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Fire Alarm System
Data Sheet Submittals



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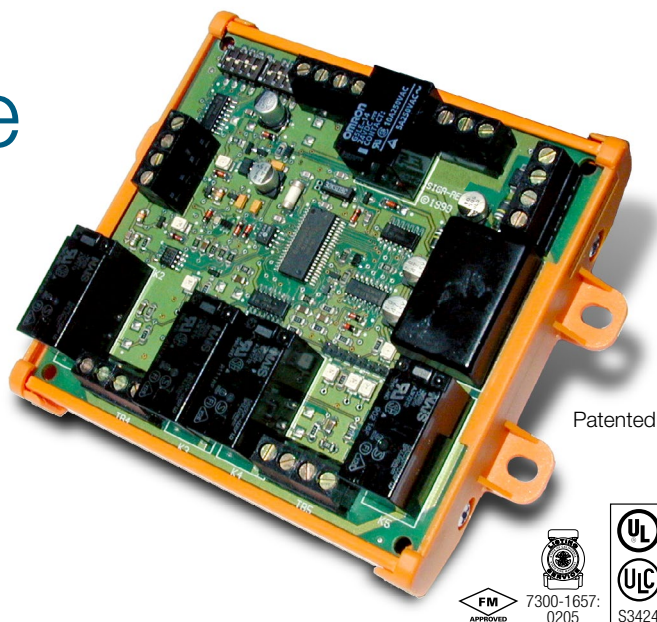
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Releasing Module

SIGA-REL



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 CO₂, 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.

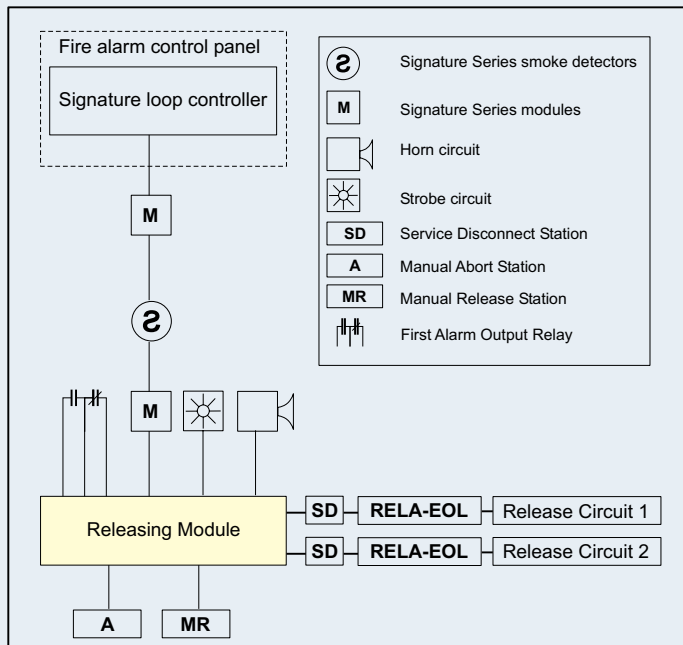
While fire detection remains the first line of defense against the risks of fire to people, building owners are looking to fire suppression as a means of protecting their property and assets.

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.

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.

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.

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 area. 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).

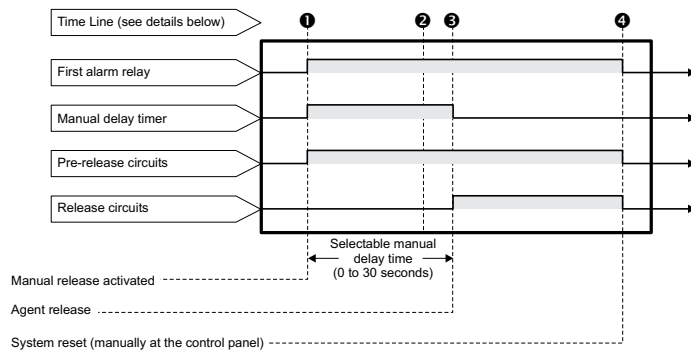
Normal State

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

- 1 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)
- 2 Ten seconds before the expiration of the manual delay timer, the pre-release horn changes from 60 pulses per minute to steady On.
- 3 The manual delay timer expires and the release circuits activate.
- 4 A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

