devices is gathered and converted into digital signals. An onboard microprocessor in each Signature device measures and analyzes the signal and decides whether or not to input an alarm. The microprocessor in each Signature device provides four additional benefits – Self-diagnostics and History Log, Automatic Device Mapping, and Fast, Stable Communication.

Self-diagnostics and History Log – Each Signature Series device constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in its non-volatile memory. This information is accessible for review any time at the control panel, PC, or using the SIGA-PRO Signature Program/Service Tool.

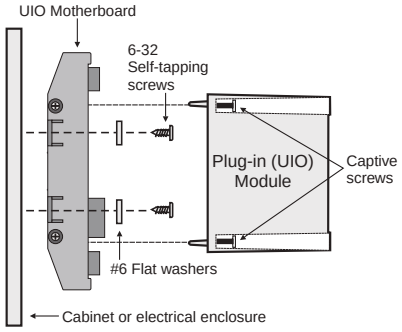
Automatic Device Mapping –The Signature Data Controller (SDC) learns where each device's serial number address is installed relative to other devices on the circuit. The SDC keeps a map of all Signature Series devices connected to it. The Signature Series Data Entry Program also uses the mapping feature. With interactive menus and graphic support, the wired circuits between each device can be examined. Layout or "as-built" drawing information showing branch wiring (T-taps), device types and their address are stored on disk for printing hard copy.

Installation

SIGA-CT1, SIGA-CT1HT and SIGA-CT2: modules mount to North American 2½ inch(64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates. The terminals are suited for #12 to #18 AWG (2.5 mm^2 to 0.75 mm^2) wire size.



SIGA-MCT2: mount the UIO motherboard inside a suitable EDWARDS enclosure with screws and washers provided. Plug the SIGA-MCT2 into any available position on the motherboard and secure the module to the motherboard with the captive screws. Wiring connections are made to the terminals on the motherboard (see wiring diagram). UIO motherboard terminals are suited for #12 to #18 AWG (2.5 mm^2 to 0.75 mm^2) wire size.



Electronic Addressing - The loop controller electronically addresses each module, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each module has its own unique serial number stored in its on-board memory. The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the modules can be addressed using the SIGA-PRO Signature Program/Service Tool.

EDWARDS recommends that this module be installed according to latest recognized edition of national and local fire alarm codes.

Application

The duty performed by the SIGA-CT1 and SIGA-CT2/MCT2 is determined by their sub-type code or "Personality Code". The code is selected by the installer depending upon the desired application and is downloaded from the loop controller.

One personality code can be assigned to the SIGA-CT1. Two personality codes can be assigned to the SIGA-CT2/MCT2. Codes 1, 2, 3 and 4 can be mixed on SIGA-CT2/MCT2 modules only. For example, personality code 1 can be assigned to the first address (circuit A) and code 4 can be assigned to the second address (circuit B).

NORMALLY-OPEN ALARM - LATCHING (Personality Code 1) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally open dry contact initiating devices such as Pull Stations, Heat Detectors, etc. An ALARM signal is sent to the loop controller when the input contact is closed. The alarm condition is latched at the module.

NORMALLY-OPEN ALARM - DELAYED LATCHING (Personality Code 2) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally-open dry contact initiating devices such as Waterflow Alarm Switches. An ALARM signal is sent to the loop controller when the input contact is closed for approximately 16 seconds. The alarm condition is latched at the module.

NORMALLY-OPEN ACTIVE - NON-LATCHING (Personality Code 3) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally-open dry contact monitoring input such as from Fans, Dampers, Doors, etc. An ACTIVE signal is sent to the loop controller when the input contact is closed. The active condition is not latched at the module.

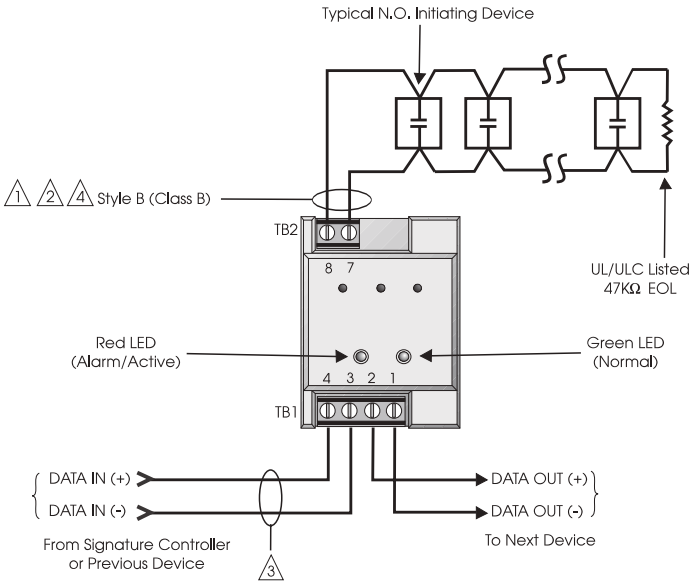
NORMALLY-OPEN ACTIVE - LATCHING (Personality Code 4) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally open dry contact monitoring input such as from Supervisory and Tamper Switches. An ACTIVE signal is sent to the loop controller when the input contact is closed. The active condition is latched at the module.

Typical Wiring

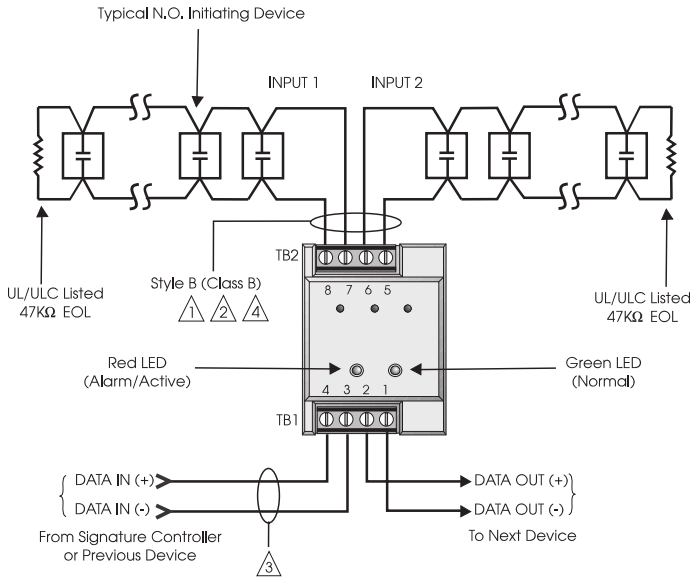
Modules will accept #18 AWG (0.75mm^2), #16 (1.0mm^2), and #14AWG (1.50mm^2), and #12 AWG (2.50mm^2) wire sizes.

Note: Sizes #16 AWG (1.0mm^2) and #18 AWG (0.75mm^2) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

Initiating (Slave) Device Circuit Wire Specifications		
Maximum Allowable Wire Resistance	50 ohms (25 ohms per wire) per Circuit	
Maximum Allowable Wire Capacitance	0.1µF per Circuit	
For Design Reference:	**Wire Size**	**Maximum Distance to EOLR**
	#18 AWG (0.75 mm^2)	4,000 ft (1,219 m)
	#16 AWG (1.00 mm^2)	
	#14 AWG (1.50 mm^2)	
	#12 AWG (1.50 mm^2)	



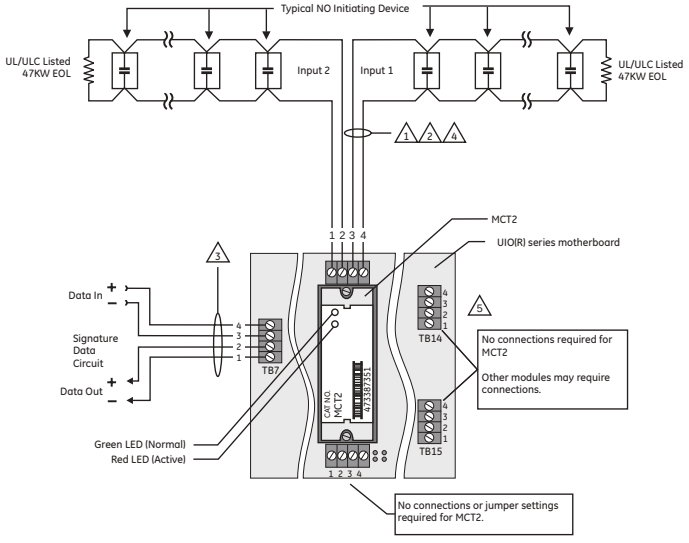
SIGA-CT1, SIGA-CT1HT



SIGA-CT2

NOTES

1. Maximum 25 Ohm resistance per wire.
2. Maximum #12 AWG (2.5 mm^2) wire; Minimum #18 AWG (0.75 mm2).
3. Refer to Signature controller installation sheet for wiring specifications.
4. Maximum 10 Vdc @ 350 µA
5. The SIGA-UIO6R and the SIGA-UIO2R do not come with TB14.
6. All wiring is supervised and power-limited.
7. These modules will not support 2-wire smoke detectors.



SIGA-MCT2

Warnings & Cautions

This module will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your local fire protection specialist.

Compatibility

These modules are part of EDWARDS's Signature Series intelligent processing and control platform. They are compatible with EST3, EST3X and iO Series control panels.

LIFE SAFETY & INCIDENT MANAGEMENT

Contact us...

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Web: *Edwards-fire.com*

EDWARDS is a UTC brand.
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Mebane, NC 27302

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Specifications

Catalog Number	SIGA-CT1HT	SIGA-CT1	SIGA-CT2	SIGA-MCT2
Description	Single Input Module		Dual Input Module	
Type Code	48 (factory set) Four sub-types (personality codes) are available		49 (factory set) Four sub-types (personality codes) are available	
Address Requirements	Uses One Module Address		Uses Two Module Addresses	
Operating Current	Standby = 250µA; Activated = 400µA		Standby = 396µA; Activated = 680µA	
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)			
Construction	High Impact Engineering Polymer			
Mounting	North American 2½ inch (64 mm) deep one-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with one-gang covers and SIGA-MP mounting plates			UIO2R/6R/6 Motherboard
Operating Environment	32°F to 158°F (0°C to 70°C)	32°F to 120°F (0°C to 49°C)		
Storage Environment	-4°F to 140°F (-20°C to 60°C); Humidity: 0 to 93% RH			
LED Operation	On-board Green LED - Flashes when polled; On-board Red LED - Flashes when in alarm/active.			
Compatibility	Use with Signature Loop Controller			
Agency Listings	UL, ULC, MEA, CSFM			

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
SIGA-CT1	Single Input Module — UL/ULC Listed	0.4 (0.15)
SIGA-CT1HT	Single Input Module High Temperature Operation UL/ULC Listed	0.4 (0.15)
SIGA-CT2	Dual Input Module — UL/ULC Listed	0.4 (0.15)
SIGA-MCT2	Dual Input Plug-in (UIO) Module — UL, ULC Listed	0.1 (0.05)

Related Equipment		
27193-11	Surface Mount Box - Red, 1-gang	1.0 (0.6)
27193-16	Surface Mount Box - White, 1-gang	1.0 (0.6)
SIGA-UIO2R	Universal Input-Output Module Board w/Riser Inputs — Two Module Positions	0.32 (0.15)
SIGA-UIO6R	Universal Input-Output Module Board w/Riser Inputs — Six Module Positions	0.62 (0.28)
SIGA-UIO6	Universal Input-Output Module Board — Six Module Positions	0.56 (0.25)
MFC-A	Multifunction Fire Cabinet — Red, supports Signature Module Mounting Plates	7.0 (3.1)
SIGA-MB4	Transponder Mounting Bracket (allows for mounting two 1-gang modules in a 2-gang box)	0.4 (0.15)
SIGA-MP1	Signature Module Mounting Plate, 1 footprint	1.5 (0.70)
SIGA-MP2	Signature Module Mounting Plate, 1/2 footprint	0.5 (0.23)
SIGA-MP2L	Signature Module Mounting Plate, 1/2 extended footprint	1.02 (0.46)

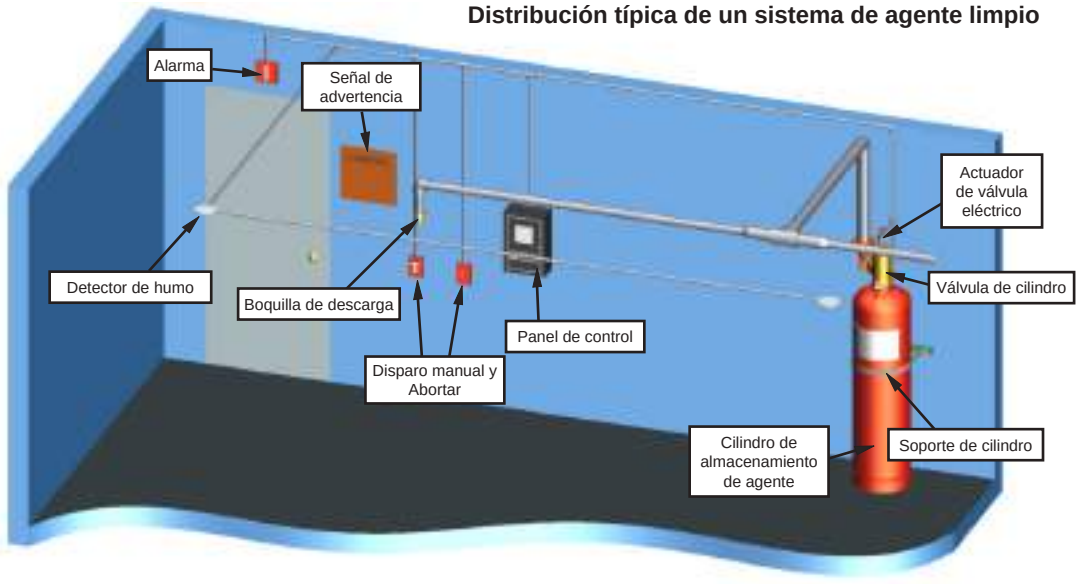
Serie Mv 500

Sistema de Supresión de incendios de FK-5-1-12

El sistema de supresión de incendios de agente limpio Serie Mv 500 de Janus Fire Systems® utiliza el FK-5-1-12 como agente extintor. FK-5-1-12 es un líquido transparente, incoloro y casi inodoro ideal para proteger los bienes de gran valor en las zonas que suelan estar ocupadas, en lugares en los que la limpieza de otros agentes sea problemática, cuando haya un espacio restringido de almacenamiento para un agente de extinción de incendios, o cuando se requiera un agente no conductor de electricidad. Cada sistema consta de los siguientes componentes y sus accesorios asociados:

1. **Componentes de almacenamiento de agente** - Estos componentes consisten en el/los conjunto(s) de cilindro, que contiene el líquido FK-5-1-12, y en e/los soporte(s) de cilindro, que mantiene el conjunto de cilindro en su sitio.
2. **Components de distribución del agente líquido** - Estos componentes consisten en las boquillas de descarga utilizadas para introducir el FK-5-1-12 en el riesgo protegido junto con el sistema de tuberías asociado, utilizado para conectar las boquillas con el conjunto de cilindro.
3 **Accesorios** - Estos componentes completan la instalación del sistema de supresión e incluyen los accesorios de conexión, un manómetro, un presostato de supervisión de baja presión, un actuador de válvula eléctrico y un actuador de válvula manual.
4 **Componentes de configuración múltiples** - Estos componentes consisten en el/los actuador(es) de válvula neumático(s), la válvula de retención piloto, la válvula de retención de venteo, el latiguillo de actuación, y los accesorios necesarios para una configuración (secundario) de varios cilindros.
5. **Componentes complementarios** - Los componentes suplementarios incluyen el presostato de descarga y la válvula de retención del colector. Complementan el equipo básico o constituyen una configuración específica con varios cilindros.
6. **Panel de control** - Este dispositivo supervisa el estado del actuador eléctrico, los detectores, los dispositivos de advertencia, la presión del cilindro, además de cualquier dispositivo de disparo manual o de aborto. Para que funcionen correctamente, todos los dispositivos eléctricos y electrónicos deberán estar conectados al panel de control.
7. **Dispositivos de detección y de alarma** - Los dispositivos de detección, junto con los dispositivos de disparo manual y de aborto, maximizan la eficiencia del sistema, mientras que los dispositivos de alarma audibles y visuales alertan al personal sobre cualquier estado de alarma.

