METROTEC
Seguridad y Automatización Inteligente

Kidde Fire Systems
Fike
VESDA by xtralis

Junta Central Electoral
Garantía de Identidad y Democracia

PROPUESTA TECNICA SISTEMA DE SUPRESION DE INCENDIO POR NOVEC 1230 CON PANEL KIDDE/EDWARDS VS1 Y SISTEMA DE DETECCIÓN TEMPRANA POR ASPIRACIÓN DE HUMOS VESDA EN DATA CENTER, CUARTO DE UPS Y SITE ALTERNO

Proceso:

JCE-CCC-CP-2022-0028

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INDICE

1. INTRODUCCION

El presente documento describe los Sistemas de Detección y Extinción de Incendios a base de un panel KIDDE VS1 y un cilindro de la marca FIKE con libras agente limpio supresor de incendios NOVEC1230 de 3M y Sistema de Detección Temprana por Aspiración XTRALIS VESDA, ubicado en el data center, cuarto de UPS y Site Alterno La Romana.

2. ALCANCE DE LOS TRABAJOS

La propuesta alcanza los siguientes ítems:

- Desarrollo de Ingeniería
- Provisión de equipos específicos
- Mano de obra y materiales para el montaje de los Sistemas
- Logística
- Programación y Puesta en Marcha
- Entrenamientos
- Garantía

3. DOCUMENTOS DE REFERENCIA

Los documentos de referencia para el proyecto son los siguientes:
DOC 01 Sistema Contra Incendio – Listado de Documentos
DOC 02 Sistema Contra Incendio – Manual de Operación y Mantenimiento
DOC.03 Sistema Contra Incendio – Procedimientos y Protocolos de Ensayo
DOC.04 Sistema Contra Incendio – Listado de Equipos
DOC 05 Sistema Contra Incendio – Hojas de Datos de los Equipos
DOC 06 Sistema Contra Incendio – Listado de Materiales
DOC07 Sistema Contra Incendio – LayOut Sistemas de Detección de Incendios
DOC 08 Sistema Contra Incendio – Diagrama de Conexionado
DOC 09 Sistema Contra Incendio – Matriz Causa-Efecto
DOC 10 Sistema Contra Incendio – LayOut Sistema de Extinción a base NOVEC 1230
DOC 11 Sistema Contra Incendio – Cálculos Hidráulicos Sistemas de Extinción
(al momento de ser adjudicados)

4. NORMAS Y ESPECIFICACIONES

La Fabricación, Provisión y Ensayos del SSI se rige por lo indicado en las siguientes normativas nacionales e internacionales:
Reglamento R-032 decreto No. 85-11
NFPA 72: National Fire Alarm and Signaling Code
NFPA 2001: Standard for Clean Agent Extinguishing Systems

5. PROYECTO SISTEMA DE DETECCION

5.1. GENERAL

El Sistema de Detección y superesión de incendios protege el ambiente de la sala en donde está instalado y dimensionado según cálculos del fabricante para trabajar con un 150% de efectividad.
El sistema cuenta con 1 (una) central direccionable, 2 o 4 detectores fotoeléctricos, 1 (un) pulsador manual de descarga y 1 de aborto y 1 sirena de pre disparo, sistemas y equipos para su comunicación via redes e internet. . 1 Sistema completo de detección temprana para aspiración de aire y humos. Todos los sistemas serán del tipo direccionable con listado UL/FM.

5.2. DESCRIPCION Y CANTIDADES DE LOS DISPOSITIVOS

Datacenter

	Supresión de Incendios	
1	Sistema de deteccion de incendios y disparo de agente límpio KIDDE EDWARDS VS1-R VS1-R FACP, 1 LOOP, 64 INTELLIGENT DEVICES MAX, 4.25A POWER SUPPLY, RED con 2 zonas de 2 entradas, 2 salidas, zona de supresión por agente límpio, 1 supervisora, gabinete metálico anticorrosivo, para agente límpio UL y FM. Incluye power supply para generación de eventos y módulo para ampliación del sistema, panel de control con release de agente limpio 2 detectores en zona cruzada. Incluye BPS10A power supply 10A, 120VAC, gabinete rojo.	1
2	Módulo de comunicación IP via internet con envio de correo electrónico para aviso de estado y disparos del sistema Ethernet communicator TRIKDIS E16T transmits information to the Central Station for KIDDE	1
3	Tarjeta de interfase IP SA-ETH ETHERNET PROGRAMMING/DIAGNOSTICS INTERFACE, RJ45, MOUNTS TO BASE P	1
4	Detectores de humo KI-PD INTELLIGENT OPTICAL SMOKE DETECTOR	2
5	Botón de Aborto RELA-ABT PULSADOR PARA ABORTAR DESCARGA DE AGENTE	1
6	Botón de Disparo de agente GSA-M278 ESTACION MANUAL DE INCENDIO DE DOBLE ACCION VS	1
7	Luz de aviso con sirena incorporada G1AVRF-SP COMPACT WALL HORN/STROBE, 15-75CD, RED, FUEGO MARKING	1
8	3 circuitos de notificación: nac1 det 1, nac2 det 2, bell (sirena), led de diagnóstico de estados del panel	1
9	Baterias 12V 7amps ELEKTRA	2
10	FIKE Cylinder 70-365, 375 lb Container Capacity: 163 @ 378 Lbs Kit Assembly system for NOVEC 1230 Fluid, 500 psi, Discharge Valve (incl. gauge and niple), UL, FM, NFPA 2001	1
11	Bracket y kit de sujecion de cilindro	1
12	Lbs agente novec 1230 Agent Novec 1230 Fluid - Weight = Lbs: 1 - Kgs: 0.5	365
13	Actuator, Valve, Electric, w/ Supervisory Limit Switch, Normally Closed, Held Open, Clean Agent - 1.2Lbs	1
14	Adapter, 1/4 Inch (8 mm) MNPT x 1/4 Inch (8 mm) JIC Male, Brass (connects to 18611) - 0.2Lbs	1
15	Vent Check - 0.2Lbs	1