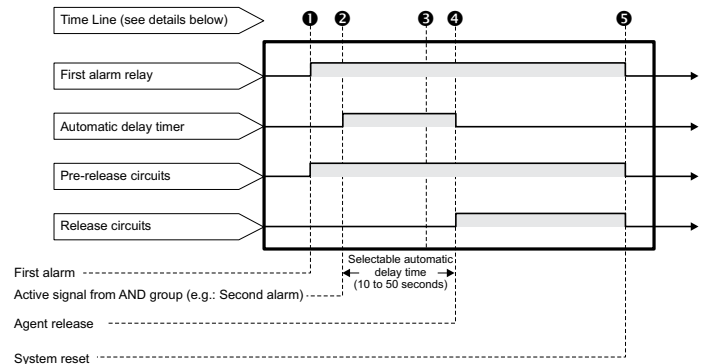
Note: Misapplication of the SIGA-REL can have serious consequences. Descriptions provided here are for information only, are subject to change, and should not be used as a guide to field installation of equipment. Always consult the SIGA-REL installation manual when setting up or configuring this component.

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

- 1 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)
- 2 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.
- 3 10 seconds before the automatic delay timer expires, the pre-release (horn) circuit changes to steady On.
- 4 The automatic delay timer expires and the release circuits activate.
- 5 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. Table 1-1 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 FMRC 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.

The following fire detection systems meet FMRC 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)

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.

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
	2	0	1
	3	1	0
	4	1	1

Routines that determine how the abort function interacts with the timers.

Manual time delay (seconds)

Delay	SW3	SW4	
0	0	0	
DEFAULT	10	0	1
	20	1	0
	30	1	1

The length of time that the deluge is inhibited when the releasing function is manually initiated.

Automatic time delay (seconds)

Delay	SW5	SW6	SW7	
10	0	0	0	
20	0	0	1	
30	0	1	0	
40	0	1	1	
DEFAULT	50	1	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).

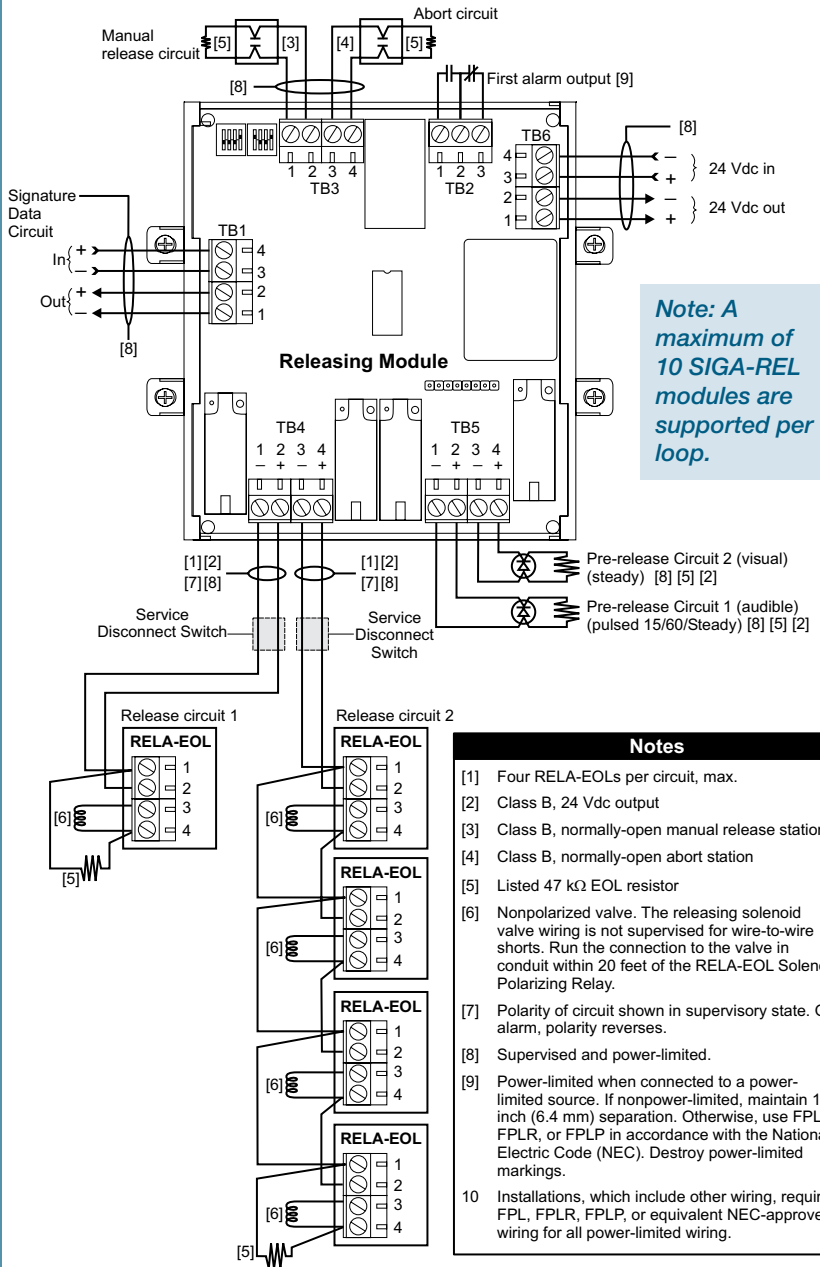
Abort time delay (seconds)