Distribución típica de un sistema de agente limpio



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DESCRIPCIÓN DEL EQUIPO

El fluido FK-5-1-12 se almacena como líquido en conjuntos de cilindros especialmente diseñados para la aplicación y llenados hasta una densidad de entre 35 lb/ft^3 (561 kg/m^3) y 70 kg/m^3 (1121 kg/m^3). Para un rendimiento óptimo, cada cilindro se sobrepresuriza con nitrógeno seco a 500 psi (34,48 bar) a 70 ºF (21 ºC). Cada cilindro cuenta con una etiqueta de identificación fijada al cuerpo del cilindro que indica la cantidad de llenado de líquido FK-5-1-12, presión y fecha de llenado y puesto de llenado. La Serie Mv 500 admite dos tamaños de cilindro.

Los sistemas de supresión de incendios que utilizan el fluido FK-5-1-12 están diseñados para descargarse en 10 segundos en una sala, zona o recinto con la integridad estructural necesaria para retener el agente. El fluido FK-5-1-12 se mezcla de forma uniforme por todo el recinto protegido, alcanzando un nivel de concentración mínimo de acuerdo con NFPA 2001 y/o las homologaciones y listados.

Tamaño nominal de cilindro	N/P	Capacidad de llenado				Peso vacío	
		Min.		Máx.			
		lb	kg	lb	kg	lb	kg
250 lb	22952	126	57,2	252	114,3	176	79,8
420 lb	22953	211	95,7	422	191,4	251	113,9

El conjunto de cilindro consiste en un cilindro, un tubo sifón, una válvula de cilindro, y un indicador de nivel de líquido.

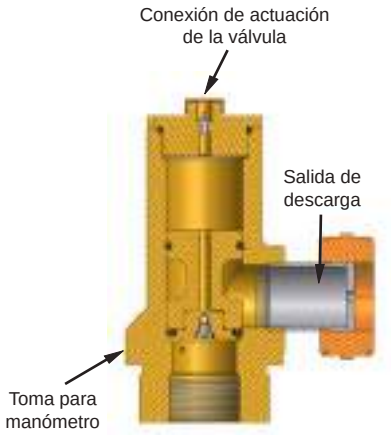


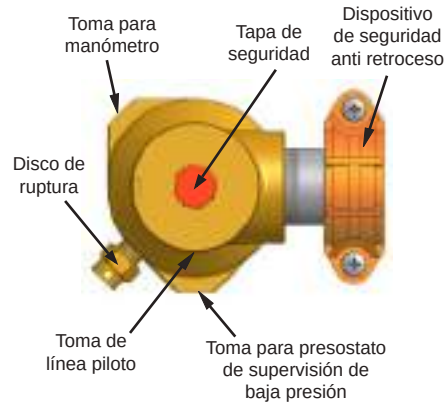
Válvula de cilindro: El disparo automático del FK-5-1-12 lo controla una válvula de cilindro de latón forjado, que funciona por presión diferencial, conectada al cuello del cilindro. El conjunto de válvulas se suministra con un dispositivo de seguridad anti-retroceso instalado en la salida de descarga y encadenado a la válvula de cilindro.

Tubo sifón: Un tubo sifón rígido, roscado, se extiende desde el cuello del cilindro hasta el fondo.

Cilindro: El cilindro de pared ligera de costura soldada se fabrica de acuerdo con los requisitos del U.S. Department of Transportation (USDOT) y Transport Canada (TC} para gas comprimido. La rosca hembra del cuello permite la conexión de la válvula de cilindro. El cilindro está diseñado montaje únicamente en posición vertical.

Indicador de nivel de líquido: Un indicador de nivel de liquido situado en el cuerpo del cilindro es un tubo no magnético que contiene una cinta métrica fijada a un imán. A medida que se retira la cinta, el imán se acoplará a la superficie del líquido. Esta medición se compara con un gráfico del manual de diseño para determinar el peso de llenado actual del cilindro.





La válvula de cilindro tiene seis elementos principales:

Conexión de actuación de la válvula: Una conexión roscada situada en la parte superior de la válvula de cilindro sirve como punto de fijación del actuador de válvula eléctrico (principal) o neumático (secundario).

Toma del manómetro: Una toma hembra sirve como punto de fijación del manómetro. Está equipada con una válvula de retención interna para permitir la retirada del manómetro mientras el cilindro está presurizo.

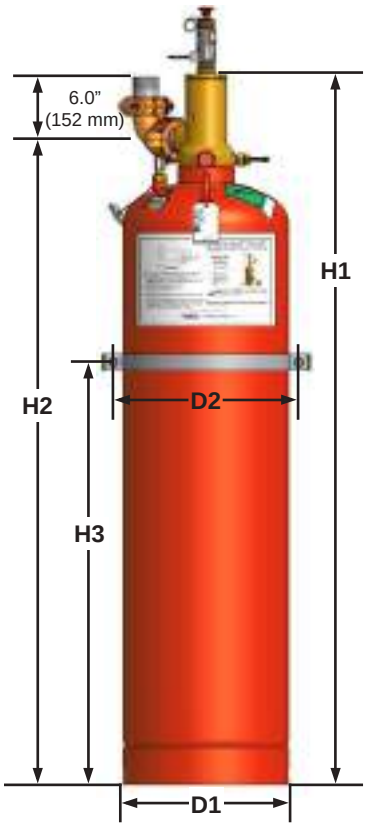
Toma del presostato de supervisión de baja presión: Una toma hembra actúa como punto de fijación del presostato de supervisión de baja presión. Una válvula de retención interior permite la retirada del presostato con el cilindro presurizado.

Disco de ruptura: Se monta un disco de ruptura en el cuerpo de la válvula de cilindro a modo de dispositivo de disparo de emergencia en caso de exceso de presión interna en el cilindro. Su punto de ruptura se encuentra entre 850 psi (58,6 bar) y 1000 psi (68,9 bar).

Salida de descarga: Una toma ranurada de 2” (50 mm) actúa como punto de fijación de la red tuberías de descarga.

Toma piloto: Una conexión NPT H de 1/4” (8 mm) (con un tapón extraíble incluido) proporciona un medio para aplicar presión de actuación al/a los cilindro(s) secundario(s). Esto también se puede utilizar para fijar el presostato de descarga en las configuraciones de un solo cilindro. La toma queda presurizada únicamente durante los 10 s de descarga.

MONTAJE DEL CILINDRO



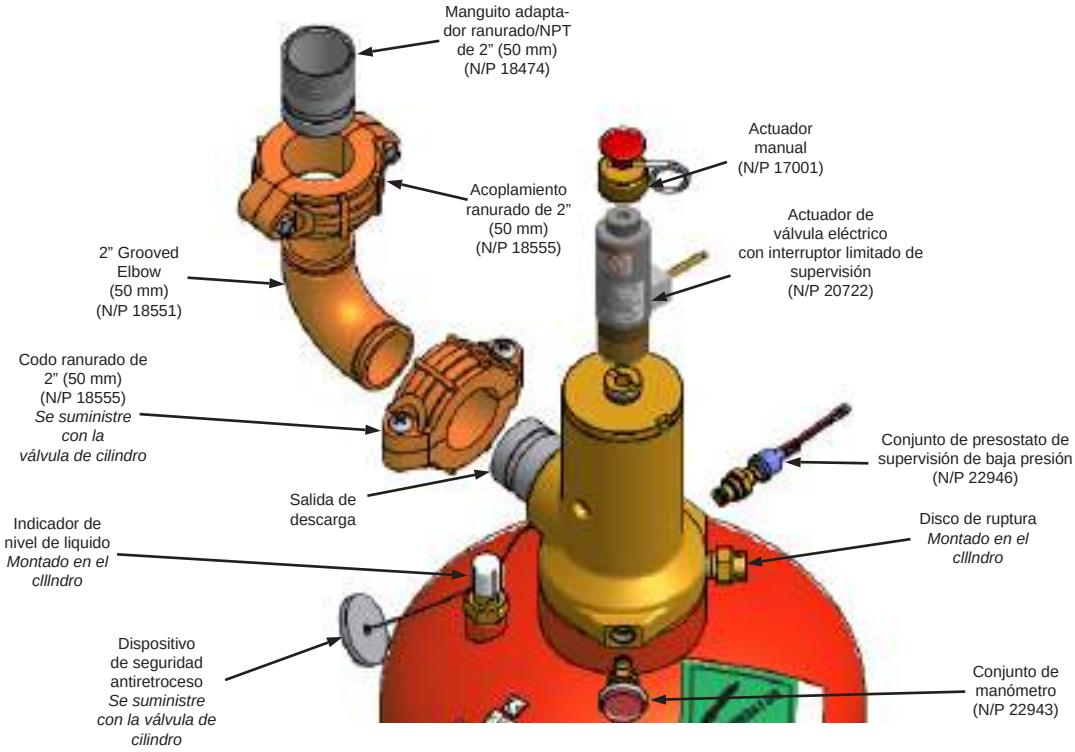
Conjunto de soportes de cilindro para montaje en pared (N/P 18535)

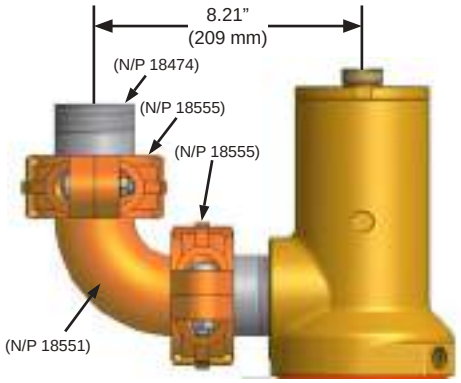
La estabilidad de los cilindros la asegura el conjunto de soporte de cilindros, que consta de un canal y abrazadera con su correspondiente tornillería. El carril está ranurado para facilitar el montaje con fijaciones suministrados por el instalador.

	Dimensiones del cilindro			
	250 lb		420 lb	
	pulg.	mm	pulg.	mm
H1	46,29	1176	68,47	1739
H2	40,00	1016	62,19	1580
H3	19,8	503	36,8	935
D1	16,0	406	16,0	406
D2	17,9	455	17,9	455

ACCESORIOS

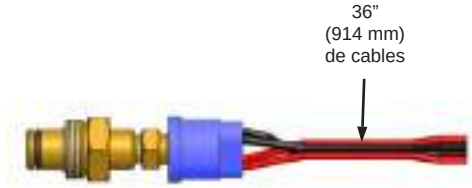
Para el funcionamiento de los cilindros de agente limpio se requieren ciertos accesorios.





Accesorios de la conexión de descarga (N/P ver diagrama)

Se conecta un codo ranurado de 2” (50 mm), un acoplamiento y un manguito adaptador NPT al adaptador de salida ranurado utilizando un acoplamiento montado en fábrica para retener el dispositivo de seguridad antiretroceso. El instalador es el encargado de suministrar las tuberías y los accesorios más allá del manguito adaptador de 2” (50 mm).



Conjunto de presostato de supervisión de baja presión (N/P 22946)

El presostato de supervisión de baja presión controla continuamente la presión dentro del cilindro. Los contactos son de una sola vía, conmutada (SPST) de 1,5 A a 24 VCC. Si la presión del cilindro desciende en torno a 440 psi (30,3 bar), los contactos del interruptor se cerrarán, transmitiendo una señal anormal en el panel de control del sistema.



Conjunto de manómetro (N/P 22943)

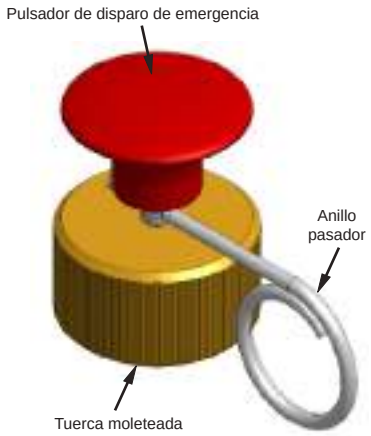
NFPA 2001 requiere que haya un manómetro en cada cilindro para el control visual de la presión interna del cilindro.



Actuador de válvula eléctrico con interruptor limitado de supervisión[1] (N/P 20722)

El actuador de la válvula eléctrico se fija al cilindro principal en la toma de actuación de válvula y se utiliza para abrir automáticamente la válvula de cilindro a la recepción de una señal del panel de control u otra fuente. Funciona entre 17 y 30 VCC y consume 500 mA (0,6 A) a 24 VCC nominales con una corriente de supervisión máxima de 30 mA (0,03 A).

El cuerpo del actuador de válvula eléctrico está hecho de acero con una tuerca giratoria moleteada y un pasador de actuación de acero inoxidable que deprime el núcleo de la válvula cuando se activa. Los contactos del interruptor de límite normalmente se cierran cuando el actuador no está instalado en la válvula del cilindro y se abren cuando el actuador está completamente instalado en la conexión de accionamiento de la válvula en la parte superior de la válvula del cilindro.



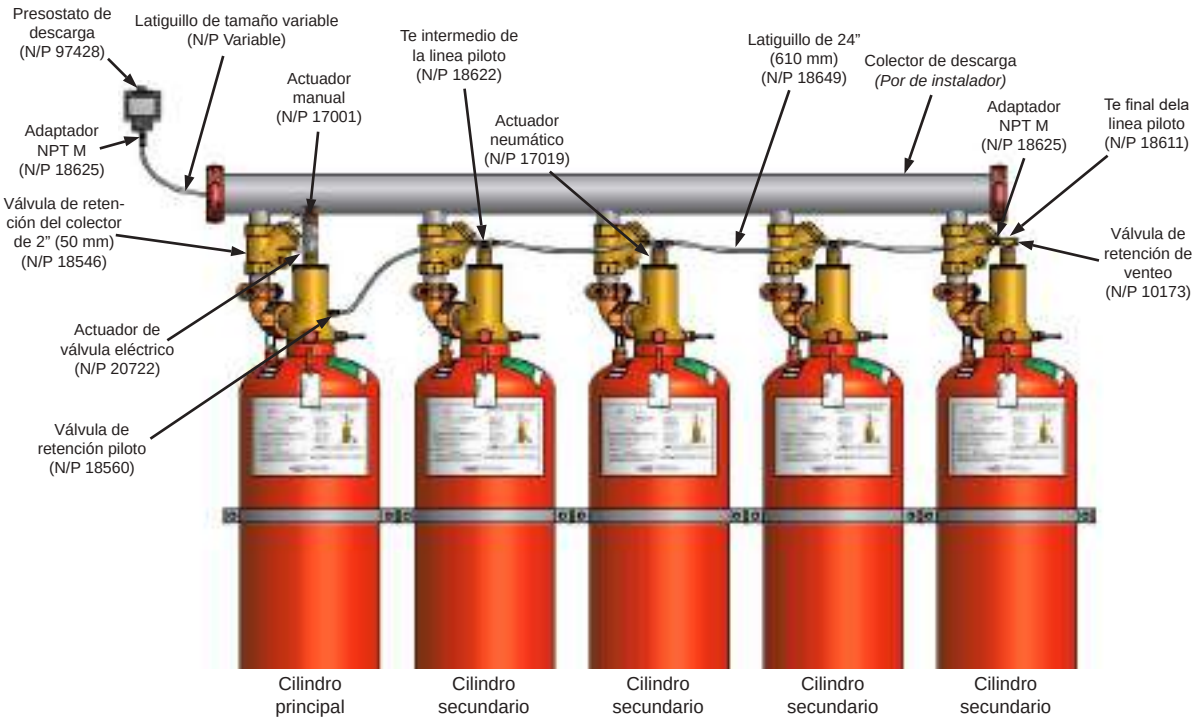
Actuador de válvula manual (N/P 17001)

Para poder abrir manualmente la válvula de cilindro, se fija un actuador de válvula manual opcional a la parte superior del actuador eléctrico. El actuador de válvula manual consiste en un cuerpo de latón, un pasador del actuador de acero inoxidable, y un pasador de anillo de seguridad de acero.

Para descargar el cilindro principal manualmente, se debe retirar el pasador de anillo y apretar el pulsador de disparo de emergencia, obligando al pasador de la válvula eléctrico a presionar el núcleo de la válvula de cilindro. El resto de los cilindros conectados se abrirán de manera neumática.