16	Hose, Flex, 3/16 Inch , 1/4 Inch JIC Female (8 mm), 16 Inch Long - 0.6Lbs	1
17	Nozzle, 360, 1/2 Inch (15mm), Brass - 0.6Lbs	4
18	Station, Solenoid Lock-Out, Keyed, LOS-1, Indoor - Maintenance Switch 1.2Lbs	1
19	Materiales miscelaneos, tuberias, anclajes, Incluirá 1 extintor de 5lb de Novec	1
20	Mano de obra instalacion, programacion, entrenamiento	1
	Detección Temprana	
21	XTRALIS VESDA Vesda VLF-250-00 Aspirating Smoke Detector, Plastic Enclosure – NF Vesda Faast Aspiration Detection for up to 2 zones, 800 M2 coverage, 8100 smoke line/smoke sensor EN54-20, Class A,B,C. VdS approved. Smoke sensor 0.1-10%/m alarm sensitivity (0.0043 dB/m) Pre-alarm since 0.01%/m, con posibilidad de interconecciòn a sistema de evacuaciòn, teclado programable integrado a módulo, una zona de extinción. Sistema de timer para conteo regresivo para disparo de agente límpio. Normas NFPA, FM, UL, HARC y FSSA.	1
22	Piping room of Conventional CPVC aspiration tubbing with multiple final collecting air and accesories for hanger and continuity for up to 3,800.00 M2 of area	1
23	Luz de aviso con sirena incorporada G1AVRF-SP COMPACT WALL HORN/STROBE, 15-75CD, RED, FUEGO MARKING	1
24	Materiales miscelaneos, tuberias CPVC naranjas, anclajes etc	1
25	Mano de obra instalacion, programacion, entrenamiento, incluye mantenimiento por 12 meses y servicios técnicos	1

Cuarto de UPS

	Supresión de Incendios	
1	Sistema de deteccion de incendios y disparo de agente límpio KIDDE EDWARDS VS1-R VS1-R FACP, 1 LOOP, 64 INTELLIGENT DEVICES MAX, 4.25A POWER SUPPLY, RED con 2 zonas de 2 entradas, 2 salidas, zona de supresión por agente límpio, 1 supervisora, gabinete metálico anticorrosivo, para agente límpio UL y FM. Incluye power supply para generación de eventos y módulo para ampliación del sistema, panel de control con release de agente limpio 2 detectores en zona cruzada. Incluye BPS10A power supply 10A, 120VAC, gabinete rojo.	1
2	Módulo de comunicación IP via internet con envio de correo electrónico para aviso de estado y disparos del sistema Ethernet communicator TRIKDIS E16T transmits information to the Central Station for KIDDE	1
3	Tarjeta de interfase IP SA-ETH ETHERNET PROGRAMMING/DIAGNOSTICS INTERFACE, RJ45, MOUNTS TO BASE P	1
4	Detectores de humo KI-PD INTELLIGENT OPTICAL SMOKE DETECTOR	2
5	Botón de Aborto RELA-ABT PULSADOR PARA ABORTAR DESCARGA DE AGENTE	1
6	Botón de Disparo de agente GSA-M278 ESTACION MANUAL DE INCENDIO DE DOBLE ACCION VS	1
7	Luz de aviso con sirena incorporada G1AVRF-SP COMPACT WALL HORN/STROBE, 15-75CD, RED, FUEGO MARKING	1
8	3 circuitos de notificación: nac1 det 1, nac2 det 2, bell (sirena), led de diagnóstico de estados del panel	1
9	Baterias 12V 7amps ELEKTRA	2
10	FIKE Cylinder 70-362, 100 lb Container Fill Capacity: 47 @ 108 Lbs Kit Assembly system for NOVEC 1230 Fluid, 500 psi, Discharge Valve (incl. gauge and niple), UL, FM, NFPA 2001	1
11	Bracket y kit de sujecion de cilindro	1