Delay	SW8	
0	0	
DEFAULT	10	1

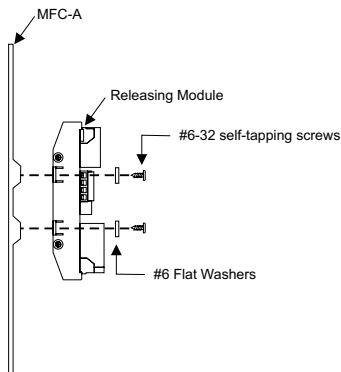
The length of time that the deluge is inhibited when the abort function is restored (i.e.: cancelled).

DEFAULT Denotes default settings.

Wiring



Mounting



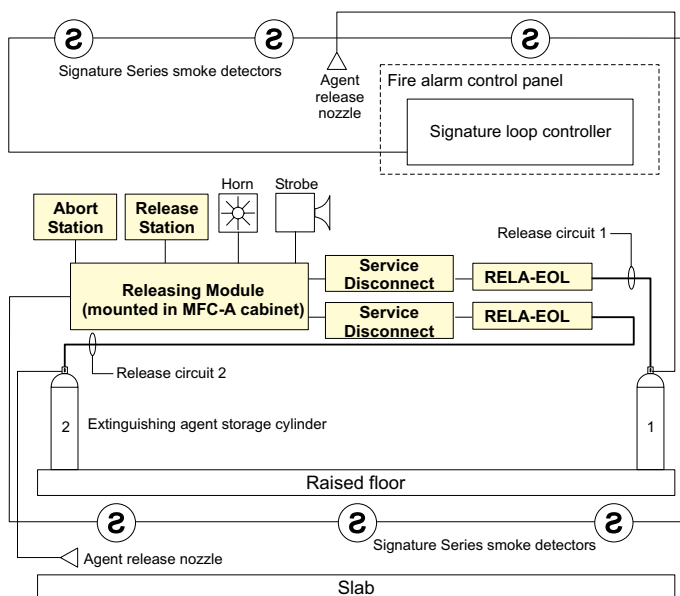
LED Operation

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

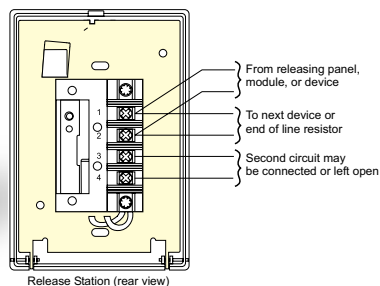
*Note: During a loss of communications, the Releasing Module will go into a standby condition, which will cause DS1 and DS2 to change to a steady pattern during an alarm condition.