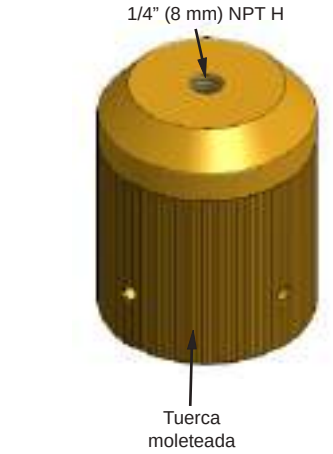
COMPONENTES DE CONFIGURACIÓN MÚLTIPLES

Es posible conectar hasta 16 cilindros (1 principal más 15 secundarios) en una sola configuración, con hasta 100 ft (30,48 m) de latiguillos o tubería piloto desde el cilindro principal en ambos direcciones. Una configuración típica se muestra a continuación.



Configuración típica de cilindro principal y secundario

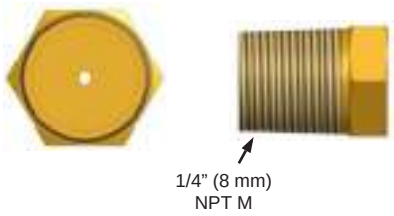
[1] A partir del 1 de enero de 2016, NFPA 2001 requiere que la extracción de un actuador eléctrico de la válvula de descarga del contenedor de almacenamiento de agentes que controla resulte en una indicación audible y visual del deterioro del sistema en el panel de control de liberación del sistema.



Actuador de válvula neumático (N/P 17019)

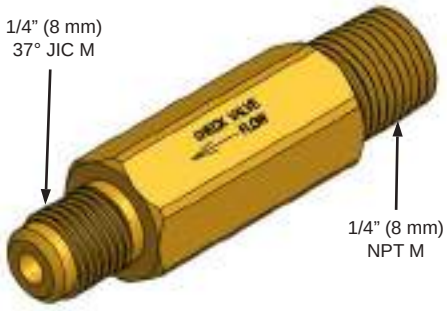
En sistemas de varios cilindros, el actuador de válvula eléctrico hará que se abra el cilindro principal y acto seguido, el(los) actuador(es) de válvula neumático(s) hará(n) que se abran todos los demás cilindros mediante la presión del cilindro principal.

Un actuador neumático se conecta a la toma de actuación de cada cilindro secundario. Recibe la presión de la toma piloto del cilindro principal a través de la válvula de retención piloto. Es de latón con un pistón y un pasador de latón.



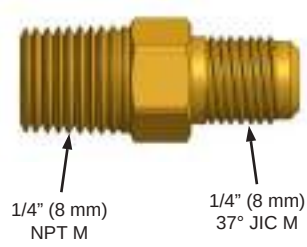
Válvula de retención de venteo (N/P 10173)

La válvula de retención de venteo es un dispositivo de seguridad con roscas NPT macho de 1/4" (8 mm), que se va a instalar en la línea piloto hacia abajo de la válvula de retención piloto. Se utiliza para purgar la presión que se pueda acumular en la línea piloto, reduciendo las probabilidades de que los actuadores de válvula neumáticos o el presostato de descarga funcionen de manera intempestiva.



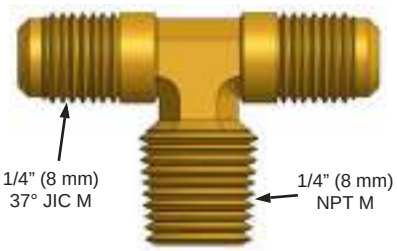
Válvula de retención piloto (N/P 18560)

Hay una válvula de retención NPT M de 1/4" (8 mm) por 37° JIC M instalada en el orificio piloto de la válvula de cilindro principal con el sentido de flujo hacia fuera. Cuando la válvula se abre, la presión se dirige a través de la válvula de retención piloto hacia los actuadores de válvula neumáticos de los cilindros secundarios. El objetivo de la válvula de retención piloto es garantizar que el actuador neumático se mantiene presurizado durante todo el tiempo de descarga.



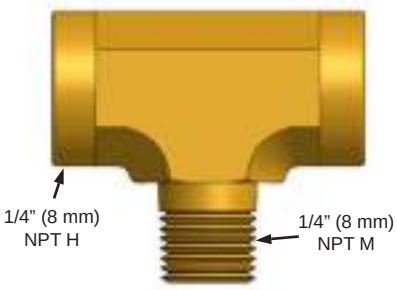
Adaptador NPT M (N/P 18625)

Se encaja un adaptador 37° JIC M de 1/4" (8 mm) por NPT M en el te de línea final piloto del último cilindro secundario para facilitar la fijación de la línea piloto. También se puede utilizar para permitir la fijación del latiguillo al presostato de descarga.



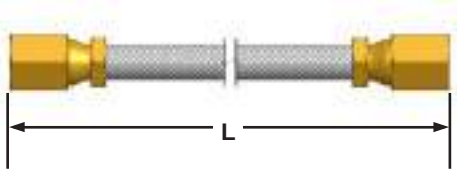
Te intermedio de la línea piloto (N/P 18622)

Se utiliza un te de latón con derivación 37° JIC M de 1/4" (8 mm) por NPT M para fijar la línea piloto al actuador de la válvula neumático.



Te final de la línea piloto (N/P 18611)

Para facilitar la fijación de la válvula de retención de venteo en la línea piloto, se monta un te de latón con derivación NPT H de 1/4" (8 mm) NPT M en el último actuador de válvula neumático.



Latiguillo (N/P Ver gráfico)

Latiguillos con trenza de acero inoxidable revestidos de Teflon® de 3/16" (7 mm) de diferentes longitudes con accesorios acampanados 37° JIC H de 1/4" (8 mm). Se utilizan para interconectar cilindros cuando es necesaria una configuración múltiples. Existe un adaptador 1/4" (8 mm) 37° JIC M acampanado x JIC M acampanado (N/P 18777) para unir dos latiguillos.

N/P	Longitud del latiguillo (L)
18648	16 in (406 mm)
18649	24 in (610 mm)
18650	34 in (864 mm)
18651	40 in (1016 mm)

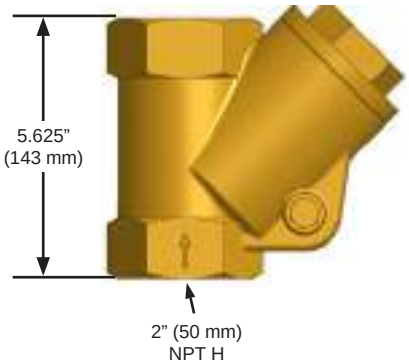
COMPONENTES ADICIONALES

Componentes adicionales sirven para completar las diferentes configuraciones de sistema.



Presostato de descarga (N/P 97428)

El sistema utiliza un presostato de descarga para enviar una señal confirmando la descarga del agente y para iniciar el cierre de equipos que pudiesen mermar la concentración de agente. El presostato tiene un solo contacto conmutado (SPOT) con contactos de 15 A a 125/250/480 VCA y 0,4 A a 125 VCC. Tiene una carcasa NEMA 4X e IP66.

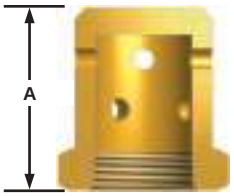


Válvula de retención del colector (N/P 18546)

En una configuración de varios cilindros, en la que los cilindros principales y secundarios comparten el mismo colector o en una configuración principal/reserva, se debe colocar una válvula de retención del colector ranurada de 2” (50 mm) entre la salida de descarga de cada cilindro y el colector de descarga, para impedir el retroflujo desde el colector en caso de que se produjera una descarga involuntaria del sistema al desconectar uno o más cilindros para su revisión. La salida de la válvula es de 1,5 in (38 mm).

BOQUILLAS DE DESCARGA

Se utilizan boquillas de descarga (de 4, 6 o 8 orificios) para distribuir de manera uniforme el FK-5-1-12. Las uniones están probabas para garantizar que el agente se descargue en menos de 10 s y se distribuya homogéneamente por la zona protegida. La altura máxima de las boquillas en un recinto protegido es de 18' 4" (5588 m) por nivel de boquillas. En alturas superiores a 18' 4", se necesitan niveles adicionales.



Boquilla de descarga Corte



Boquilla de descarga Vista superior



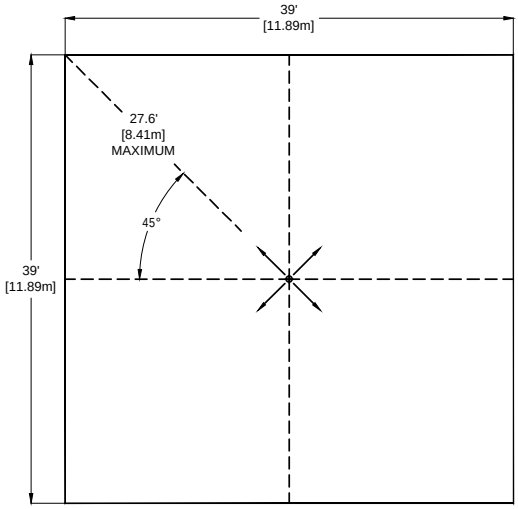
Boquilla Radial de 360º (8 orificios)



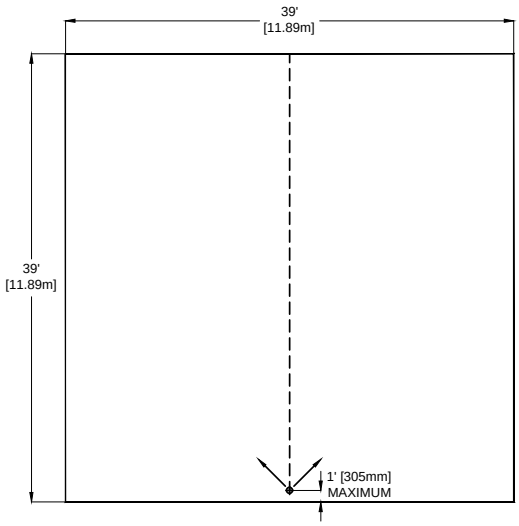
Boquilla lateral de 180º (6 orificios)



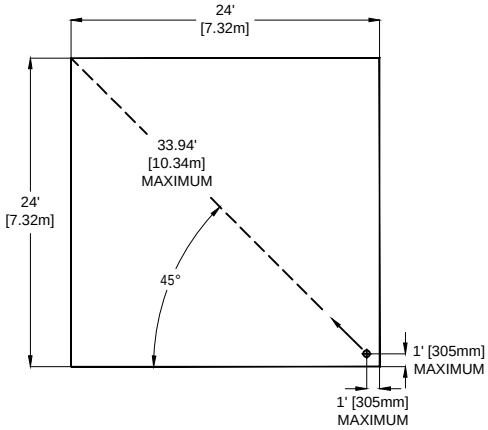
Boquilla de esquina de 90º (4 orificios)



Configuración de boquilla radial de 360º (8 orificios)



Configuración de boquilla lateral de 180º (6 orificios)



Configuración de boquilla de esquina de 90º (4 orificios)

Orientación de boquilla Numero Parte						Diámetro nominal	Altura de boquilla (A)	
Latón			Acero inoxidable					
360°	180°	90°	360°	180°	90°		pulg.	mm
19529	19522	19515	20445	20438	20431	3/8 in (10mm)	1,436	36,5
19530	19523	19516	20446	20439	20432	1/2 in (15 mm)	1,722	43,7
19531	19524	19517	20447	20440	20433	3/4 in (20 mm)	1,926	48,9
19532	19525	19518	20448	20441	20434	1 in (25 mm)	2,176	55,3
19533	19526	19519	20449	20442	20435	1 1/4 in (32 mm)	2,500	63,5
19534	19527	19520	20450	20443	20436	1 1/2 in (40 mm)	2,689	68,3
19535	19528	19521	20451	20444	20437	2 in (50 mm)	3,100	78,7

Instrucciones para pedidos: *Especifique la referencia de la boquilla, seguida de un guión y de los tres dígitos representativos del código de perforación, como lo establece el software Janus Design Suite®.*
Ejemplo: 19529-XXX = Boquilla · 360º, 3/8" (10 mm), latón (con el código de taladro que se especifica)

PROPIEDADES QUÍMICAS DEL FK-5-1-12

El fluido FK-5-1-12 está compuesto por los elementos carbono, flúor y oxígeno [CF3CF2C(O) CF(CF) 2 - dodecafluoro-2-metilpentano-3-uno]. El mecanismo de extinción primario del FK-5-1-12 es la absorción del calor, con una aportación química secundaria a partir de la descomposición térmica del FK-5-1-12 por las llamas. El FK-5-1-12 no deja ningún residuo y es seguro utilizarlo en zonas ocupadas..

Potencial de agotamiento de ozono (ODP) – El FK-5-1-12 es una cetona altamente fluorada, que no contiene ni cloro ni bromo. Por ello, el PAO del FK-5-1-12 es cero, por lo que no afecta en absoluto al ozono estratosférico.

Potencial de calentamiento global (GWP) – El FK-5-1-12 tiene una vida en la atmósfera de solo 0,014 años. El potencial de calentamiento global para todos los efectos prácticos es despeciable.

CONSIDERACIONES DE SEGURIDAD

A pesar de que el FK-5-1-12 aparece en las listas SNAP (Significant New Alternative Program) de EPA como aceptable en recintos ocupados, la norma NFPA 2001 y SNAP enumeran las siguientes directrices para la exposición de seres humanos:

El FK-5-1-12 tiene un NOAEL[1] del 10,0% v/v sin restricciones. La exposición máxima caso no deberá superar los 5 minutos. Evite cualquier exposición superior al 10% v/v (LOAEL[2]).

La descarga del FK-5-1-12 en un riesgo puede reducir la visibilidad durante un breve momento.

Cuando el FK-5-1-12 se expone a temperaturas extremadamente elevadas, se forma el producto secundario ácido fluorhídrico (HF). Los sistemas del líquido de protección contra incendios FK-5-1-12 están diseñados para efectuar la descarga en 10 segundos o menos para minimizar la formación de HF.

La Ficha de Datos de Seguridad (SDS) sobre el FK-5-1-12 debe leerse y entenderse antes de trabajar con el agente.

Los cilindros que contienen el FK-5-1-12 deben manipularse con cuidado. **El dispositivo de seguridad anti-retroceso debe estar siempre en su sitio cuando el cilindro no esté conectado a la red de tuberías de descarga y correctamente anclado.**

[1] NOAEL (No Observed Adverse Effect Level) - La concentración más alta a la que no se ha percibido ningún efecto toxicológico o fisiológico adverso.
[2] LOAEL (Lowest Observable Adverse Effect Level) - La concentración más baja a la que se ha percibido algún efecto fisiológico o toxicológico adverso.