12	Lbs agente novec 1230 Agent Novec 1230 Fluid - Weight = Lbs: 1 - Kgs: 0.5	73
13	Actuator, Valve, Electric, w/ Supervisory Limit Switch, Normally Closed, Held Open, Clean Agent - 1.2Lbs	1
14	Adapter, 1/4 Inch (8 mm) MNPT x 1/4 Inch (8 mm) JIC Male, Brass (connects to 18611) - 0.2Lbs	1
15	Vent Check - 0.2Lbs	1
16	Hose, Flex, 3/16 Inch , 1/4 Inch JIC Female (8 mm), 16 Inch Long - 0.6Lbs	1
17	Nozzle, 360, 1/2 Inch (15mm), Brass - 0.6Lbs	1
18	Station, Solenoid Lock-Out, Keyed, LOS-1, Indoor - Maintenance Switch 1.2Lbs	1
19	Materiales miscelaneos, tuberias, anclajes, incluirá 1 cilindro de 5lb de Novec	1
20	Mano de obra instalacion, programacion, entrenamiento	1
	Detección Temprana	
21	XTRALIS VESDA Vesda VLF-250-00 Aspirating Smoke Detector, Plastic Enclosure – NF Vesda Faast Aspiration Detection for up to 2 zones, 800 M2 coverage, 8100 smoke line/smoke sensor EN54-20, Class A,B,C. VdS approved. Smoke sensor 0.1-10%/m alarm sensitivity (0.0043 dB/m) Pre-alarm since 0.01%/m, con posibilidad de interconecciòn a sistema de evacuaciòn, teclado programable integrado a módulo, una zona de extinción. Sistema de timer para conteo regresivo para disparo de agente límpio. Normas NFPA, FM, UL, HARC y FSSA.	1
22	Piping room of Conventional CPVC aspiration tubbing with multiple final collecting air and accesories for hanger and continuity for up to 3,800.00 M2 of area	1
23	Luz de aviso con sirena incorporada G1AVRF-SP COMPACT WALL HORN/STROBE, 15-75CD, RED, FUEGO MARKING	1
24	Materiales miscelaneos, tuberias CPVC naranjas, anclajes, incluirá 1 extintor manual Novec 5Lb	1
25	Mano de obra instalacion, programacion, entrenamiento, incluye mantenimiento por 12 meses y servicios técnicos	1

Site Alterno La Romana

Supresión de Incendios		
1	Sistema de deteccion de incendios y disparo de agente límpio KIDDE EDWARDS VS1-R VS1-R FACP, 1 LOOP, 64 INTELLIGENT DEVICES MAX, 4.25A POWER SUPPLY, RED con 2 zonas de 2 entradas, 2 salidas, zona de supresión por agente límpio, 1 supervisora, gabinete metálico anticorrosivo, para agente límpio UL y FM. Incluye power supply para generación de eventos y módulo para ampliación del sistema, panel de control con release de agente limpio 2 detectores en zona cruzada. Incluye BPS10A power supply 10A, 120VAC, gabinete rojo.	1
2	Módulo de comunicación IP via internet con envio de correo electrónico para aviso de estado y disparos del sistema Ethernet communicator TRIKDIS E16T transmits information to the Central Station for KIDDE	1
3	Tarjeta de interfase IP SA-ETH ETHERNET PROGRAMMING/DIAGNOSTICS INTERFACE, RJ45, MOUNTS TO BASE P	1
4	Detectores de humo KI-PD INTELLIGENT OPTICAL SMOKE DETECTOR	2
5	Botón de Aborto RELA-ABT PULSADOR PARA ABORTAR DESCARGA DE AGENTE	1
6	Botón de Disparo de agente GSA-M278 ESTACION MANUAL DE INCENDIO DE DOBLE ACCION VS	1
7	Luz de aviso con sirena incorporada G1AVRF-SP COMPACT WALL HORN/STROBE, 15-75CD, RED, FUEGO MARKING	1