Accessories

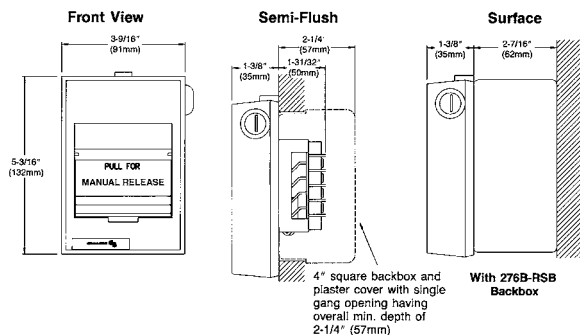
Typical application of SIGA-REL accessories (computer room)



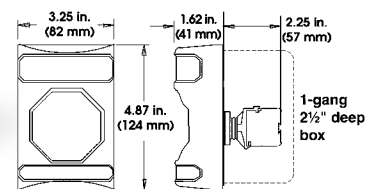
Manual Release Station



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.

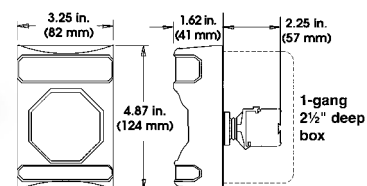


Abort Station



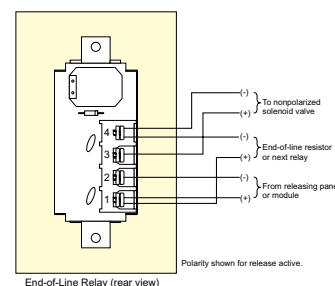
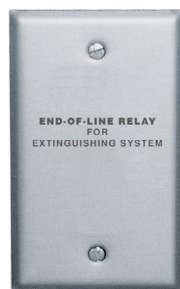
The abort station is a normally-open, non-latching device. It is used to prevent the release of agent into the protected area after the release sequence has begun.

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 RELAY-EOI 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.

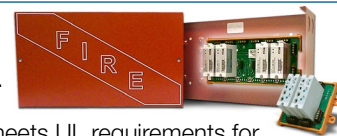
End-of-Line Relay



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	24 Vdc (power limited)
	Supervisory current	25 mA, max.
	Riser input current	4 amps maximum
	Alarm	170 mA min.; 4 A max.
Release circuits	Output rating	2 A @ 24 Vdc (for each circuit)
	Valves per circuit	4 valves, max.
	Max. supervisory current	0.4 mA (short circuit)
	Nominal supervisory current	0.18 mA
	Supervisory voltage	26 Vdc, max. (open circuit)
	End of line device	47k Ohm EOL
Pre-release alarm circuits	Output rating	2 A @ 24 Vdc (for each circuit)
	Max. supervisory current	0.4 mA (short circuit)
	Nominal supervisory current	0.18 mA
	Supervisory voltage	26 Vdc, max. (open circuit)
	End of line device	47k Ohm resistor
Manual release input circuit	Max. supervisory current	0.4 mA (short circuit)
	Nominal supervisory current	0.18 mA
	Supervisory voltage	26 Vdc, max. (open circuit)
	End of line device	47k Ohm resistor
	Circuit type	Class B N.O. latching
Abort circuit	Circuit capacitance	0.1 µF, max
	Max. supervisory current	0.4 mA (short circuit)
	Nominal supervisory current	0.18 mA
	Supervisory voltage	26 Vdc, max. (open circuit)
	End of line device	47k Ohm resistor
First alarm output relay	Circuit type	Class B N.O. non- latching
	Circuit capacitance	0.1 µF, max
	Contact rating	3 A @ 24 Vdc (0.6 power factor) Form C
Signature Data line	Operating voltage	5.2 to 19.95 Vdc
	Supervisory current	1000 µA
	Alarm current	1000 µA
Environmental conditions	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% Non-condensing
Wiring Terminals	Suitable for #18 to #12 AWG (2.5 mm ² to .75 mm ²)	
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 mm ²	#14 AWG	1.5 mm ²	
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 mm ²	#14 AWG	1.5 mm ²	
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 3 1/2" (203mm x 356mm x 89mm)	7.0 (3.1)



LIFE SAFETY & INCIDENT MANAGEMENT

Contact us

Phone: 800-655-4497 (Option 4)