Lista para revisión de pedido		
N/P	**Descripción**	**Peso nom. de expedición lb (kg)**
22952[1]	**Conjunto de cilindro, FK-5-1-12, Serie Mv 500, 250 lb (capacidad de 126 a 252 lb / 57,2 a 114,3 kg)**	**176 (79,8)**
22953[1]	**Conjunto de cilindro, FK-5-1-12, Serie Mv 500, 420 lb (capacidad de 211 a 422 lb / 95,7 a 191,4 kg)**	**251 (113,9)**
FK-5-1-12	**Agente FK-5-1-12**	**Variable**
18535	**Conjunto de soportes, cilindro (250 lb I 420 lb)**	**10,0 (4,5)**
20722	**Actuador eléctrico con interruptor limitado de supervisión (cilindro principal)**	**2,0 (0,9)**
17001	**Actuador manual (cilindro principal)**	**0,6 (0,3)**
22943	**Conjunto de manómetro, FK-5-1-12, Serie 500 (todos los cilindros)**	**0,4 (0,2)**
22946	**Presostato de supervisión de baja presión, Serie 500 (recomendado para todos los cilindros)**	**0,5 (0,2)**
18555	**Acoplamiento ranurado de 2” (50 mm)**	**2,8 (1,3)**
18551	**Codo ranurado de 2” (50 mm)**	**2,0 (0,9)**
18474	**Manguito ranurado x NPT M de 2” (50 mm)**	**1,4 (0,6)**
17019	**Actuador de válvula neumático (cilindro secundario)**	**1,2 (0,5)**
18560	**Válvula de retención, JIC M de 1/4" x NPT M de 1/4" *válvula de retención piloto***	**0,3 (0,1)**
18622	**Te, JIC M de 1/4" x NPT M de 1/4", latón *te intermedio de la linea piloto de latón***	**0,2 (0,1)**
10173	**Válvula de retención de venteo (se conecta al te final de la línea piloto)**	**0,2 (0,1)**
18625	**Adaptador, NPT M de 1/4" x JIC M de 1/4", latón *Adaptador NPT M* (se conecta al te final de la línea piloto)**	**0,2 (0,1)**
18611	**Te, NPT H de 1/4" x NPT M de 1/4", latón *te final de la línea piloto de latón***	**0,3 (0,1)**
97428	**Presostato de descarga**	**1,6 (0,7)**
18546	**Válvula, retención, ranurada, de 2” (50 mm) *válvula de retención del colector***	**9,9 (4,5)**
18649	**Latiguillo de 3/16”, JIC H de 1/4”, 24” de longitud (recomendado para configuraciones de cilindros de 250 / 420 lb)**	**0,6 (0,3)**
18777	**Adaptador, JIC M de 1/4" x JIC M de 1/4", latón *adaptador de latón para latiguillo***	**0,2 (0,1)**
Variable	**Boquilla, 3/8", JSH**	**0,5 (0,2)**
Variable	**Boquilla, 1/2", JSH**	**0,6 (0,3)**
Variable	**Boquilla, 3/4", JSH**	**0,8 (0,4)**
Variable	**Boquilla, 1", JSH**	**1,2 (0,5)**
Variable	**Boquilla, 1-1/4", JSH**	**1,6 (0,7)**
Variable	**Boquilla, 1-1/2", JSH**	**1,7 (0,8)**
Variable	**Boquilla, 2", JSH**	**3,6 (1,6)**

[1] Especifique la Ref. del conjunto de cilindro, seguida de un guión y el peso de llenado en libras, expresadas en tres dígitos. Ejemplo: 22952-188 - Conjunto de cilindro, FK-5-1-12, Serie Mv 500, 250 lb (188 lb de llenado)

El vendedor rechaza toda garantla, incluyendo, sin limitación, las garantlas expresas y/o impllcitas que incluyan, sin limitación, las garantlas impllcitas de comerciabilidad y adecuación a un propósito en particular, excepto como expresado explicita mente en el contrato de venta o formulario de acuse de recibo del vendedor. Hacemos todo lo posible para mantener actualizada y precisa la información sobre nuestros productos. No se pueden cubrir todas la aplicaciones, ni es posible prever todos los requisitos. Todas las especificaciones están sujetas a modificación sin previo aviso.

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e-mail: info@janusfiresystems.com
www.janusfiresystems.com

SAFETY DATA SHEET

Section 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	FK-5-1-12 Fire Protection Fluid with Expellant
Other Identifiers:	FK-5-1-12 with Expellant
Product Use:	Fire Extinguishing Agent
Model Groups:	Lv (Lv 500) Series*: 1000lb, 900lb, 600lb Mv (Mv 500) Series*: 420lb, 250lb Sv (Sv 500) Series*: 130lb, 80lb, 40lb (*: Weights referenced in model groups are nominal reference descriptions of containers and not actual physical weights.)
Manufacturer:	Janus Fire Systems
Internet Address:	www.janusfiresystems.com
Address:	1102 Rupcich Dr. Crown Point, IN 46307
Company Telephone:	(219) 663-1600
E-mail Address:	info@janusfiresystems.com
Emergency Contacts:	Chemtrec 1(800) 424-9300 (Outside US +1-703-527-3887) and Reference Cust No: 1013723
Issued:	July 3, 2023

Section 2. HAZARDS IDENTIFICATION

GHS – Classification

Health	Environmental	Physical
Acute Toxicity- Category 5	None	None
Skin Corrosion/Irritation	None	None
Skin Sensitization: NO	None	None
Eye: 2B	None	Mild
Carcinogen: Category None	None	None

GHS – Label Symbol(s):



GHS – Signal Word(s): Warning: Gas Under Pressure

Other Hazards Not Resulting in Classification: Simple asphyxiant. May displace oxygen and cause rapid suffocation.

May cause frostbite if contact with skin or eyes.

GHS – Hazard Phrases

GHS Hazard	GHS Codes(s)	Code Phrase(s)
Physical	H229	Pressurized container; may burst if heated.
Health	None	None
Environmental	H412	Harmful to aquatic life with long lasting effects.
Precautionary:		
General	P101 102	If medical advice is needed, have product container or label at hand. Keep out of reach of children.
Prevention	P251 273	Do not pierce or burn, even after use. Avoid release to the environment.
Response	P312 321 302+352 305+351+338 332+313 337+313	Call a doctor if you feel unwell. Specific treatment (see Section 4. First Aid Measures) IF ON SKIN: Wash with plenty of water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If skin irritation occurs: Get medical advice/attention. If eye irritation persists get medical advice/attention.
Storage	P410+403	Protect from sunlight. Store in well-ventilated place.
Disposal	P501	Dispose of contents through a licensed disposal company. Contaminated container should be disposed of as unused product.

Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	EC No.	REACH Reg. No.	CAS-No.	Weight %
1,1,1,2,2,4,5,5,5- Nonafluoro-4-(trifluromethyl)-3-pentanone (FK-5-1-12)	436-710-6	NA	756-13-8	>99.9

Note: Pressurized cylinder uses nitrogen as an expellant.

Emergency overview: Clear liquid, low odor.

Section 4. FIRST AID MEASURES

Eye Exposure: Liquid or cold gas can cause freezing injury to eyes. Flush eyes with cool water for 15 minutes. Seek medical attention immediately.

Skin Exposure: May cause cold burns or frostbite. Remove contaminated clothing and flush affected areas with lukewarm (NOT HOT) water. Seek medical attention immediately if blistering of the dermal surface or if deep tissue freezing occurs

Inhalation: May cause coughing. If respiratory irritation or distress occurs, remove victim to fresh air. Seek medical attention if problems persists.

Ingestion: None under normal conditions

Medical conditions possibly aggravated by exposure: None

Section 5. FIRE-FIGHTING MEASURES

Flammable Properties:	Not flammable
Flash Point:	None
Suitable Extinguishing Media:	Non-combustible. Use extinguishing media suitable for surrounding conditions.
Hazardous Combustion Products:	Main decomposition product is hydrogen fluoride in fire situations. Byproducts are irritating and potentially toxic. Pressurized container can explode in heat of fire
Explosion Data:	
Sensitivity to Mechanical Impact:	Not sensitive
Sensitivity to Static Discharge:	Not sensitive
Unusual fire/explosion hazards:	Pressurized container can explode in heat of fire
Protective Equipment and Precautions for Firefighters:	As in any fire, wear self-contained breathing apparatus in pressure-demand, NIOSH approved or equivalent and full protective gear.

Section 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas. Monitor oxygen level.
Personal Protective Equipment:	None unless there is a chance of direct contact with the chemical. Wear self-contained breathing apparatus when entering area unless atmosphere is proved safe. Wear appropriate PPE for the situation.
Emergency Procedures:	Handle in accordance with good health and safety practices.
Methods for Containment:	Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. If leak is in container or container valve, contact the appropriate emergency telephone number in Section 1 or call your closest supplier location.
Methods for Clean Up:	Return cylinder to authorized distributor.
Environmental Precautions:	Prevent spreading of vapors through sewers, ventilation systems and confined areas.
Other:	If product is contaminated, use PPE and containment appropriate to the nature of the most toxic chemical/material in the mixture.

Section 7. HANDLING AND STORAGE

Personal Precautions:	Put on appropriate personal protective equipment. Contains gas under pressure. Do not get in eyes, on skin or clothing. Avoid breathing gas. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container.
Conditions for Safe Storage/Handling:	Protect from sunlight and store in a well-ventilated place. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use suitable equipment for cylinder movement. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating area.

Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	CAS NO.	OSHA PEL
1,1,1,2,2,4,5,5,5- Nonafluoro-4-(triflurомethyl)-3-pentanone	756-13-8	TWA: 150 ppm (1,940 mg/m³)

Value is an 8 hour time weighted average concentration.

Engineering Controls

Provide appropriate local exhaust when product is heated. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant exposure Limits and/or control fumes/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

Personal Protective Equipment (PPE)

Eye/face protection
Eye protection recommended when handling pressurized cylinders.

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.

Gloves made from the following material(s) are recommended: Neoprene

Foot protection
Appropriate safety shoes are recommended when handling compress gas cylinders.

Respiratory protection
During heating:
Use a positive pressure supplied-air respirator if there is a potential for over exposure from an uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless liquid
Molecular Weight:	316.05
Odor:	Low odor
Odor Threshold:	No information available
Decomposition Temperature °C:	No information available
Freezing/Melting Point °C:	-108°C
Initial Boiling Point °C:	49°C at 1 atm
Physical State:	Liquid
pH:	Not applicable
Flash Point °C:	None
Auto-ignition Temperature °C:	Not applicable
Flammability:	Not Flammable
Flammability Limits in Air °C:	Upper – Not Flammable; Lower-Not Flammable
Explosivity	Upper – Not Explosive; Lower-Not Explosive
Volatile Organic Compounds	1600 g/L
Percent Volatile	100%
Evaporation Rate:	>1
Vapor Density:	11.6 (AIR=1)
Vapor Pressure:	0.404 bar @ 25°C
Specific gravity at 25°C:	1.6
Solubility:	40.95 mg/L @ 25°C
Partition Coefficient: octanol/air	8.3E-012
Viscosity:	0.6 centipoise @ 25°C

Section 10. STABILITY AND REACTIVITY

Stability:	Stable under recommended storage and handling conditions.

Reactivity:	This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.
Incompatibles:	Strong bases, amines, alcohols, water
Conditions to Avoid:	Storage or handling near incompatibles, heat, sunlight. Pressurized containers may rupture or explode if exposed to heat.
Hazardous Decomposition Products:	Heat of fire or elevated temperatures may release hydrogen fluoride and perfluoroisobutylene.
Possibility of Hazardous Reactions:	Slight
Hazardous Polymerization	Will not occur

Section 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure:	Inhalation, skin, and eye contact.
Symptoms:	
Immediate:	
Inhalation:	No known health effects
Eyes:	Normally does not cause significant irritation
Skin:	Normally does not cause significant irritation
Delayed:	Normally does not have a delayed reaction
Acute Toxicity:	Relatively non-toxic.
Chronic Toxicity:	
Short-term Exposure:	None known.
Long-term Exposure:	None known

Acute Toxicity Values - Health

Chemical Name	LD50		LC50 (Inhalation)
	Oral	Dermal	
1,1,1,2,2,4,5,5,5- Nonafluoro-4-(trifluromethyl)-3-pentanone	>2000 mg/kg (rat)	>2000 mg/kg (rat)	1,227 mg/m³ (rat)

Reproductive Toxicity:	This product's ingredients are not known to have reproductive or teratogenic effects.
Target Organs and Effects (TOST):	This product is not known to have any single exposure target organ toxicities. Some data exists concerning impacts on liver, kidney, bladder, but the data are not sufficient for classification; all other potential organ impacts are not apparent.

Other Toxicity Categories

Chemical Name	Germ Cell Mutagenicity	Carcinogenicity	Reproductive	Aspiration
1,1,1,2,2,4,5,5,5- Nonafluoro-4-(trifluromethyl)-3-pentanone	Not a hazard	Not considered carcinogenic	Not considered a hazard	Not a hazard

Note: Nitrogen, the expellant when in a pressurized container, is a simple asphyxiant.

Section 12. ECOLOGICAL INFORMATION

Ecotoxicity:	Harmful to aquatic life with long lasting impacts
Persistence/Degradability:	Insoluble in water; Photolytic half-life 3-5 days
Probability of rapid biodegradation:	Est: -1.325 (Slow)
Anaerobic biodegradation probability:	Est: 0.2243 (Slow)
Bioaccummulation potential:	63.04 L/kg (Low)
Bioconcentration factor:	63.02 L/kg (wet-wt) (Low BFC)
Mobility in soil:	Highly insoluble in water
Log Koc (Kow Method):	Est: 2.66
Log Koa:	Est: 1.529
Log Kow:	Est 2.79

Ecotoxicological Information - 1,1,1,2,2,4,5,5,5- Nonafluoro-4-(trifluromethyl-3-pentanone

Test Organism	Acute (LC50)	EC50
Green algae, *Selenastrum capricornutum*	N/A	7.7 mg/L (72 hours)
Zebra Fish, *Brachydanio rerio*	>1200 mg/L (96 hours)	NA
Water flea, *Daphnia magna*	NA	>1200 mg/L (48 hours)
Green algae, *Selenastrum capricornutum*	NA	1.2 mg/L (72 hours, No obs EC)

Section 13. DISPOSAL CONSIDERATIONS

Safe Handling	Use appropriate PPE when handling, and wash thoroughly after handling (see Section 8).
Waste Disposal Considerations	Dispose in accordance with federal, state, and local regulations.
Contaminated Packaging	Dispose in accordance with federal, state, and local regulations. Use a leak-proof container

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Combustion products will include halogen acid (HCl/HF/HBr). Facility must be capable of handling halogenated materials. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

NOTES:
This product is not a RCRA characteristically hazardous or listed hazardous waste.

Section 14a. TRANSPORT INFORMATION

Applies to Model groups: Lv (Lv 500) Series: 1000lb, 900lb, 600lb
Mv (Mv 500) Series: 420lb, 250lb
Sv (Sv 500) Series: 130lb, 80lb

*(Note: The following applies to all models except Sv Series 40lb. For information for Sv Series: 40lb see **Section 14b. TRANSPORT INFORMATION**)*

International Regulations

IATA-DGR

UN/ID No.:	UN 1058
Proper shipping name:	Liquefied gases
Class :	2.2
Packing group:	
Labels:	Non-flamm. gas
Packing instruction (cargo aircraft):	200
Packing instruction (passenger aircraft):	200

IMDG-Code

UN number:	UN 1058
Proper shipping name:	LIQUEFIED GASES
Class:	2.2
Packing group:	
Labels:	2.2
EmS Code:	F-C, S-V
Marine pollutant:	No

Domestic regulation

49 CFR

UN/ID/NA number:	UN 1058
Proper shipping name:	Liquefied gases
Class:	2.2
Packing group:	
ERG Code:	ERG No. 120
Marine pollutant:	No

Section 14b. TRANSPORT INFORMATION

Applies to Model groups: Sv (Sv 500) Series: 40lb

*(Note: For information for all other model groups see Section **14a. TRANSPORT INFORMATION)***

International Regulations

IATA-DGR

UN/ID No.:	UN 1044
Proper shipping name:	Fire Extinguishers
Class :	2.2
Packing group:	
Labels:	Non-flamm. gas
Packing instruction (cargo aircraft):	213
Packing instruction (passenger aircraft):	213

IMDG-Code

UN number:	UN 1044
Proper shipping name:	Fire Extinguishers
Class:	2.2
Packing group:	
Labels:	2.2
EmS Code:	F-C, S-V
Marine pollutant:	No

Domestic regulation

49 CFR

UN/ID/NA number:	UN 1044
Proper shipping name:	Fire Extinguishers
Class:	2.2
Packing group:	
ERG Code:	ERG No. 126
Marine pollutant:	No

Section 15. REGULATORY INFORMATION

International Inventory Status: All ingredients are on the following inventories

Country(ies)	Agency	Status
United States of America	TSCA	Yes
Canada	DSL	Yes
Europe	EINECS/ELINCS	Yes
Australia	AICS	Yes
Japan	MITI	Yes
South Korea	KECL	Does not comply

U.S. Federal Regulatory Information:

SARA Title III Sect 311/312 Categorization: Pressurized
Pressure Hazard

SARA Title III Sect 311/312 Categorization: Non-pressurized
None

SARA Title III Sect 313
This product does not contain any chemicals that are listed in Section 313 at or above de minimis concentrations.

Clean Water/Clean Air Acts:
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42) or Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61) and Section 112 of the Clean Air Act Amendments of 1990.

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfunds Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, state, or provincial level.

U.S. State Regulatory Information:

Chemicals in this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: None
California – Permissible Exposure Limits for Chemical Contaminants: None
Florida – Substance List: None
Illinois – Toxic Substance List: None
Kansas – Section 302/303 List: None
Massachusetts – Substance List: None
Minnesota – List of Hazardous Substances: None

Missouri – Employer Information/Toxic Substance List: None
New Jersey – Right to Know Hazardous Substance List: None
North Dakota – List of Hazardous Chemicals, Reportable Quantities: None
Pennsylvania – Hazardous Substance List: None
Rhode Island – Hazardous Substance List: None
Texas – Hazardous Substance List: None
West Virginia – Hazardous Substance List: None
Wisconsin – Toxic and Hazardous Substances: None
California Proposition 65: No component is listed on the California Proposition 65 list.