8	3 circuitos de notificación: nac1 det 1, nac2 det 2, bell (sirena), led de diagnóstico de estados del panel	1
9	Baterias 12V 7amps ELEKTRA	2
10	FIKE Cylinder 70-364, 215 lb Container Fill Capacity: 93 @ 216 Lbs Kit Assembly system for NOVEC 1230 Fluid, 500 psi, Discharge Valve (incl. gauge and niple), UL, FM, NFPA 2001	1
11	Bracket y kit de sujecion de cilindro	1
12	Lbs agente novec 1230 Agent Novec 1230 Fluid - Weight = Lbs: 1 - Kgs: 0.5	140
13	Actuator, Valve, Electric, w/ Supervisory Limit Switch, Normally Closed, Held Open, Clean Agent - 1.2Lbs	1
14	Adapter, 1/4 Inch (8 mm) MNPT x 1/4 Inch (8 mm) JIC Male, Brass (connects to 18611) - 0.2Lbs	1
15	Vent Check - 0.2Lbs	1
16	Hose, Flex, 3/16 Inch , 1/4 Inch JIC Female (8 mm), 16 Inch Long - 0.6Lbs	1
17	Nozzle, 360, 1/2 Inch (15mm), Brass - 0.6Lbs	1
18	Station, Solenoid Lock-Out, Keyed, LOS-1, Indoor - Maintenance Switch 1.2Lbs	1
19	Materiales miscelaneos, tuberias, anclajes, incluirá 1 extintor de 5 libras NOVEC	1
20	Mano de obra instalacion, programacion, entrenamiento	1
	Detección Temprana	
21	XTRALIS VESDA Vesda VLF-250-00 Aspirating Smoke Detector, Plastic Enclosure – NF Vesda Faast Aspiration Detection for up to 2 zones, 800 M2 coverage, 8100 smoke line/smoke sensor EN54-20, Class A,B,C. VdS approved. Smoke sensor 0.1-10%/m alarm sensitivity (0.0043 dB/m) Pre-alarm since 0.01%/m, con posibilidad de interconecciòn a sistema de evacuaciòn, teclado programable integrado a módulo, una zona de extinción. Sistema de timer para conteo regresivo para disparo de agente límpio. Normas NFPA, FM, UL, HARC y FSSA.	1
22	Piping room of Conventional CPVC aspiration tubbing with multiple final collecting air and accesories for hanger and continuity for up to 3,800.00 M2 of area	1
23	Luz de aviso con sirena incorporada G1AVRF-SP COMPACT WALL HORN/STROBE, 15-75CD, RED, FUEGO MARKING	1
24	Materiales miscelaneos, tuberias CPVC naranjas, anclajes etc	1
25	Mano de obra instalacion, programacion, entrenamiento, incluye mantenimiento por 12 meses y servicios técnicos	1

5.2.1. CENTRAL DE ALARMA MARCA KIDDE VS1

El panel de control de incendio tiene las siguientes funciones: Suministra la energía para los componentes del sistema.
Contiene los circuitos lógicos para interpretar las entradas y relacionar las salidas.
Monitorea la integridad de todos sus circuitos. Permite realizar funciones complementarias para elevar el sistema de seguridad.
Estos sistemas básicamente consisten en:

Liberar puertas de control de acceso para una evacuación segura
Detener los elevadores para que no sean utilizados, solo por bomberos.
Apagado de Aires acondicionados

Equipos de Control: Central de detección automática, donde convergen las alarmas y reside la lógica de funcionamiento, por lo cual se llevan a cabo una serie de acciones preventivas programadas en caso de emergencia.

5.2.2. DETECTOR FOTOELECTRICO MARCA KIDDE

Los detectores de humo fotoeléctricos están diseñados para cumplir los más estrictos códigos de seguridad contra incendios UL y responder eficazmente a un amplio espectro de detectores. Son adecuados para uso en comercios, industrias, instituciones y residencias. El diseño de bajo perfil destaca por su facilidad de instalación y mantenimiento.
Utilizando detección de avanzada y algoritmos de discriminación, proveen calidad y confiabilidad.
Es un detector de humo fotoeléctrico de 2 hilos para uso con unidades de control de alarma de incendio compatibles electrónicamente.

5.2.3. PULSADOR DE DESCARGA MARCA EDWARDS

Son estaciones de liberación de agentes diseñadas para ser utilizadas con los paneles de control de alarma contra incendios KIDDE va conectada al módulo REL y su función es provocar una alarma y descarga de agente con anticipación a la acción automática del sistema.
Fabricado en
policarbonato duradero.
Interruptor de anulación.
Indicación de
encendido.
Indicación
liberada.
Liberación manual
(doble acción).
Estas estaciones son ideales para áreas tales como salas limpias y salas de computación donde un agente químico se utiliza para
extinguir un incendio.

5.23-A PULSADOR DE ABORTO MARCA KIDDE

Este pulsador trabaja en combinación con la estación manual igualmente va conectado al módulo REL y su función es detener una descarga en caso de que el personal presente

determine que no es necesaria.

5.2.4. SIRENA DE ALARMA MARCA KIDDE

Las sirenas se programan en campo para 2 tonos distintos con un nivel sonoro no menor a 88 dBA medidos a 3 mts. del dispositivo.
Las sirenas operan en 24 Vcc nominales y de baja corriente de consumo.
Las luces estroboscópicas operan en 24Vcc y cumplen con todos los requerimientos según se definen en la norma UL 1971, siendo la duración máxima del impulso de 2/10 de segundos. Tendrán la siguiente configuración:

- Alarma de Incendio - Switch position 4 (Tono intermitente).
- Predescarga - Switch position 4 (Tono intermitente).
- Descarga de NOVEC 1230 - Switch position 1 (Tono contínuo). Clasificación IP56 versiones al aire libre.