Email: edwards.fire@carrier.com

Website: edwardsfiresafety.com

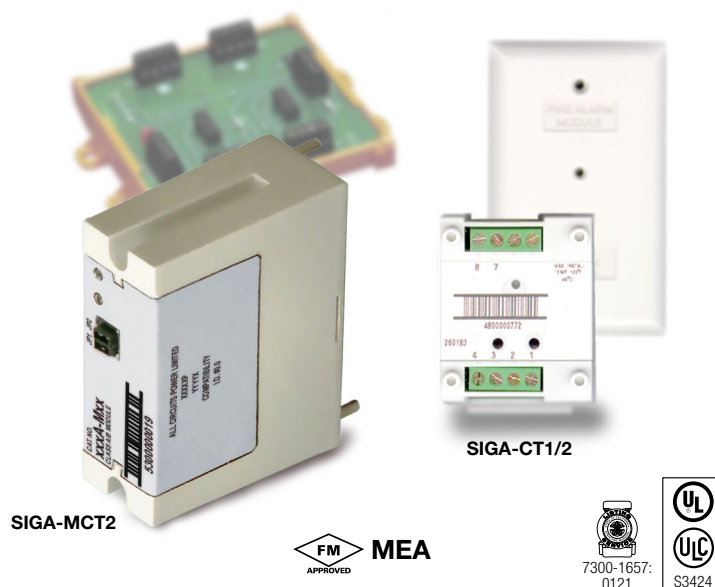
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LIFE SAFETY & INCIDENT MANAGEMENT

Input Modules

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



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 °F to 158 °F (0 °C to 70 °C) 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

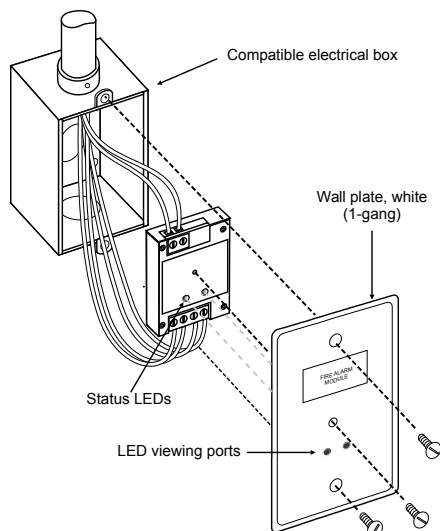
The Signature Series intelligent analog-addressable system from EDWARDS Security is an entire family of multi-sensor detectors and mounting bases, multiple-function input and output modules, network and non-network control panels, and user-friendly maintenance and service tools. Analog information from 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.

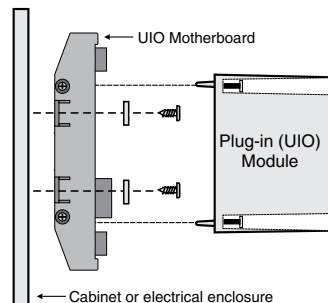
Automatic Device Mapping – The Signature Data Controller (SDC) learns where each device's serial number address is installed relative to other devices on the circuit. The SDC keeps a map of all Signature Series devices connected to it. The Signature Series Data Entry Program also uses the mapping feature. 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 mm² to 0.75 mm²) 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 mm² to 0.75 mm²) 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 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.