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations.

Section 16. OTHER INFORMATION

This SDS conforms to requirements under U.S., U.K., Canadian, Australian, and EU regulations or standards, and conforms to the 2003 ANSI Z400.1 format. No modifications of this SDS are authorized by Janus Fire Systems. Questions or comments should be directed to Janus Fire Systems (See Section 1).

Issuing Date	03-July-2023
Revision Date	03-July-2023; Revision -
Revision Notes	None

ACTA DE GARANTIAS
CONTRATO 2199 DE 2025

Villavicencio, 22 de abril de 2026

Señor
LILIANA MARCELA BAQUERO TORRES
Gerente de Infraestructura y Sistemas De Información
Secretaría de Tecnologías y Sistemas De Información
Supervisor contrato 2433 de 2025

REF: CERTIFICACIÓN DE GARANTÍA

Respetados señores:

Por medio de la presente, de manera cordial y atenta nos dirigimos a usted para certificar Garantía de los elementos relacionados con el Contrato No. 2199 de 2025 cuyo objeto es **"MODERNIZACIÓN DEL SISTEMA DE DETECCIÓN Y EXTINCIÓN DE INCENDIOS PARA EL DATACENTER DE LA SEDE ADMINISTRATIVA DE LA GOBERNACION DEL DEPARTAMENTO DEL META",** de acuerdo con las cantidades y especificaciones técnicas establecidas en la siguiente relación:

ITEM	DESCRIPCIÓN	TERMINO GARANTIA
	1. DETECCIÓN	
1.1	Suministro e instalación, Panel de control de alarma de incendio (FACP); 1 lazo; máximo 64 dispositivos inteligentes; 2 NAC Clase B; fuente de alimentación de 4.25A; puerta gris; 115 VCA; capacidad para hasta (2) baterías de 10 A/h.	3 AÑOS
1.2	Suministro e instalación, tarjeta de interfaz SA-USBSA-USB que proporciona conexión USB a una impresora compatible para imprimir eventos del sistema o conexión a una PC que ejecute la utilidad de configuración (CU) para cargar/descargar la configuración del panel, el historial, los diagnósticos y el estado actual.	1 AÑO
1.3	Suministro e instalación, Batería 12V @ 7Ah / Tecnología AGM / Alarmas de intrusión / Incendio	3 AÑOS
1.4	Suministro e instalación, Detector de humo óptico multicriterio inteligente; UL/ULC	3 AÑOS
1.5	Suministro e instalación, Base de detector - Estándar	3 AÑOS
1.6	Suministro e instalación, Estación manual de alarma - Doble acción; 1 etapa	3 AÑOS
1.7	Suministro e instalación, Cubierta protectora Stopper II con sirena (batería de 9V) - para estaciones de montaje en superficie; incluye STI-3100	3 AÑOS
1.8	Suministro e instalación, Placa de timbre/estroboscopio de 10 cd. Adapta el timbre vibratorio para que se convierta en un timbre con estroboscopio. UL	3 AÑOS

ITEM	DESCRIPCIÓN	TERMINO GARANTIA
	1971 con 110 cd de orientación de pared, 'FIRE' en pulgadas. Cumple con los requisitos del área de dormir. El timbre se pide por separado	
1.9	Suministro e instalación, Campana de alarma de incendio, 6 pulgadas (150 mm), vibratoria, con diodo, 24 VCC, roja	3 AÑOS
1.10	Suministro e instalación, Sirena/Estrobo de pared compacto; 15-75cd; Rojo; Marcado 'FUEGO	3 AÑOS
1.11	Suministro e instalación, Placa de montaje universal, paquete de 10	3 AÑOS
1.12	Suministro e instalación, Módulo inteligente de liberación de agente; 2 circuitos	3 AÑOS
1.13	Suministro e instalación, Accesorio de control de incendios; Gabinete multifunción; 8"x14"x3.5"; Rojo	3 AÑOS
1.14	Suministro e instalación, Estación manual de aborto - para módulo de liberación	N/A
1.15	Suministro e instalación, Interruptor de llave de desconexión de servicio - para módulo de liberación	3 AÑOS
1.16	Suministro e instalación, Dispositivo de relé de fin de línea - polarizado	3 AÑOS
1.17	Suministro e instalación, Estación manual de liberación - Doble acción	N/A
1.18	Suministro e instalación, Módulo de relé de control. Seleccionable para operación N.A. (Normalmente Abierto) o N.C. (Normalmente Cerrado). Con una capacidad de 2 amperios (24 VCC).	N/A
1.19	Suministro e instalación, Módulo de doble entrada. Módulo de entrada de dos circuitos para uso con dispositivos de contacto normalmente abierto. Cuatro códigos de personalidad seleccionables (en cada circuito) para alarma con retención (o enclavada), o alarma con retención retardada, o monitor sin retención, o supervisión con retención	N/A
2. DETECCIÓN		
2.1	Suministro e instalación, Conjunto de cilindro, 420 lb, rango de llenado a 500 psi - 211 a 422 lb (95.7 a 191.4 kg) FK-5-1-12	1 AÑO
2.2	Agente limpio de última generación para extinción de incendios en centros de datos (supresión de incendios de clases C, con vida atmosférica de al menos 5 días, con descarga de 10 segundos o menos, que cumpla certificaciones NFPA 2001 ISO 14520 certificado por el fabricante, seguro para ocupación humana y cero residuos con ODP=0 -GWP menor o igual a 1 - Peso del envío en lb (kg) FK5112 y Debe incluir los cilindros de almacenamientos que sean requeridos para su funcionamiento	N/A *(CONSUMIBLE)*
2.3	Suministro e instalación, Kit de soporte de cilindro de 16 pulgadas JFS (para cilindros de 250 lb y 420 lb)".	1 AÑO
2.4	Suministro e instalación, Actuador eléctrico supervisado normalmente cerrado que se abre al instalarse, para agente limpio - 2 - Lbs	1 AÑO
2.5	Suministro e instalación, Actuador de válvula manual - Peso = Lbs: 0.6 - Kgs: 0.324	1 AÑO
2.6	Suministro e instalación, Conjunto de manómetro, presión, 500 psi. FK-5-1-12	1 AÑO
2.7	Suministro e instalación, Acoplamiento ranurado de 2 pulgadas JFS (50 mm)	1 AÑO
2.8	Suministro e instalación, Codo ranurado de 2 pulgadas JFS (50 mm)	N/A
2.9	Suministro e instalación, Niple de 2 pulgadas (50 mm) Ranurado x MNPT JFS	1 AÑO

ITEM	DESCRIPCIÓN	TERMINO GARANTIA
2.10	Suministro e instalación, Interruptor de presión de descarga, estanco, NEMA 3/4/4X/13, SPDT, aumento de 50 psig, 1/4 pulgada FNPT, reinicio manual, uso interior/exterior - Peso de envío lb (kg): 1.6 (0.7)	1 AÑO
2.11	Suministro e instalación, Señal de advertencia de salida (de) agente limpio en español - 0.2 lbs	1 AÑO
2.12	Suministro e instalación, Señal de advertencia de entrada de agente limpio en español - 0.2 libras	1 AÑO
2.13	Suministro e instalación, Boquilla: 360°, 1" (25 mm), FK-5-1-12, Latón - Peso de envío lb (kg): 1.2 (0.5	1 AÑO
2.14	Suministro e instalación, Boquilla: 360°, 1/2" (15 mm), FK-5-1-12, Latón - Peso de envío lb (kg): 0.6 (0.3)	1 AÑO
2.15	Suministro e instalación de tubería Schedule 40 para un sistema de extinción con agente limpio que se encuentre en listado UL FK-5-1-12	N/A

CONDICIONES Y TÉRMINOS DE APLICACIÓN DE LA GARANTÍA

1. **Cobertura de la Garantía:** La presente garantía ampara única y exclusivamente los defectos de fabricación, fallas de componentes internos, defectos en los materiales y el mal funcionamiento del hardware o software originado bajo condiciones normales de operación. **MEGAPROYECTOS DE TECNOLOGÍA SAS** se compromete a gestionar la reparación o el reemplazo de los equipos que presenten fallas inherentes a su manufactura durante el periodo de tiempo estipulado en la tabla superior.

2. **Exclusiones de la Garantía (Causales de Pérdida de Cobertura):** La garantía aquí otorgada quedará automáticamente anulada y sin efecto, eximiendo de toda responsabilidad técnica y financiera a **MEGAPROYECTOS DE TECNOLOGÍA SAS**, cuando la falla, deterioro o daño de los equipos sea atribuible a cualquiera de las siguientes causas:

   - **Manipulación e Intervención no Autorizada:** Apertura, alteración, modificación de la topología, reconfiguración del panel, o cualquier intento de reparación realizado por personal ajeno a nuestra compañía o por técnicos no certificados expresamente por los fabricantes (Edwards y Janus Fire Systems).

   - **Uso Indebido y Negligencia:** Operación incorrecta, impericia, vandalismo o uso de los equipos para fines distintos a la detección y extinción de incendios en el Datacenter, contraviniendo los manuales de operación entregados a la entidad.

   - **Deficiencias de Infraestructura y Factores Ambientales:** Daños ocasionados por operar los equipos fuera de los rangos ambientales especificados por el fabricante, tales como: humedad relativa excesiva, condensación, filtraciones de agua, inundaciones, exposición a agentes corrosivos, polvo excesivo por obras civiles anexas, o fallas prolongadas en el sistema de climatización del cuarto técnico.

   - **Alteraciones y Fallas Eléctricas Externas:** Averías en los circuitos internos (tarjetas

electrónicas, fuentes, módulos) originadas por sobretensiones, fluctuaciones severas en el suministro eléctrico del edificio, ausencia de sistema de puesta a tierra certificado, cortocircuitos externos o descargas atmosféricas (rayos).

- **Fuerza Mayor, Caso Fortuito y Orden Público:** Daños o destrucción de los equipos derivados de desastres naturales (sismos, terremotos, vendavales), así como aquellos resultantes de alteraciones del orden público, asonadas, motines, manifestaciones, actos de terrorismo o incendios estructurales de magnitudes que superen la capacidad volumétrica de diseño del sistema de agente limpio.

- **Omisión del Plan de Mantenimiento:** El incumplimiento en la ejecución de los mantenimientos preventivos periódicos obligatorios por parte de la entidad contratante (una vez superado el periodo de los mantenimientos ofertados por el contratista), así como la falta de limpieza e inspección regular del sistema.

Agradecemos su atención.

FABIAN GUZMAN SOTO
R.P Megaproyectos de Tecnología SAS

Edwards Return and Warranty Policy

Introduction

This Return and Warranty Policy applies to Edwards products and services purchased directly from Walter Kidde Portable Equipment, Inc.

As all policies herein are subject to change, please check our website at my-eddie.com for the latest policy. For all non-Edwards Products, refer to specific 3rd party policy for returns, credit request, material evaluation, and warranty periods.

If you have questions about this policy, contact the appropriate customer service center.

All periods of days set forth herein are calendar days unless otherwise stated.

Returning Edwards products

Before you can return any product to Edwards, you must obtain a return material authorization (RMA). This applies to all product returns, including warranty replacements, emergency replacements, and credit returns.

To obtain an RMA, contact the appropriate Edwards customer service center (see “Customer Service Centers”) for your product, and have the product and the following information ready:

- Original PO number (not required for distribution partners)
- SKU/part number
- Serial number
- Date Code

Customer Service will provide you with an RMA number and an RMA acknowledgment form that confirms your request.

Once you have the RMA, repackage the product appropriately (see “Packaging your shipment” on page 2) and attach the RMA acknowledgement form on the outside of the package. Then send the product to the return location given by the customer service center.

All products must be returned freight prepaid within 30 days of obtaining an RMA. We reserve the right to cancel the RMA after 30 days. If you fail to return the product within the 30 days, please contact Customer Service to get a new RMA.

We will not accept unauthorized returns or freight collection returns; we will return these to you at your expense.

If a returned product contains parts that are no longer available we will contact you to discuss resolution and return of the material.

Note: Dealer, distributor, and integrator return and warranty policies may vary. Consult your Edwards program agreement, if applicable, or contact your local Edwards sales representative for details.

Warranty replacement

Subject to the terms of the limited warranty in effect at the time of purchase (as set forth in the Walter Kidde Portable Equipment, Inc. Terms and Conditions of Sale, available at my-eddie.com, Edwards will replace a product that fails to meet the terms provided within the product’s warranty period.

Edwards reserves the right to replace any product under warranty with new, refurbished, or remanufactured product. For product purchased directly from Edwards by a dealer or an integrator, the warranty period starts from either a) the date of shipment from Edwards’ facility (point of origin) or b) the manufacturer’s date code (if the shipment date is unknown). Except for software products (which shall be treated as if purchased directly from Edwards for purposes of determining the start of the warranty period as set forth in the immediately preceding sentence), for product purchased from an authorized Edwards distributor by a dealer or an integrator, the warranty period starts from the date the product is purchased by the dealer or integrator. Warranty periods vary based on product category and type of equipment, as shown in Table 1 on page 2.

We will return equipment or ship replacement equipment via the same incoming ship method at no additional charge. If you request a different return ship method, we will charge for the full shipping cost.

Emergency replacement

Emergency replacement products follow the same terms as Warranty replacement, except for shipping, which will be next day air.

Credit returns

No returns for credit or refund will be accepted unless you have obtained a return material authorization as described in “Returning Edwards products.” Edwards will refund or credit new, standard production items that are unused and in the original unopened shipping cartons for a period of 90 days from the original date of shipment; however, any returned product is subject to a 25% restocking fee if your request comes more than 60 days after the original ship date.

Returns for refund or credit beyond 90 days from original shipment date will be denied.

Products purchased as part of a kit must be returned in their entirety (i.e., the entire kit must be returned, not separate parts) to receive refund or credit. Refund or credit is not available for custom, special or nonstandard products.

You must use credit within one year of the date of issue. All returns are subject to Edwards inspection and approval.

Return material evaluation

Our RMA receiving department will evaluate the returned product to determine whether it is a warranty or non-warranty replacement and bill you accordingly. We will invoice emergency and warranty replacements after 30 days if the defective product in not received. If we determine that the returned product is in good working order or that performance issues were due to improper installation, misuse, abuse, or other user-related causes, we will issue no credit and you will remain responsible for paying the invoice, and we will return such product to you at your expense. If the defective product is part of a kit, you shall return only the defective product (i.e., you shall not return the remainder of the kit) and we will replace only the defective product through Warranty or Emergency replacement.

Refurbished products

Warranty and Emergency replacement products—though they may come from the same pool of products—are covered by different warranty conditions and durations. Refurbished products come with a one-year limited warranty.

Packaging your shipment

Protecting the value of returned products by packaging and shipping them correctly is your responsibility. We reserve the right to deny warranty coverage for any damage caused by failing to meet the following packaging requirements:

- All electronic components must be taped and/or contained in their original electrostatic protective packaging or an equivalent substitute.
- All parts must be packed securely inside the external shipping carton to prevent mechanical damage.
- External packaging must be sufficient to protect the contents from the usual hazards of shipping.

Product warranty periods

Table 1 lists warranty durations for most Edwards equipment, sorted by category. Warranty periods start as set forth under the heading “Warranty repair/replacements” above. For items that do not appear in Table 1, contact Customer Service or your sales representative for the applicable policy.

To the extent of any conflict between this policy and your agreement, the latter shall control.

Customer Service Centers

Edwards RMA/Warranty Support Centers EST, Kidde Commercial, Kidde FX

- Phone: 800.655.4497
- E-mail: edwards.rma@carrier.com

Latin America - Fire Products Only

- E-mail: edwards.latam@carrier.com

Table 1: Product warranty periods

	Product	Warranty period
Fire		
	EST3 Fire alarm control panels and accessories*	1 year
	Fire alarm control panels (all other)*	3 years
	Air duct detectors	3 years
	Heat detectors	3 years
	Notification appliances	3 years
	Pull stations, fire stations	3 years
	Smoke detectors	3 years
	Computers, computer option cards, file servers, monitors, touchscreens	1 year
Other		
	Edwards Signaling products	2 years
	ModuLaser ASD	5 years
	Third-party product**	Third-party warranty
	***Xtralis Products	2 years
	Refurbished products	1 year

* EST3 FACPs and Accessories have a warranty of 1 year for all orders placed on 4/1/24 or later. Refer to Table 2 for a full list of affected products.