Construcción resistente a la manipulación.
Los ajustes de luminosidad son
seleccionables. Bocina nominal de
88 dBA a + 16 volts.

5.3. INSTALACION ELECTRICA

La Instalación se realizará de acuerdo con las normas NFPA 72 y los códigos locales y y las recomendaciones del fabricante principal del equipo.
Para la instalación eléctrica se utilizan tuberías para uso eléctrico rígido galvanizado tipo EMT y BX flexible metalico, sujetos a la estructura mediante soportes adecuados de acuerdo al diámetro de caño a instalar.
Las uniones y empalmes deben ser roscados, utilizándose cuplas, tuercas y boquillas de acero galvanizado.
Los conductores deben ser de cobre electrolítico, con aislación de PVC, fabricados de acuerdo con las Normas correspondientes.
Todos los empalmes y conexiones se deben efectuar con terminales adecuados.

5.4. COMPONENTES DE COMUNICACIÓN

El sistema contempla la inclusión de módulos de interconexión para comunicación IP y SNMP de las situaciones del los equipos.

SA-ETH Ethernet Interface Card
La tarjeta SA-ETH proporciona una conexión de red estándar de 10/100 base-T Ethernet para conectarse a una red local. Se puede utilizar la tarjeta para cargar y descargar la configuración del panel, el historial y el estado actual a un equipo que ejecuta la utilidad de configuración o conectarla al recibidor de una estación de monitoreo central compatible en una red.

Características:

Consumo de Voltaje 24 VCD
Ethernet 10/100 Base T
Consumo de Corriente Resposo / Alarma 34 mA Max 41mA
Distancia de la tarjeta al puerto de comunicación hasta 60m con cable UTP Cat 5

Comunicador Ethernet E16T
E16T es un comunicador destinado a la transmisión de los mensajes de alarma de intrusión y contra incendios a un CRA via Internet. El módulo está diseñado para ser conectado a la línea telefónica del comunicador del panel de control y transmitir los mensajes de alarma.
Comunicador Ethernet E16T
La función del Comunicador E16T es de mejorar los paneles de alarma compatibles para la señalización de eventos y control a través de Internet.

El comunicador transmite información de eventos completos al Central de Monitoreo.

El comunicador también funciona con la aplicación Protegus. Con Protegus, los usuarios pueden controlar el sistema de alarma de forma remota y obtener notificaciones de cualquier evento de seguridad. La app Protegus es compatible con todos los paneles de control de varios fabricantes que son compatibles con el comunicador E16T. El comunicador puede transmitir notificaciones de eventos al Central de Monitoreo y trabajar de forma simultanea con Protegus.

El Comunicador E16T se puede conectar directamente con los paneles de control DSC®, Paradox®, UTC Interlogix® (CADDX), Innerrange®, Texecom®, Kidde®, Edwards®, Honeywell®, Crow®, Numens® and Pyronix®.

6. PROYECTO SISTEMAS DE EXTINCIÓN A BASE DE NOVEC 1230 de 3M

6.1. GENERAL

El sistema de Extinción será por el método de inundación total a base de NOVEC 1230 y protegerá el interior del Data Center en su nivel de ambiente.

El NOVEC 1230 se almacena en estado líquido en un cilindro especialmente diseñado para la aplicación y llenado hasta una densidad de entre 35 lb/ft3 (561 kg/m3) y 70 kg/m3 (1121 kg/m3). Para un rendimiento óptimo, cada cilindro se sobre presuriza con nitrógeno seco a
360 psi (24,8 bar) a 70 °F (21 °C). Cada cilindro cuenta con una etiqueta de identificación fijada al cuerpo del cilindro que indica la cantidad de llenado de NOVEC 1230 presión y fecha de llenado y puesto de llenado.
Los sistemas de supresión de incendios de NOVEC 1230 están diseñados para descargarse en menos 10 segundos en una habitación, superficie o recinto con la integridad estructural necesaria para retener el agente. **El NOVEC 1230 posee la mejor relación posible en el mercado del NOAEL pues logra ser eficiente con una concentración menor a la de otros agentes como el FM200 que ya tiene fecha de salida del mercado** por tanto los sistemas de NOVEC 1230 son amigables con el medio ambiente y tienen con todas las certificaciones de NFPA 2001 y/o homologaciones y listados. Todos los elementos cuentan con sello de calidad UL y/o FM
El sistema será diseñado mediante un software de cálculo del fabricante de equipos, de forma de garantizar los caudales de descarga exacta de las toberas y asegurar la concentración de diseño en todos los puntos del área protegida.
Se presentará la información técnica que demostrará la procedencia de los equipos a proveer y la disponibilidad del software correspondiente.