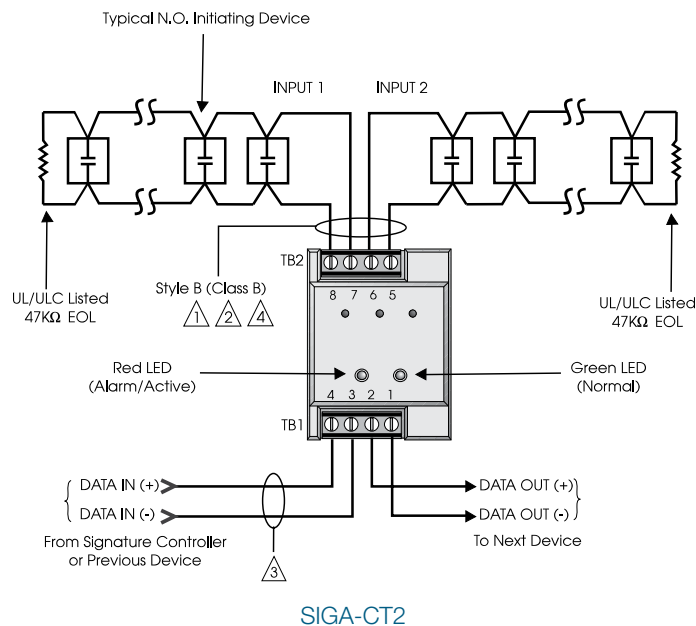
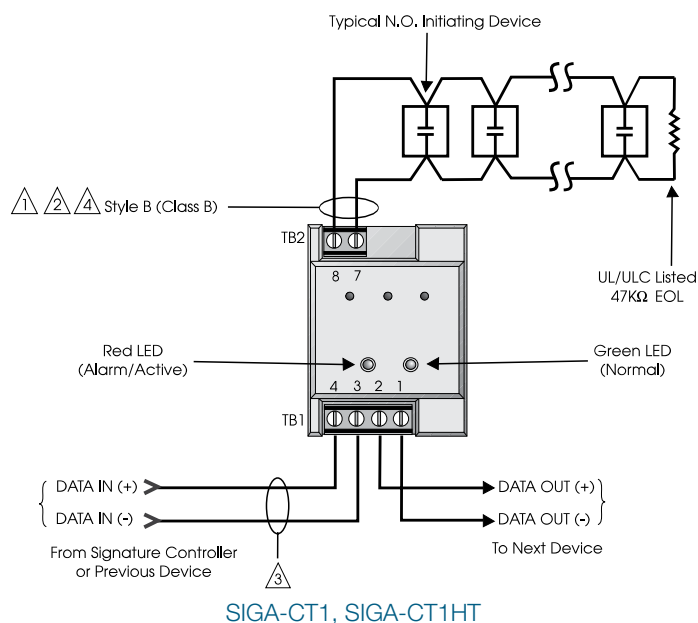
Typical Wiring

Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), and #14AWG (1.50mm²), and #12 AWG (2.50mm²) wire sizes.

Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) 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)	



NOTES

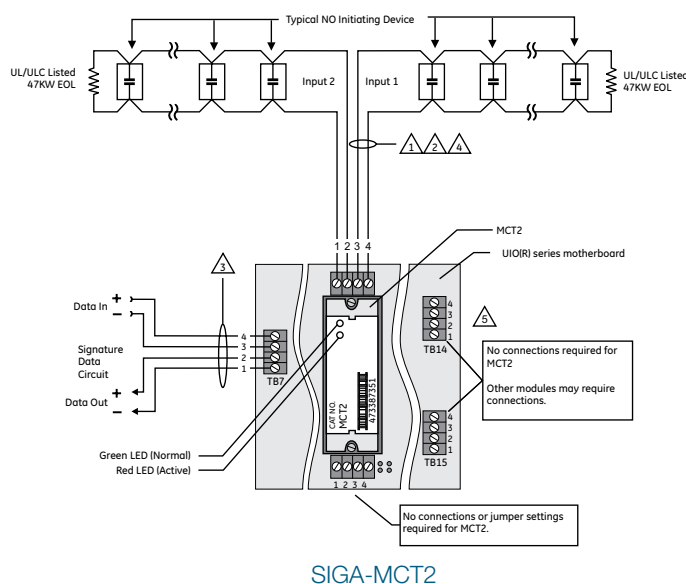
- 1 Maximum 25 Ohm resistance per wire.
- 2 Maximum #12 AWG (2.5 mm²) wire; Minimum #18 AWG (0.75 mm²).
- 3 Refer to Signature controller installation sheet for wiring specifications.
- 4 Maximum 10 Vdc @ 350 µA
- 5 The SIGA-UIO6R and the SIGA-UIO2R do not come with TB14.
- 6 All wiring is supervised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

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

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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)

The VESDA-E VEP series of smoke detectors bring the latest and most advanced detection technology to provide very early warning and the best nuisance alarm rejection to a wide range of applications. Built on the Flair detection technology and years of application experience, VEP detectors achieve consistent performance over their lifetime via absolute calibration. In addition, the VEP delivers a range of revolutionary features that provide user value.



Flair Detection Technology

Flair is the revolutionary detection chamber that forms the core of the VESDA-E VEP, providing higher stability and increased longevity. Direct imaging of the sampled particles using a CMOS imager combined with multiple photo-diodes allows better detection and fewer nuisance alarms.