** Third-party product warranty period is for informational purposes. Please refer directly to Third-party warranty policy for specific details.

*** Xtralis warranty period as of the date of this policy. Please refer directly to Xtralis for most up-to-date information.

Table 2: EST3 Fire Alarm Control Panels and Accessories

Product	Description	Product	Description
10ANN/B	Semi-flush Annunciator Wall Box	3-CHASS4	Chassis
10ANN/B-S	Surface Annunciator Wall Box	3-CPU3	Central Processor Unit Module
3-10ANN	Ten Position Base Annunciator	3-CPUDR	Two plastic doors..
3-10ANN/D	Ten Position Annunciator Cabinet Door	3-FIBMB2	Fiber Optic Communications Interface
3-12/S1GY	LED Display/Control Module	3-FP	Plastic Filler Plate
3-12/S1RY	LED Display/Control Module	3-FTCU	Fire Fighters Telephone Control Unit
3-12/S2Y	LED Display/Control Module	3-FTCU	Fire Fighters Telephone Control Unit
3-12RY	LED Display Module	3-FTEQ	Seismic hardening kit
3-12SG	LED Display/Control Module	3-LCD	Liquid Crystal Display Module
3-12SR	LED Display/Control Module	3-LCDANN	Remote LCD Cmd Module Annunciator.
3-12SY	LED Display/Control Module	3-LCDXL1	Large Format LCD Module.
3-24G	LED Display Module	3-LCDXL1KBL	3-LCDXL1 cable kit.
3-24R	LED Display Module	3-LDSM	LED Display Support Module.
3-24Y	LED Display Module	3-LKCC	Label Kit & Cover Plate
3-4/3SGYWR	12 Switches in 4 Groups of 3 Switches	3-LKE	UK English Label Kit
3-4ANN	Four Position Base Annunciator.	3-LKS	Spanish Label Kit
3-4ANN/D	Four Position Annunciator Cabinet Door	3-LRMF	Blank LRM Filler (Plastic).
3-6/3S1G2Y	LED & Switch Module	3-MPFIB	3-FIB(A) Mounting Plate
3-6/3S1GYR	LED & Switch Module	3-NSHM1	Network Short Haul Model Comm Interface
3-6ANN	Six Position Base Annunciator	3-NSHM2	Network Short Haul Modem Comm Interface
3-6ANN/D	Six Position Annunciator Cabinet Door	3-REMICA	Remote Mic
3-ANNCPU3	Annunciator CPU.	3-REMICP	Remote Mic
3-ANNSM	Annunciator Support Module	3-RLCM/D	Remote LCD Comm Module Door
3-ASU	Audio Source Unit with Mounting Chassis	3-RS232	RS-232 Communication Card
3-ASU/4	Audio Source Unit with Mounting Chassis	3-RS485A	Network Comm Card, Class A
3-ASU/4-CC	Audio Source Unit	3-RS485B	Network Comm Card, Class B
3-ASU/FT	Audio Source Unit with Mounting Chassis	3-SDU/K-USB	Programming Software USB Key
3-ASU/FT-CC	Audio Source Unit w/FF Phone	3-TAMP	Tamper Switch
3-ASU/FTRC	Audio Source Unit	3-TAMP5	Tamper Switch
3-ASU-CC	Audio Source Unit	3-TAMPRCC	Tamper Switch
3-ASUMX/100	Audio Source Unit Memory Expansion	3-XFP	Extender Filler Plate.
3-BBCMON	Booster Power Supply	4ANN//B	Semi-flush Annun Wall Box
3-BPMON	Booster Power Supply Card	4ANN/B-S	Surface Annun Wall Box
3-CAB14D	Door for CAB14B Wallbox	6ANN/B	Semi-flush Annun Wall Box
3-CAB14DR	Door (Red) for CAB14B Wallbox	6ANN/B-S	Surface Annun Wall Box
3-CAB21D	Door for CAB21B Wallbox	FSB-PC2	Field Server Bridge Protocol Converter
3-CAB21DR	Door (Red) for CAB21B Wallbox	FSB-PCLW	Field Server Bridge Protocol Converter
3-CAB5	Complete Cabinet. Wallbox and door.	MMXVR	Standard output MULTI MODE transceiver.
3-CAB5R	Complete Cabinet (Red). Wallbox and door.	RC-BRKT	Redundant command center relay bracket
3-CAB7D	Door for CAB7B Wallbox	RLCM/B	Semi-flush Wall Box
3-CAB7DR	Door (Red) for CAB7B Wallbox	RLCM/B-S	Surface Wall Box
3-CBLKIT1	Chassis Extension Cable	SMXHI2	High output SINGLE MODE transceiver.
3-CCI	City of Chicago Interface	SMXLO2	Standard output SINGLE MODE transceiver.

Janus Fire Systems Terms and Conditions of Sales and Service

1. ENTIRE AGREEMENT.
Each party agrees that all sales of goods ("Goods") and/or provision of services ("Services") by JFS Holdings, LLC, doing business as Janus Fire Systems ("Seller") to Buyer are governed by these Terms and Conditions of Sale and Service ("Terms and Conditions of Sale and Service") which supersede any other terms of Buyer or Seller. Each party agrees that the Terms and Conditions of Sale will also govern all sales of Goods and provision of Services to Buyer by any JFS Holding, LLC, subsidiary, affiliate, or division, in which case such subsidiary, affiliate, or division will be the "Seller" under this Agreement (unless otherwise agreed in writing by such subsidiary, affiliate, or division). Buyer acknowledges that these Terms and Conditions of Sale are subject to change from time to time and the parties agree that each sale of Goods and provision of Services will be governed by the version of Terms and Conditions of Sale and Service available online at www.janusfiresystems.com under the Terms and Conditions tab at the time of acceptance by Seller of an order for such Goods and/or Services. The Terms and Conditions of Sale and Service and the order from Buyer and agreed by Seller ("Order) or other contract documents to which they apply constitute the entire agreement between the parties with respect to Goods and Services ("Agreement"). All references by Seller to Buyer's specifications and similar requirements are only to describe Goods and Services covered hereby and no warranties or other terms will have any force or effect. No other terms of Buyer, no modification, amendment, or waiver to this Agreement, and no cancellation, change, or return of any Order under this Agreement will be binding on either party until agreed in writing by such party's authorized representative. Buyer may not rely on any representation, promise, or term not set forth herein and Seller expressly objects to and rejects all terms not contained in this Agreement. Seller's acceptance of Orders, whether oral or written, and/or its delivery of Goods to and performance of Services for Buyer is based on the express condition that Buyer agrees to these Terms and Conditions of Sale and Service.

2. QUOTATIONS. Where this Agreement is used by Seller to place a bid, Seller's quotation is for prompt acceptance and Seller may change and/or withdraw without notice. Buyer's prompt acceptance of the quotation is a material term of the bid and any subsequent agreement. In cases where freight allowance is included in the quotation, Buyer is liable for any rate increase and/or additional expense over the calculated allowance resulting from compliance with Buyer's shipping instructions.

3. DELIVERY OF GOODS. Delivery terms for Goods (stated in Incoterms® 2020) are stated on each Order. All Orders must include Buyer's or forwarder address and are assumed to authorize immediate release upon ready-to-ship status unless otherwise specified in writing. All shipping dates are approximate; production will not begin until receipt by Seller of complete manufacturing, shipping, and credit information. Tender of delivery is deemed to occur at the earliest of (A) acceptance of shipment by designated shipper, (B) allocation of Goods to Buyer at location other than Seller's location, (C) delivery to Buyer's representative or designee, or (D) mailing of an invoice to Buyer. Buyer agrees to provide Seller with defined shipping instructions within seven (7) business days following receipt of packing list provided by Seller. Title to Goods will pass to Buyer on tender of delivery, subject to Seller's right to stop Goods in transit and to any interest of Seller reserved to secure Buyer's payment or performance to Seller, even if freight is included or prepaid. If Seller holds Goods at Buyer's instruction or because Buyer has failed to supply shipping instructions or because Seller, in its sole discretion, determines that any part of Goods should be held for Buyer's account, Seller may invoice Buyer for the Goods, as well as for storage. Storage fees will be at Seller's standard rates. Goods invoiced and held at any location for whatever reason will be at Buyer's risk and Seller may charge for (but is not obligated to carry) insurance. If Buyer fails to provide shipping instructions, Seller may, at its option, ship the Goods to Buyer at the address specified in the applicable Order and invoice Buyer for the Goods. Buyer agrees to make payment of such invoice when due under this Agreement. Buyer will accept and pay for partial deliveries at the Agreement prices and terms. If Buyer declares or indicates an intention to not accept delivery, Seller may, at its option, give written notice to Buyer that Seller is ready and willing to deliver, and such notice will constitute a valid tender of delivery. Buyer must report any shortages in shipments within three (3) calendar days of receipt of the initial shipment. Buyer may not make any deduction from any payment due because of loss or damage to Goods in transit. If Buyer makes a written request, Seller, in its sole discretion, may agree as a service to Buyer to process Buyer's claim against the freight vendor for any loss or damage in transit, so long as Seller receives the claim within five (5) calendar days of delivery of the Goods. All claims will be waived unless accompanied by a delivery receipt, signed by freight vendor's agent at time of delivery, on which receipt the loss or damage has been noted.

4. PERFORMANCE OF SERVICES. Promptly following delivery of Goods, if applicable, or promptly following notice to proceed from Buyer, Seller will begin and diligently proceed to perform Services. All completion dates or milestone dates are approximate. Title and risk of loss to work performed by Seller will pass to Buyer upon complete payment by Buyer for such Services.

5. PRICES; PAYMENT. Prices and payment terms are stated on the Order or invoice document. Seller may make partial shipments and payment for that portion will be due as indicated on the Order or invoice document based on time of shipment. Seller's prices do not include sales, use, excise, or other similar taxes and Buyer agrees to pay the amount of any present or future such tax in addition to the price specified in each Order, unless Buyer, at the time of sale, provides Seller with all tax-exemption certificates required by taxing authorities. If Seller has any cause to question Buyer's ability to perform, Seller may demand such assurances of Buyer's performance as Seller deems necessary in its discretion, including payment in advance for all shipments. If (A) Buyer fails to provide Seller with such assurance within ten (10) calendar days of Seller's demand, or (B) Buyer is declared bankrupt or insolvent or any proceeding is brought against Buyer, voluntarily or involuntarily, under any bankruptcy or insolvency laws, or (C) Buyer fails to make payment for Goods or Services when due, Seller may suspend its performance, cancel any Order then outstanding, receive reimbursement for its reasonable and proper cancellation charges and collect any sums due and owing, its reasonable cancellation charges and all damages resulting from Buyer's default. Additionally, if Buyer fails to make payment for Goods or Services when due, Buyer's account will be deemed delinquent and Buyer will be liable to Seller for a service charge of eighteen percent (18%) per annum or the maximum allowed by law, whichever is greater, on any unpaid amount. Buyer will be liable to Seller for all costs and expenses of collection, including court costs and reasonable attorneys' fees.

6. CANCELLATION, CHANGES AND RETURNS. If Buyer properly requests a cancellation, change, or return, Seller may, at its option: (A) charge Buyer for any costs Seller incurred prior to or because of such cancellation, change, or return; (B) revise its prices and delivery dates to reflect such change; and/or (C) accept returned Goods for credit if, in Seller's sole discretion, it finds such Goods to be standard stock and in good condition. The credit will be the invoice price less twenty-five percent (25%), along with shipping and handling charges to be determined by Seller. All returned Goods must be securely packed by Buyer to ensure that returned material is not damaged during shipment. All returns must be accompanied by a Return Materials Authorization ("RMA") issued by Seller explaining the nature of the problem, which can be obtained by written request to Seller's Sales Department.

7. FORCE MAJEURE; DEFERRED DELIVERY. Seller will not be liable for any expense, loss, or damage resulting from delay in delivery or prevention of performance caused by any event beyond Seller's reasonable control ("Force Majeure"), including but not limited to: fire; flood; storm; act of God; strike, labor dispute or labor shortage; lack of or inability to obtain materials, fuels, supplies, or equipment; civil unrest or riot; pandemic; accident; transportation delay or shortage; act or failure to act of Buyer or any government; or any other cause whatsoever, provided that such cause is beyond Seller's reasonable control. Seller will have such additional time for performance as reasonably necessary under the circumstances and may adjust the price to reflect increases caused by Force Majeure. Buyer's acceptance of any Goods will constitute Buyer's waiver of any claim for damages for delay in delivery of such Goods. If delivery is delayed or interrupted by Force Majeure, Seller may store the Goods at Buyer's expense and risk and charge Buyer a reasonable storage rate. If Seller is delayed because it is awaiting Buyer's approval or acceptance of designs, drawings, prints, or engineering or technical data, or is awaiting Buyer's approval or acceptance of Goods, Seller will be entitled to a price adjustment equal to increase in Seller's production costs and all other losses and expenses incurred by Seller because of such delays. If Buyer requests and Seller approves in writing a deferred delivery on any Order, Seller may charge Buyer for the completed portion of the Order and warehouse all completed Goods at Buyer's expense and risk of loss. As to any uncompleted portion of the Order, Seller may, at its option, cancel the uncompleted portion under Section 5 above or revise its prices and delivery schedules on the uncompleted portion to reflect its increased costs and expenses attributable to the delay.

8. WARRANTY; PATENTS. Warranty as to Services: Seller warrants that the Services will be performed in accordance with generally accepted industry standards and practices by competent personnel. If any Services fail to comply with this standard and Buyer provides notice of such non-compliance within ninety (90) days from the date such Services were performed, Seller will, at its option, either re-perform such Services at no additional charge or refund to Buyer all fees paid by Buyer with respect to such non-complying Services. The foregoing remedies are the exclusive remedies for any breach of Seller's warranty of Services. Warranty as to Goods: Seller warrants that Goods will be of the kind described in this Agreement and free from defects in material and workmanship under conditions of normal use for a period of one (1) year from the date of purchase. Seller reserves the right to make any modifications required by production conditions to information set forth in Seller's catalogues and advertising literature. Seller will not be liable or responsible for (A) any defects attributed to normal wear and tear, erosion or corrosion, improper storage, use, installation, or maintenance, modification, alteration, or misuse or use of Goods with incompatible products, or (B) defects in any part of Goods manufactured by others. If (B) above is applicable, Seller will, as an accommodation to Buyer, assign to Buyer any warranties given to it by any such other manufacturers; provided, however, that the foregoing will not extend Seller's warranty to any accessory products unless Seller specifically agrees in writing. All warranties are void if Goods are modified or used in conjunction with products or accessories not manufactured or approved by Seller or which are incompatible with Goods. This warranty does not cover failure of any part manufactured by others, failure of any part from external forces, including but not limited to corrosive soils, earthquake, installation, vandalism, vehicular or other impact, or other Force Majeure. Any claim by Buyer with reference to Goods for any cause will be deemed waived by Buyer unless submitted to Seller in writing within ten (10) calendar days from the date Buyer discovered, or should have discovered, any claimed breach. Buyer will give Seller an opportunity to investigate. If Buyer furnishes prompt notice to Seller of any defect and an opportunity to inspect the alleged defect as provided above, Seller will, in its sole discretion, either: (i)

repair the defective or nonconforming Goods; (ii) replace nonconforming Goods, or part thereof, which are sent to Seller by Buyer within sixty (60) calendar days after receipt of the Goods at Buyer's plant or storage facilities; or (iii) if Seller is unable or chooses not to repair or replace, return the purchase price paid and cancel any obligation to pay unpaid portions of the purchase price of nonconforming Goods. In no event will any obligation to pay or refund exceed the purchase price paid. Repair and/or replacement as provided above will be shipped EXW (Ex-Works) Seller's facility (Incoterms® 2020) unless otherwise agreed in writing by Seller. Buyer will prepay all transportation charges for return of all or part of Goods to Seller, unless otherwise agreed in writing by Seller. Seller will not be responsible for any labor, removal, or installation charges that may result from repair and/or replacement of any Goods. Buyer's exclusive remedy and Seller's sole liability for any loss, damage, injury, or expense of any kind arising from manufacture, delivery, sale, installation, use, or shipment of Goods will be, at Seller's option, the remedies described above, whether based on contract, warranty, tort, or any other basis of recovery. If any claim is made against Buyer based on a claim that any Goods constitute an infringement of any U.S. Letter Patent, Buyer will notify Seller immediately. Seller may, with Buyer's assistance, if required, but at Seller's expense, conduct settlement negotiations or defense of any litigation. If any Goods are held to infringe any U.S. Letter Patent, and their use is enjoined, or, if as a result of a settlement, Seller deems their continued use unadvisable and provided that Buyer has given Seller the immediate notice required above and has used Goods only in accordance with the provisions of this Agreement and has not altered or changed them in any material way, Seller will, at its option and expense, procure for Buyer the right to continue using Goods, modify Goods so that they become non-infringing, replace Goods with non-infringing Goods of substantially equal quality, or replace Goods and refund the purchase price, less reasonable depreciation. The above is intended as a complete allocation of risks between the parties, including without limitation liability for patent infringement. Because this Agreement and the price paid reflect such allocation, this limitation will not have failed of its essential purpose even if it operates to bar recovery for such consequential damages.