6.2. DESCRIPCION DEL EQUIPAMIENTO

6.2.1. CONJUNTO CILINDRO

El conjunto de cilindro consiste en un cilindro, un tubo sifón, y una válvula de cilindro.

6.2.1.1 Cilindro

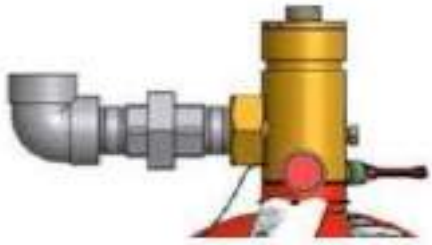
El cilindro marca FIRETRACE de pared ligera de costura soldada se fabrica de acuerdo con los requisitos del U.S. Department of Transportation (USDOT) y Transport Canada (TC) para gas comprimido. La rosca hembra del cuello permite la conexión de la válvula de cilindro. El cilindro está diseñado montaje únicamente en posición vertical.

6.2.1.2 Tubo sifón

Un tubo sifón rígido, roscado, se extiende desde el cuello del cilindro hasta el fondo.

6.2.1.3 Válvula de cilindro

El disparo automático de NOVEC 1230 lo controla una válvula solenoide conectada al cuello del cilindro y que va conectada al panel a través del módulo de liberación REL y que cuenta con dos protecciones, una tarjeta módulo relé de fin de línea y un Switch llave para uso en el mantenimiento.



6.2.2. SALIDA DE DESCARGA

La salida de descarga de la válvula de cilindro es una conexión NPT hembra de 1 1/4" (32 mm) que se utiliza para fijar el cilindro a la red de tuberías de descarga. A la izquierda, se muestra la configuración de tuberías sugerida. El instalador es el encargado de suministrar las tuberías y los accesorios.

6.2.3. PRESOSTATO DE SUPERVISIÓN DE BAJA PRESIÓN (P/N 17032)

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 280 psi (19,3 bar), los contactos del interruptor se cerrarán, transmitiendo una señal al panel de control del sistema. Se monta en la válvula de cilindro y no se puede reemplazar al estar bajo presión.

6.2.4. MANÓMETRO (P/N 17556)

NFPA 2001 requiere que haya un manómetro en cada cilindro para el control visual de la presión interna del cilindro. El manómetro se monta en la válvula de cilindro y no se puede reemplazar al estar bajo presión.

6.2.5. ACTUADOR DE VÁLVULA ELÉCTRICO

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 (0,5 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.

6.2.6. ACTUADOR DE VÁLVULA MANUAL (P/N 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.

6.2.7. MODULO REL KIDDE

El sistema utiliza un módulo REL que se correlaciona con el panel principal y es quien controla y monitorea las acciones y tiempos de pre disparo, disparo y aborto

6.2.8. BOQUILLAS DE DESCARGA

Se utilizan boquillas de descarga de 4 orificios para distribuir de manera uniforme el agente NOVEC 1230. Las uniones están probabas para garantizar que el agente se descargue en menos de 10 s y se distribuya homogéneamente por la zona protegida.

6.3. DESCRIPCION DE LOS MATERIALES

6.3.1. CAÑERIAS Y ACCESORIOS

Las cañerías son de acero según Norma R-032
Los accesorios son como mínimo de la clase 300, según Norma R-032

6.3.2. SOPORTES

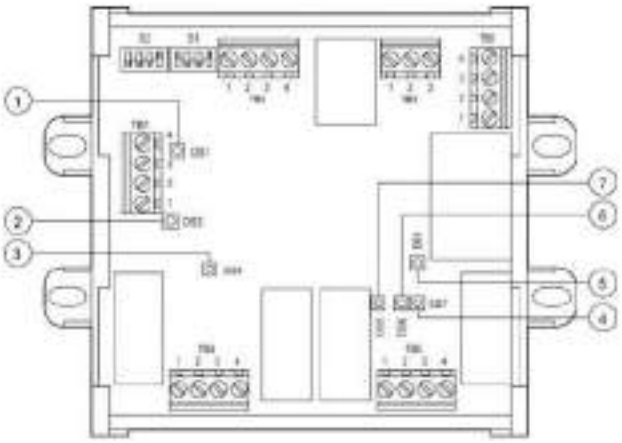
De diseño adecuado para soportar las fuerzas de reacción de la descarga y los efectos de las reacciones térmicas de contracción y expansión