Installation, Commissioning and Operation

VESDA-E VEP is equipped with a powerful aspirator that enables use of a total of 130m (427ft) of sampling pipe in the one pipe model and 560m (1,837ft) of pipe in the four pipe model. Out of box operation is made possible with AutoConfig which allows airflow normalisation and AutoLearn Smoke and Flow to be initiated from within the detector. VEP is fully supported by the ASPIRE and Xtralis VSC software applications which facilitate ease of pipe network design, system commissioning and maintenance.

VESDAnet™

VESDA devices communicate on VESDAnet which provides a robust bi-directional communication network allowing continued redundant operation even during single point wiring failures. VESDAnet enables primary reporting, centralized configuration, control, maintenance and monitoring.

Ethernet connectivity

VESDA-E detectors offer connectivity to corporate networks via Ethernet, allowing for devices installed with Xtralis monitoring and configuration software to connect to the detector.

Backward Compatibility

VESDA-E VEP is compatible with existing VESDA installations. The detector occupies the same mounting footprint, pipe, conduit and electrical connector positioning as VESDA VLP. VEP is also compatible with existing VESDAnet installations allowing monitoring of both VESDA-E and legacy detectors via the latest VSC and VSM4 applications.

Features

- Suitable for Class 1 Division 2 applications - Groups A, B, C & D
- One and four pipe models for different applications
- Flair detection technology delivers reliable very early warning in a wide range of environments with minimal nuisance alarms
- Short wavelength laser-based detection:
 - High sensitivity from small particle light scattering
 - No drift compensation required since focused light directed at target gives low backgrounds
 - High stability with temperature and time
- Multi stage filtration and optical protection with clean air barriers ensures lifetime detection performance
- Four alarm levels and a wide sensitivity range deliver optimum protection for the widest range of applications
- Intuitive LCD icon display provides instant status information for immediate response
- Flow fault thresholds per port accommodate varying airflow conditions
- Smart on-board filter retains dust count and remaining filter life for predictable maintenance
- Extensive event log (20,000 events) for event analysis and system diagnostics
- AutoLearn™ smoke and flow for reliable and rapid commissioning
- Referencing to accommodate external environmental conditions to minimise nuisance alarms

- Backward compatible with VLP and VESDAnet
- Ethernet for connectivity with Xtralis software for configuration, secondary monitoring and maintenance
- USB for PC configuration, and firmware upgrade using a memory stick
- Two programmable GPIs (1 monitored) for flexible remote control
- Field replaceable sub-assemblies enable faster service and maximum uptime

Listings / Approvals

- CSFM
 - FM
 - VdS
 - NF-SSI (www.marque-nf.com)
 - CE
 - UKCA
 - ActivFire
 - CCC
 - EN 54-20, ISO 7240-20
- Four Pipe VEP
- Class A (40 holes / Fire 1 = 0.028% obs/m)
 - Class B (80 holes / Fire 1 = 0.027% obs/m)
 - Class C (100 holes / Fire 1 = 0.056% obs/m)
- Classification of any configuration is determined using ASPIRE.

Regional approvals listings and regulatory compliance vary between product models. Refer to www.xtralis.com for the latest product approvals matrix.