9. LIMITATION OF LIABILITY. THE WARRANTIES IN SECTION 8 ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED BY LAW OR STATUTE OR ARISING FROM TRADE USAGE OR COURSE OF DEALING. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE), OR STRICT LIABILITY, WILL SELLER BE LIABLE FOR ANY PUNITIVE, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PROFIT, LOSS OF USE OF GOODS OR OTHER PROPERTY OR EQUIPMENT, DAMAGE TO OTHER PROPERTY, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, DOWNTIME, OR CLAIMS OF BUYER'S CUSTOMERS FOR ANY OF THE AFORESAID DAMAGES, EVEN IF BUYER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BUYER UNDERSTANDS THAT IT WILL NOT BE ABLE TO RECOVER CONSEQUENTIAL DAMAGES EVEN THOUGH IT MAY SUFFER SUCH DAMAGES IN SUBSTANTIAL AMOUNTS. SELLER WILL NOT BE LIABLE, AND BUYER AGREES TO INDEMNIFY SELLER, FOR ALL PERSONAL INJURY, PROPERTY DAMAGE, AND OTHER LIABILITY RESULTING IN WHOLE OR PART FROM BUYER'S NEGLIGENCE OR WILLFUL MISCONDUCT. NO CLAIMS OF ANY KIND, WHETHER BASED ON CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE, MAY BE BROUGHT AGAINST SELLER MORE THAN TWENTY-FOUR (24) MONTHS AFTER DELIVERY OF GOODS TO BUYER. In any contract by Buyer for resale of Goods, Buyer will effectively disclaim, as against Seller, any implied warranty of merchantability and all liability for property damage or personal injury resulting from handling, possession, or use of Goods, and will exclude, as against Seller, any liability for special or consequential damages.

10. CONTROLLING LAW; CONSENT TO VENUE; DISPUTE RESOLUTION. This Agreement and all rights and obligations hereunder will be governed by, and construed in accordance with, the laws of the State of Delaware, without regard to its conflicts of law provisions. The United Nations Convention on Contracts for the International Sale of Goods will not apply to this Agreement. All disputes, claims, and controversies ("Dispute") between the parties arising out of or relating to this Agreement, including but not limited to Disputes based on or arising from an alleged tort, will be resolved by binding arbitration in accordance with Title 9 of the U.S. Code and the Commercial Arbitration Rules of the American Arbitration Association ("AAA"). Disputes will be arbitrated in Wilmington, Delaware. Defenses based on statutes of limitation and similar doctrines will be applicable in any such proceeding, and commencement of an arbitration proceeding under this Agreement will be deemed commencement of an action for such purposes. The parties will select arbitrators in accordance with the Commercial Arbitration Rules of the AAA. The AAA will designate a panel often (10) potential arbitrators knowledgeable in the subject matter of the Dispute. Seller and Buyer will each designate, within thirty (30) calendar days of receipt of the list of potential arbitrators, one of the potential arbitrators to serve, and the two arbitrators so designated will select a third arbitrator from the eight remaining candidates. No Dispute will be arbitrated as a class action, representative or general public action, collective action, private attorney-general action, or otherwise be joined with claims of any other person ("Collective Proceedings"). Accordingly, AAA's Supplementary Rules for Class Arbitrations will not be applicable. If this limitation on Collective Proceedings is held by an arbitrator or court of competent jurisdiction to be unenforceable or interpreted to not prevent a Collective Proceeding, then such action will proceed in a court of law as provided below and not arbitration. If any arbitrator renders a decision regarding the question of arbitrability of the above limitation or orders any form of Collective Proceeding, then the arbitrator has exceeded its powers under the Federal Arbitration Act. Notwithstanding the foregoing, Seller reserves the right to resolve or bring any Dispute in a court of competent jurisdiction in the state or federal courts of Delaware and the parties agree that, except when the Dispute is arbitrated, the exclusive venue for all Disputes between the parties will be the state and federal courts of Delaware, to which jurisdiction each party hereby irrevocably submits. Each party waives any objection or defense that it is not personally subject

to jurisdiction of the state and federal courts of Delaware; that venue of the action is improper; and that the action, suit, or proceeding is brought in an inconvenient forum. In addition to any other mode of service of process authorized by law, each party consents to service of process by registered or certified mail. EACH PARTY EXPRESSLY WAIVES ALL RIGHTS IT MAY HAVE TO A TRIAL BY JURY.

11. COMPLIANCE WITH LAWS. Each party represents and warrants, in connection with transactions contemplated by this Agreement, and any other agreement contemplated by or entered into pursuant to this Agreement, that it will comply with all applicable federal, state and local laws, codes, regulations, orders, and ordinances, including but not limited to all applicable: (A) laws and regulations regarding export controls, economic sanctions, trade embargoes, anti-boycott restrictions and anti-corruption laws, including but not limited to the U.S. Foreign Corrupt Practices Act (as amended), and the United Kingdom Bribery Act ("Applicable International Trade and Anti-Corruption Laws"); (B); laws and regulations addressing human trafficking and slavery; and (C) equal employment opportunity laws, regulations, and requirements, including but not limited to those set forth in U.S. Executive Order 11246, the U.S. Rehabilitation Act of 1973, as amended, and the U.S. Vietnam Era Veterans Readjustment Assistance Act of 1974, as amended, and other laws and regulations prohibiting discrimination against any person because of veteran status, disability, race, creed, color, national origin, religion, age or sex in any term or condition of employment, all of which are incorporated by reference into this Agreement. **Specifically, Seller and its subcontractors and vendors will abide by the requirements of 41 C.F.R. §§ 60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities and prohibit discrimination against all individuals based on their race, color, religion, sex, or national origin, and require that covered prime contractors, and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, national origin, protected veteran status, or disability**. Each party acknowledges and confirms that it and its officers, directors, employees, agents, contractors, designees, and/or any other party acting on its behalf ("Related Parties") are familiar with the provisions of Applicable International Trade and Anti-Corruption Laws. Each party agrees to indemnify, defend, and hold harmless the other party and its employees from and against all claims, demands, costs, penalties, and fines arising in connection with any alleged breach by the indemnifying party or any of its Related Parties of this Section. Seller may terminate this Agreement entirely, without liability to Buyer, if Seller believes in good faith that Buyer or any of its Related Parties has violated or intends to violate this Section.

12. INDEMNITY AND INSURANCE. In the event that Seller is performing Services on Buyer's property, Seller agrees to be responsible to the fullest extent permitted by applicable law to indemnify, defend and hold Buyer harmless from and against claims, losses, suits, damages, liabilities, settlements, expenses and costs (including without limitation reasonable attorneys' fees and other costs of litigation) arising from sickness, disease, death or bodily injury ("Injuries") and injury to property of others to the extent arising out of Seller's negligence or willful misconduct in performing Services. Seller will maintain and require its subcontractors to maintain insurance coverage (under an "occurrence" policy form) evidencing the following:

a. Commercial General Liability Insurance of $1,000,000 per occurrence and $2,000,000 annual aggregate covering bodily injury and property damage arising out of Seller's activities at Buyer's site and including $1,000,000 Personal and Advertising Injury and $2,000,000 Products/Completed Operations coverage;
b. Automobile Liability Insurance with a combined single limit of $1,000,000;
c. Employers Liability Insurance with limits of $1,000,000 each accident/$1,000,000 each employee/$1,000,000 each disease;
d. Umbrella/Excess Insurance covering the insurance provided in (a), (b) and (c) above with limits of $3,000,000 per occurrence and aggregate; and
e. Workers Compensation Insurance with statutory limits.

Upon request, Seller will furnish Buyer with certificates of insurance in the standard ACORD form evidencing the above coverages and including a statement that notice of cancellation will be provided in accordance with policy provisions.

13. MISCELLANEOUS.

(A) No waiver of any provision, right or remedy contained in this Agreement, including the terms of this Section 13(A), is binding on or effective against a party unless expressly stated in writing and signed by such party's authorized representative. Each party agrees that no right or remedy provided for in this Agreement can be waived through course of dealing, course of performance or trade usage and that reliance on any waiver without the other party's written consent is unreasonable. Waiver by a party of any breach will be limited to the specific breach so waived and will not be construed as a waiver of any subsequent breach. A party's approval or consent to any action proposed by the other will not be considered an agreement to the propriety, fitness, or usefulness of the proposed action, and will not affect the proposing party's obligation to strictly comply with this Agreement and all related Orders.

(B) Subject to Buyer's payment under this Agreement and any Order, Seller will pay, satisfy, and discharge all mechanics', suppliers', materialmen's, and other liens and all claims, obligations, and liabilities which may be asserted against Buyer or its property by reason of, or as a result of, Seller's acts or omissions relating to furnishing of Goods or performance of Services.

(C) Buyer may not assign this Agreement or any rights or obligations hereunder without Seller's prior written consent. Any attempted assignment in violation of this Section is void; however, this Agreement and the Terms and Conditions of Sale and Service contained herein are enforceable against Buyer's successors and permitted assigns.

(D) Seller's remedies in this Agreement are cumulative and in addition to any other remedies available to Seller, whether at law, equity, or otherwise.

(E) If any provision or part of a provision contained in this Agreement is held by a court of competent jurisdiction to be contrary to law or public policy, the remaining provisions of the Agreement will remain in full force and effect.

(F) Each party is an independent contractor with respect to this Agreement and not an agent or employee of the other party.

(G) Any notice, request, demand, or other communication from one party to the other required or permitted to be given under this Agreement will be sent to the address for each party indicated on the applicable Order and (i) delivered in person; (ii) sent by overnight service (signature required); or (iii) sent via email with confirmation of delivery. All notices will be effect on the date of receipt. Parties may change such notice addresses upon written notice to the other party. In the case of notice to Seller, please also send a copy to:

Janus Fire Systems
1102 Rupcich Dr
Crown Point, IN 46317
Attn: General Manager

(H) No provision of this Agreement may be construed against either party as the drafting party. The English language version of this Agreement will govern over any translations.

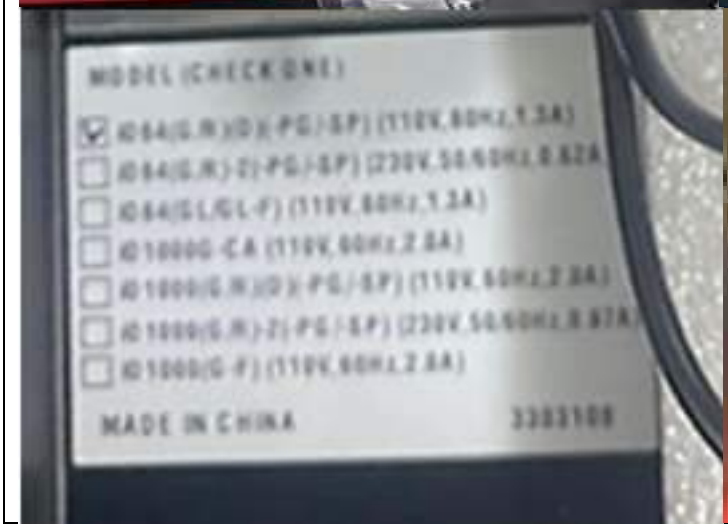
1. REGISTRO FOTOGRÁFICO ELEMENTOS DETECCIÓN DE INCENDIO

A continuación, se presenta el registro fotográfico de cada uno de los ítems relacionados en la tabla anterior, así:

1.1. Panel de control de alarma de incendio (FACP); 1 lazo; máximo 64 dispositivos inteligentes; 2 NAC Clase B; fuente de alimentación de 4.25A; puerta gris; 115 VCA; capacidad para hasta (2) baterías de 10 A/h.	CANT	1









1.2. Tarjeta de interfaz SA-USBSA-USB que proporciona conexión USB a una impresora compatible para imprimir eventos del sistema o conexión a una PC que ejecute la utilidad de configuración (CU) para cargar/descargar la configuración del panel, el historial, los diagnósticos y el estado actual.	**CANT**	**1**



1.3. Batería 12V @ 7Ah / Tecnología AGM / Alarmas de intrusión / Incendio	CANT	2





1.4. Detector de humo óptico multicriterio inteligente; UL/ULC	CANT	8





1.5. Base de detector - Estándar	CANT	8



1.6. Estación manual de alarma - Doble acción; 1 etapa	CANT	2





1.7. Cubierta protectora Stopper II con sirena (batería de 9V) - para estaciones de montaje en superficie; incluye STI-3100	CANT	2





1.8. Placa de timbre/estroboscopio de 10 cd. Adapta el timbre vibratorio para que se convierta en un timbre con estroboscopio. UL 1971 con 110 cd de orientación de pared, 'FIRE' en pulgadas. Cumple con los requisitos del área de dormir. El timbre se pide por separado	CANT	2





1.9 Campana de alarma de incendio, 6 pulgadas (150 mm), vibratoria, con diodo, 24 VCC, roja	CANT	2





1.10. Sirena/Estrobo de pared compacto; 15-75cd; Rojo; Marcado 'FUEGO	CANT	2





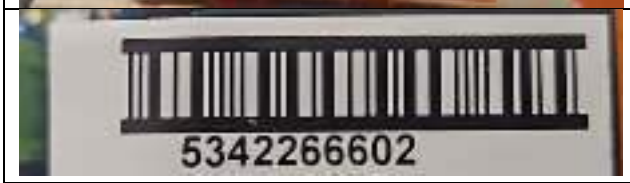
1.11. Suministro e instalación, Placa de montaje universal, paquete de 10	CANT	1

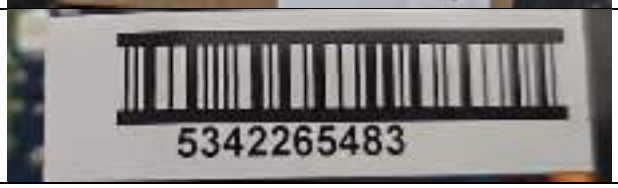


1.12. Módulo inteligente de liberación de agente; 2 circuitos	CANT	2









1.13. Accesorio de control de incendios; Gabinete multifunción; 8"x14"x3.5"; Rojo	CANT	2





1.14. Estación manual de aborto - para módulo de liberación	CANT	2





1.15. Interruptor de llave de desconexión de servicio - para módulo de liberación	**CANT**	**2**





1.16. Dispositivo de relé de fin de línea - polarizado	**CANT**	**2**





1.17. Estación manual de liberación - Doble acción	CANT	2





1.18. Módulo de relé de control. Seleccionable para operación N.A. (Normalmente Abierto) o N.C. (Normalmente Cerrado). Con una capacidad de 2 amperios (24 VCC).	CANT	4





1.19. Módulo de doble entrada. Módulo de entrada de dos circuitos para uso con dispositivos de contacto normalmente abierto. Cuatro códigos de personalidad seleccionables (en cada circuito) para alarma con retención (o enclavada), o alarma con retención retardada, o monitor sin retención, o supervisión con retención	**CANT**	**8**