INFORME SISTEMA SUPRESION DE INCENDIOS

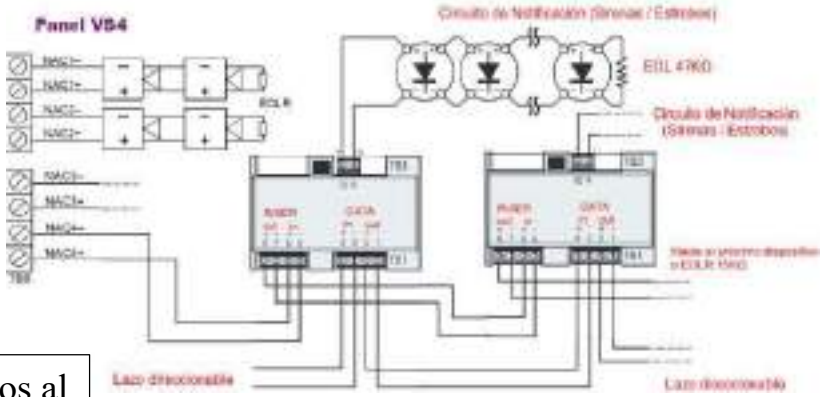
1.1 Lay Out sistema detección de incendios

En la figura tenemos el Lay Out típico de la parte de detección de un sistema de supresión de incendios para un datacenter.
Este ocupa un panel del control con función de reléase para el agente, detectores que trabajaran en zona cruzada para aminorar las falsas alarmas un pulsador de disparo manual y un pulsador de aborto que por un tiempo indicado puede evitar la descarga de haber personal presente que determine que no es necesario
Adicional a esto tenemos el sistema de anunciación que es la alarma audio visual que nos alerta de la situación.

1.2 Diagrama de conexionado

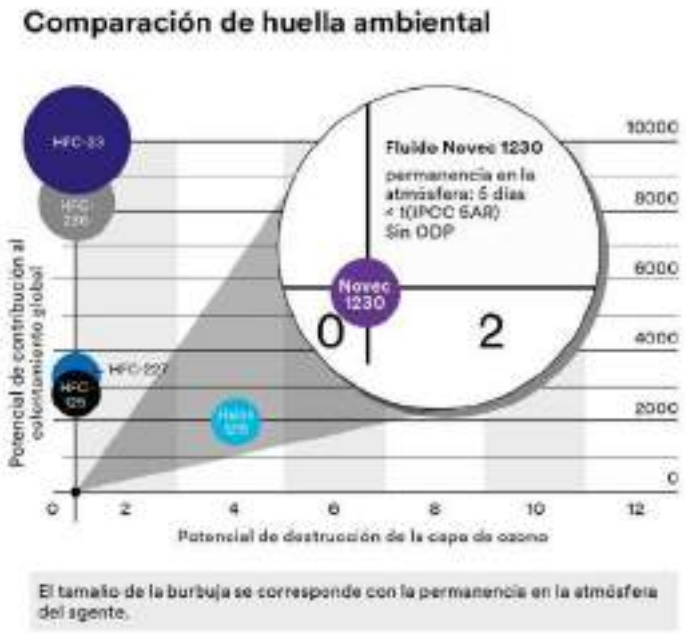


En las fotos tenemos el diagrama de conexión de los detectores y las sirenas al panel de control en nuestro caso además adicionamos un módulo que se encarga de la liberación del agente y al cual irán conectados la estación de disparo manual y la estación de aborto



Módulo de liberación que conectamos al panel para controlar la salida del agente extintor