VESDA-E VEP

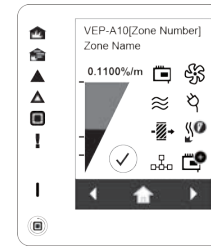
TECHNICAL SPECIFICATIONS



Specifications

	One Pipe VEP	Four Pipe VEP			
Supply Voltage	18-30 VDC (24 V Nominal)				
Power Consumption @ 24VDC	VEP-A00-1P	VEP-A00-P		VEP-A10-P	
Aspirator Setting	Fixed	1	5	1	5
Power (Quiescent)	8.8 W	7.0 W	9.0 W	8.0 W	10.0 W
Power (In Alarm)	9.6 W	7.8 W	9.8 W	8.8 W	10.8 W
Dimensions (WHD)	350 mm x 225 mm x 135 mm (13.8 in x 8.9 in x 5.3 in)				
Weight	4.4 kg (9.7 lbs)	4.4 kg (9.7 lbs)		4.5 kg (9.9 lbs)	
Operating Conditions	Ambient: 0°C to 38°C (32°F to 100°F) Sampled Air: -20°C to 60°C (-4°F to 140°F) * Humidity: 5% to 95% RH, non-condensing * Sampled Air temperature shall reach Ambient Detector temperature upon entry into Detector. Refer to Xtralis Design Guides & Application Notes for sampled air pre-conditioning.				
Area Coverage	1,000 m ² (10,760 sq. ft)	2,000 m ² (21,520 sq. ft)			
Min. airflow per pipe	15 l/m				
Pipe Length (Linear)	100 m (328 ft)	280 m (919 ft)			
Pipe Length (Branched)	130 m (427 ft)	560 m (1,837 ft)			
Pipe lengths depending on number of pipes in use	1 Pipe	1 Pipe	2 Pipe	3 Pipe	4 Pipe
	100 m (328 ft)	110 m (361 ft)	100 m (328 ft)	80 m (262 ft)	70 m (230 ft)
StaX	PSU				
No. of holes (A/B/C)	30/40/45	40/80/100			
Computer design tool	ASPIRE				
Pipe	Inlet: External diameter 25 mm or 1.05 in (3/4 in IPS) Exhaust: External diameter 25 mm or 1.05 in (3/4 in IPS) via adaptor				
Relays	7 programmable relays (latching or non-latching states) Contacts rated 2 A @ 30 VDC (Resistive)				
IP rating	IP40				
Cable access	4 x 26 mm (1.02 in) cable entries				
Cable termination	Screw Terminal blocks 0.2–2.5 sq mm (24–14 AWG)				
Measurement Range	0.000 to 32% obs/m (0.0000 to 11.09% obs/ft)				
Sensitivity Range	0.005 to 20% obs/m (0.0015% to 6.575% obs/ft)				
Threshold setting range	Alert: 0.005% to 2.0% obs/m (0.0015% to 0.614% obs/ft) Action: 0.005% to 2.0% obs/m (0.0015% to 0.614% obs/ft) Fire1: 0.010% to 2.0% obs/m (0.0030% to 0.614% obs/ft) Fire2: 0.020% to 20.0% obs/m (0.0061% to 6.575% obs/ft)				
Software features	Event log: Up to 20,000 events Smoke level, user actions, alarms and faults with time and date stamp AutoLearn: Detector learns Alarm Thresholds and Flow Fault thresholds by monitoring the environment.				

3.5" Display



LED	Description
	Fire 2
	Fire 1
	Action
	Alert
	Disabled
	Fault
	Power

Home Page

Icon on Display	Description
	Smoke and Alarm Threshold Levels
	Detector OK
	Detector Fault
	Aspirator Fault
	Airflow Fault
	Power Fault
	Filter Fault
	Smoke Chamber Fault
	VESDAnet Fault
	StaX Module Fault

Spare Parts

VSP-956	VESDA-E Flow Sensor Manifold	VSP-964-03	VESDA-E Smoke Detection Chamber - MK3
VSP-956-04*	VESDA-E Flow Sensor Manifold	VSP-964-04*	VESDA-E Smoke Detection Chamber - MK4
VSP-960	VESDA-E Mounting Bracket	VSP-965	VESDA-E Sampling Module
VSP-961	VESDA-E Exhaust adaptor US	VSP-968	VESDA-E VEP-A00-P/1P Front Cover - Plastic - LEDs
VSP-962	VESDA-E Filter	VSP-969	VESDA-E VEP-A10-P Front Cover - Plastic - LCD - 3.5" Display
VSP-962-20	VESDA-E Filter - 20 Pieces	VSP-969-04*	VESDA-E VEP-A10-P Front Cover - Plastic - LCD - 3.5" Display
VSP-963	VESDA-E Aspirator		

* Spare parts for GA4 only.

Ordering Information

Ordering Code	Description
VEP-A00-1P	VESDA-E VEP with LEDs, 1 pipe, Plastic Enclosure
VEP-A00-P	VESDA-E VEP with LEDs, 4 pipe, Plastic Enclosure
VEP-A10-P	VESDA-E VEP with 3.5" Display, 4 pipe, Plastic Enclosure

Approvals Compliance

Please refer to the Product Guide for details regarding compliant design, installation and commissioning.