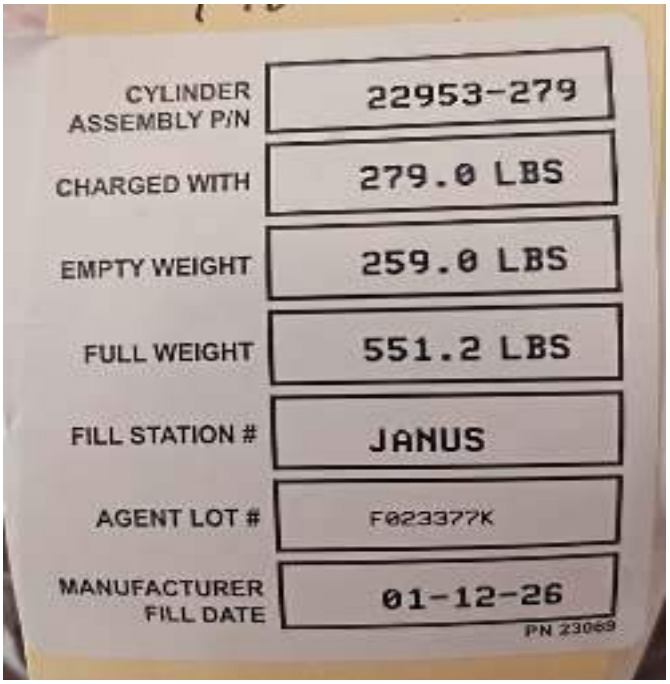
2. REGISTRO FOTOGRÁFICO ELEMENTOS EXTINCIÓN

A continuación, se presenta el registro fotográfico de los ítems objeto del contrato, en el cual se evidencia la entrega de cada uno de los componentes contemplados en el contrato y conforme a las especificaciones técnicas establecidas durante el desarrollo contractual. Cada registro corresponde a los elementos relacionados a continuación, como soporte del cumplimiento de las obligaciones contractuales asi:

2.1. Conjunto de cilindro, 420 lb, rango de llenado a 500 psi - 211 a 422 lb (95.7 a 191.4 kg) FK-5-1-12	**CANT**	**1**









2.2 Agente limpio de última generación para extinción de incendios en centros de datos (supresión de incendios de clases C, con vida atmosférica de al menos 5 días, con descarga de 10 segundos o menos, que cumpla certificaciones NFPA 2001 ISO 14520 certificado por el fabricante, seguro para ocupación humana y cero residuos con ODP=0 -GWP menor o igual a 1 - Peso del envío en lb (kg) FK5112 y Debe incluir los cilindros de almacenamientos que sean requeridos para su funcionamiento	**CANT**	**279 Lb**



2.3 Kit de soporte de cilindro de 16 pulgadas JFS (para cilindros de 250 lb y 420 lb)".	CANT	1



2.4 Actuador eléctrico supervisado normalmente cerrado que se abre al instalarse, para agente limpio - 2 - Lbs	CANT	1

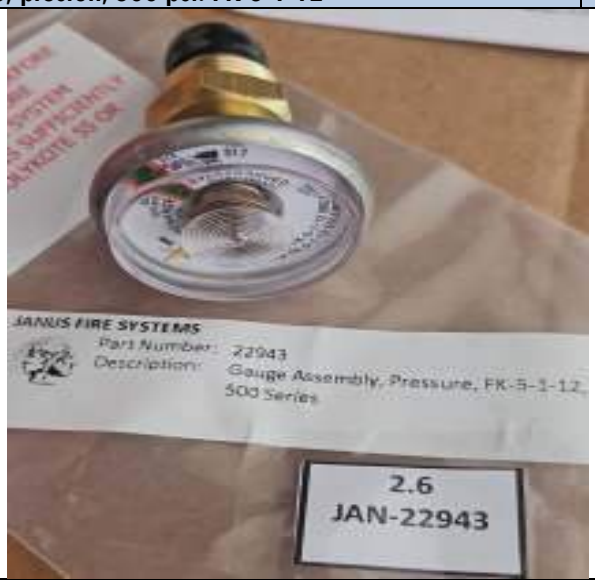




2.5. Actuador de válvula manual - Peso = Lbs: 0.6 - Kgs: 0.324	CANT	1



2.6. Conjunto de manómetro, presión, 500 psi. FK-5-1-12	CANT	1



2.7. Acoplamiento ranurado de 2 pulgadas JFS (50 mm)	CANT	1



2.8. Codo ranurado de 2 pulgadas JFS (50 mm)	CANT	1

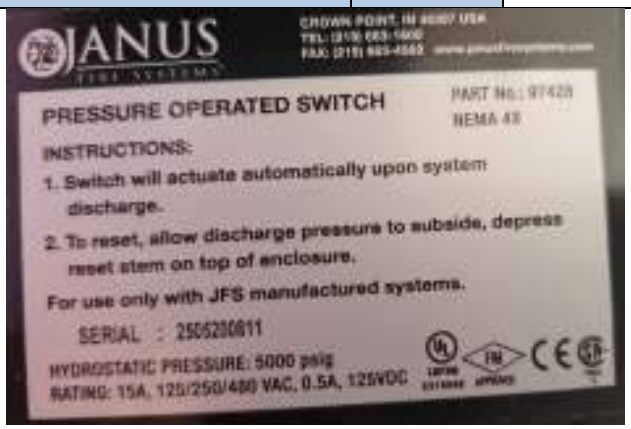


2.9. Niple de 2 pulgadas (50 mm) Ranurado x MNPT JFS	CANT	1



2.10 Interruptor de presión de descarga, estanco, NEMA 3/4/4X/13, SPDT, aumento de 50 psig, 1/4 pulgada FNPT, reinicio manual, uso interior/exterior - Peso de envío lb (kg): 1.6 (0.7)	CANT	1





2.11. Señal de advertencia de salida (de) agente limpio en español - 0.2 lbs	CANT	1



2.12. Señal de advertencia de entrada de agente limpio en español - 0.2 libras	CANT	1



2.13. Boquilla: 360°, 1" (25 mm), FK-5-1-12, Latón - Peso de envío lb (kg): 1.2 (0.5)	CANT	2



2.14 Boquilla: 360°, 1/2" (15 mm), FK-5-1-12, Latón - Peso de envío lb (kg): 0.6 (0.3)	CANT	2



2.15. tubería Schedule 40 para un sistema de extinción con agente limpio que se encuentre en listado UL FK-5-1-12	**CANT**	**1**





NOTAS:

No es necesario imprimir ni anexar este instructivo.

1. En la celda de Remision N: iniciar la numeracion en 01 y en caso de entradas parciales, continuar con el consecutivo.

2. Insertar el logo del contratista.

3. Esquema de fecha corto DD/MM/AAA

4. En la columna de % de IVA aplicado se debe especificar si se aplica el 0%, 5% o 19%.

5. Los valores unitarios se deben reportar con el IVA incluido. En caso de tener decimales, tanto los valores unitarios como valores totales se deben reportar con dos decimales.

6. Ordenador del gasto: Indicar la Secretaria a la que pertenece el contrato/oferta/orden de compra nacional

7. indicar si la adquisicion de los bienes es por contrato, oferta o una orden de compra nacional y en la celda continua indicar el numero y el año.

8. Si los elementos no contienen marcas ni seriales poner N.A

9. En el caso de vehìculos, se debe relacionar el Numero del motor y chasis en la celda de SERIAL

10. Es obligatorio diligenciar la totalidad de los campos. En caso de remitir informacion incompleta la remision sera devuelta.

11. La remisión debe ser firmado por el contratista o representante legal y un visto bueno del supervisor del contrato/oferta/orden de compra nacional.

	FORMATO DE REMISIÓN	CÓDIGO	F-RF-55
		VERSIÓN	01

REMISIÓN N. __01___

CONTRATISTA:	MEGAPROYECTOS DE TECNOLOGIA S.A.S
NIT O CÉDULA:	900714956-5
DIRECCIÓN:	CALLE 9 SUR 29-08
TELÉFONO:	3126217709
FECHA:	29/04/2026

ORDENADOR DEL GASTO:	**SECRETARÍA DE TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN**
Especificar si es contrato/ oferta/orden de compra nacional	**Contrato No. 2433 del 03 de diciembre de 2025**

ITEM	DESCRIPCIÓN DEL PRODUCTO	UNIDAD DE MEDIDA	MARCA	SERIAL	CANTIDAD	% de IVA APLICADO	VALOR UNITARIO CON IVA	VALOR TOTAL CON IVA
1. DETECCIÓN								
1.1	Suministro e instalacion, Panel de control de alarma de incendio (FACP); 1 lazo; máximo 64 dispositivos inteligentes; 2 NAC Clase B; fuente de alimentación de 4.25A; puerta gris; 115 VCA; capacidad para hasta (2) baterías de 10 A/h.	Unidad	Edwards	3303108	1	19%	6.953.527,00	6.953.527,00
1.2	Suministro e instalacion, tarjeta de interfaz SA-USBSA-USB que proporciona conexión USB a una impresora compatible para imprimir eventos del sistema o conexión a una PC que ejecute la utilidad de configuración (CU) para cargar/descargar la configuración del panel, el historial, los diagnósticos y el estado actual.	Unidad	Edwards	769548	1	19%	1.141.210,00	1.141.210,00
1.3	Suministro e instalacion, Bateria 12V @ 7Ah / Tecnología AGM / Alarmas de intrusión / Incendio	Unidad	Actuvate	N/A	2	19%	77.945,00	155.890,00
1.4	Suministro e instalacion, Detector de humo óptico multicriterio inteligente; UL/ULC	Unidad	Edwards	3942723587 3941785647 3942726175 3941653939 3942838690 3942638775 3942638744 3942727639	8	19%	926.058,00	7.408.464,00
1.5	Suministro e instalacion, Base de detector - Estándar	Unidad	Edwards	N/A	8	19%	119.000,00	952.000,00
1.6	Suministro e instalacion, Estación manual de alarma - Doble acción; 1 etapa	Unidad	Edwards	4890848940 4890847349	2	19%	1.103.725,00	2.207.450,00
1.7	Suministro e instalacion, Cubierta protectora Stopper II con sirena (batería de 9V) - para estaciones de montaje en superficie; incluye STI-3100	Unidad	Edwards	N/A	2	19%	1.135.617,00	2.271.234,00
1.8	Suministro e instalacion, Placa de timbre/estroboscopio de 10 cd. Adapta el timbre vibratorio para que se convierta en un timbre con estroboscopio. UL 1971 con 110 cd de orientación de pared, 'FIRE' en pulgadas. Cumple con los requisitos del área de dormir. El timbre se pide por separado	Unidad	Edwards	N/A	2	19%	971.159,00	1.942.318,00
1.9	Suministro e instalacion, Campana de alarma de incendio, 6 pulgadas (150 mm), vibratoria, con diodo, 24 VCC, roja	Unidad	Edwards	N/A	2	19%	900.949,00	1.801.898,00
1.10	Suministro e instalacion, Sirena/Estrobo de pared compacto; 15-75cd; Rojo; Marcado 'FUEGO	Unidad	Edwards	N/A	2	19%	610.113,00	1.220.226,00
1.11	Suministro e instalacion, Placa de montaje universal, paquete de 10	Unidad	Edwards	N/A	1	19%	414.477,00	414.477,00
1.12	Suministro e instalacion, Módulo inteligente de liberación de agente; 2 circuitos	Unidad	Edwards	5342266602 5342265483	2	19%	4.239.375,00	8.478.750,00
1.13	Suministro e instalacion, Accesorio de control de incendios; Gabinete multifunción; 8"x14"x3.5"; Rojo	Unidad	Edwards	N/A	2	19%	1.177.505,00	2.355.010,00
1.14	Suministro e instalacion, Estación manual de aborto - para módulo de liberación	Unidad	Edwards	N/A	2	19%	791.469,00	1.582.938,00
1.15	Suministro e instalacion, Interruptor de llave de desconexión de servicio - para módulo de liberación	Unidad	Edwards	N/A	2	19%	791.469,00	1.582.938,00
1.16	Suministro e instalacion, Dispositivo de relé de fin de línea - polarizado	Unidad	Edwards	N/A	2	19%	1.166.557,00	2.333.114,00
1.17	Suministro e instalacion, Estación manual de liberación - Doble acción	Unidad	Edwards	N/A	2	19%	925.463,00	1.850.926,00
1.18	Suministro e instalacion, Módulo de relé de control. Seleccionable para operación N.A. (Normalmente Abierto) o N.C. (Normalmente Cerrado). Con una capacidad de 2 amperios (24 VCC).	Unidad	Edwards	5223001827 5224680946 5222973323 5224677496	4	19%	901.663,00	3.606.652,00

1.19	Suministro e instalacion, Módulo de doble entrada. Módulo de entrada de dos circuitos para uso con dispositivos de contacto normalmente abierto. Cuatro códigos de personalidad seleccionables (en cada circuito) para alarma con retención (o enclavada), o alarma con retención retardada, o monitor sin retención, o supervisión con retención	Unidad	Edwards	4936281946 4925267562 4937241024 4936282783 4936280086 4925270487 4936280284 4925273464	8	19%	1.101.940,00	8.815.520,00
2. EXTINCIÓN								
2.1	Suministro e instalacion, Conjunto de cilindro, 420 lb, rango de llenado a 500 psi - 211 a 422 lb (95.7 a 191.4 kg) FK-5-1-12	Unidad	JANUS	22953-279	1	19%	94.635.940,00	94.635.940,00
2.2	Agente limpio de última generación para extinción de incendios en centros de datos (supresión de incendios de clases C, con vida afmos férica de almenos 5 días, con descarga de 10 segundos o menos, que cumpla certificaciones NFPA 2001 ISO 14520 certificado por el fabricante, seguro para ocupación humana y cero residuos con ODP=0 - GWP menor o igual a 1 - Peso del envío en lb (kg) FK5112 y Debe incluir los cilindros de almacenamientos que sean requeridos para su funcionamiento	Libras	JANUS	N/A	279	19%	381.157,00	106.342.803,00
2.3	Suministro e instalacion, Kit de soporte de cilindro de 16 pulgadas JFS (para cilindros de 250 lb y 420 lb)".	Unidad	JANUS	N/A	1	19%	2.299.675,00	2.299.675,00
2.4	Suministro e instalacion, Actuador eléctrico supervisado normalmente cerrado que se abre al instalarse, para agente limpio - 2 - Lbs	Unidad	JANUS	74383-172	1	19%	11.619.874,00	11.619.874,00
2.5	Suministro e instalacion, Actuador de válvula manual - Peso = Lbs: 0.6 - Kgs: 0.324	Unidad	JANUS	N/A	1	19%	1.690.633,00	1.690.633,00
2.6	Suministro e instalacion, Conjunto de manómetro, presión, 500 psi. FK-5-1-12	Unidad	JANUS	N/A	1	19%	1.965.999,00	1.965.999,00
2.7	Suministro e instalacion, Acoplamiento ranurado de 2 pulgadas JFS (50 mm)	Unidad	JANUS	N/A	1	19%	1.897.693,00	1.897.693,00
2.8	Suministro e instalacion, Codo ranurado de 2 pulgadas JFS (50 mm)	Unidad	JANUS	N/A	1	19%	1.338.750,00	1.338.750,00
2.9	Suministro e instalacion, Niple de 2 pulgadas (50 mm) Ranurado x MNPT JFS	Unidad	JANUS	N/A	1	19%	788.970,00	788.970,00
2.10	Suministro e instalacion, Interruptor de presión de descarga, estanco, NEMA 3/4/4X/13, SPDT, aumento de 50 psig, 1/4 pulgada FNPT, reinicio manual, uso interior/exterior - Peso de envío lb (kg): 1.6 (0.7)	Unidad	JANUS	2505200811	1	19%	6.802.635,00	6.802.635,00
2.11	Suministro e instalacion, Señal de advertencia de salida (de) agente limpio en español - 0.2 lbs	Unidad	JANUS	N/A	1	19%	637.245,00	637.245,00
2.12	Suministro e instalacion, Señal de advertencia de entrada de agente limpio en español - 0.2 libras	Unidad	JANUS	N/A	1	19%	647.122,00	647.122,00
2.13	Suministro e instalacion, Boquilla: 360°, 1" (25 mm), FK-5-1-12, Latón - Peso de envío lb (kg): 1.2 (0.5	Unidad	JANUS	N/A	2	19%	297,50	595,00
2.14	Suministro e instalacion, Boquilla: 360°, 1/2" (15 mm), FK-5-1-12, Latón - Peso de envío lb (kg): 0.6 (0.3)	Unidad	JANUS	N/A	2	19%	1.148.350,00	2.296.700,00
2.15	Suministro e instalación de tubería Schedule 40 para un sistema de extinción con agente limpio que se encuentre en listado UL FK-5-1-12	Unidad	JANUS	N/A	1	19%	7.469.273,00	7.469.273,00
				VALOR TOTAL				**297.508.449,00**

FIRMA DEL CONTRATISTA O REPRESENTANTE LEGAL

NOMBRE: FABIAN GUZMAN SOTO
CEDULA: 86079311

Vo. Bo. del Supervisor

NOMBRE: LILIANA MARCELA BAQUERO TORRES
CEDULA: 40.219.134