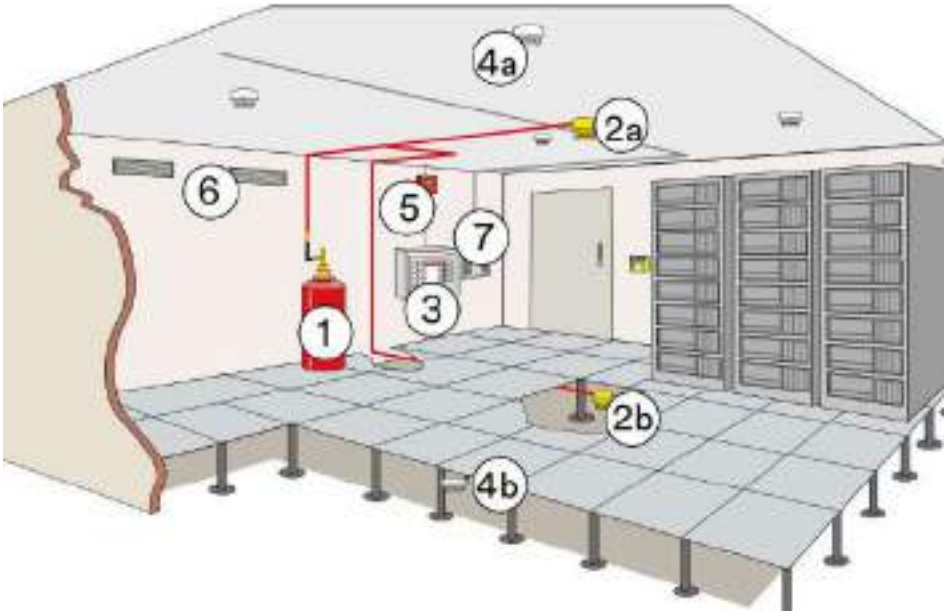
1.3 Matriz Causa-Efecto



Para esta solicitud tendríamos que tomar en cuenta lo nocivo que es para el medio ambiente cuando se produce un incendio por los gases que el mismo genera de cuenta propia contraponiéndolo contra el igualmente enorme daño medio ambiental que causan la mayoría de los agentes químicos que utilizamos para apagar el fuego.
En el caso que nos ocupa estamos trabajando con el agente NOVEC 1230 de 3M que es el agente más amigable con el medio ambiente con el que se cuenta actualmente el mismo solo se mantiene por 5 días en el medio ambiente luego de ser liberado contra 30 años que promete durar el agente FM200

1.4 Lay Out sistema de extinción de incendios a base de Novec 1230

En la imagen resalta el lay out típico de la parte de descarga de agente de un sistema de inundación total para protección contra incendios que consta de su parte principal que es el cilindro donde estará contenido el agente extintor en nuestro caso Novec 1230 de 3M este cilindro estará sostenido en un braket especialmente diseñado y controlara el agente con la válvula de salida misma que estará conectada al solenoide que es el dispositivo que recibirá la orden desde el panel de control para iniciar la descarga.
Completan esta parte del sistema las mangueras flexibles, tuberías, soportes y boquillas de descarga del agente.



1.5 Cálculos hidráulicos sistema de extinción a base de Novec 1230

Para el cálculo de la cantidad de agente requerido vamos a recurrir a fórmulas propuestas por la NFPA como pueden ser

$$W=V \times C.F. \times F.F.$$

$$W= C.F. (V/S(C/100-C))$$

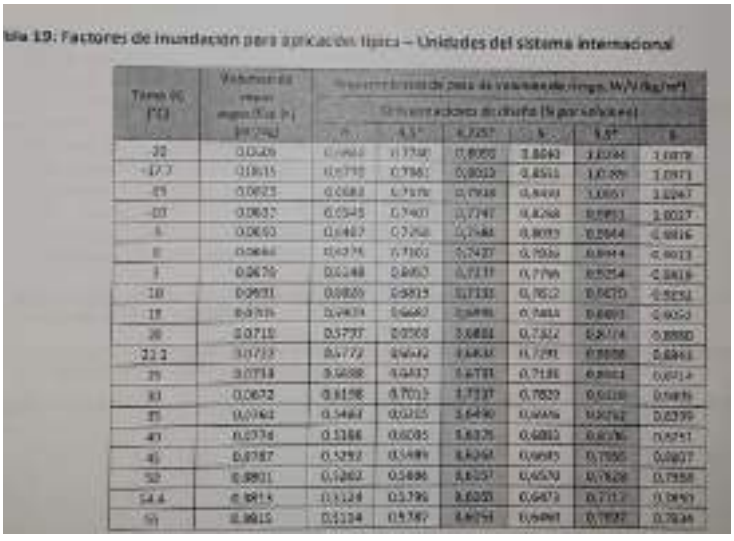
En estas formulas
W= peso del agente en Libras
V= volumen del recinto a proteger
F.F= factor de inundación este valor nos lo da una tabla
CF.= factor de corrección atmosférica este valor lo obtenemos de una tabla
S= volumen especifico de vapor del Novec 1230
C= concentración de agente requerida valor en tabla

1.6 Memoria técnica sistema detección y extinción a base de Novec 1230

Las instalaciones contraincendios tienen el objetivo de extinguir o, en su defecto, contener cualquier incendio que se produzca en su área de acción.

Tabla 17: Factor de corrección atmosférica

Altitud		Presión de recinto		Factor de corrección (CF)
pies	km	psia	mm Hg	
-3.000	-0,92	16,25	840	1,11
-2.000	-0,61	15,71	812	1,07
-1.000	-0,30	15,23	787	1,04
0	0,00	14,71	760	1,00
1.000	0,30	14,18	733	0,96
2.000	0,61	13,64	705	0,93
3.000	0,92	13,12	678	0,89
4.000	1,21	12,58	650	0,86
5.000	1,52	12,04	622	0,82
6.000	1,83	11,53	596	0,78
7.000	2,13	11,03	570	0,75
8.000	2,43	10,64	550	0,72
9.000	2,74	10,22	528	0,69
10.000	3,05	9,77	505	0,66



Esta función podrá realizarse en la medida de que seamos capaces de llevar el agente extintor al foco del incendio en la forma más rápida posible para que así se minimicen los daños.

El objeto de este trabajo es llevar a cabo el cálculo y dimensionamiento de una instalación de extinción mediante NOVEC

La primera parte de este estudio versará sobre el fuego, de los distintos sistemas de extinción.

La combustión

La combustión es una reacción química de oxidación en que la que una sustancia se combina con el oxígeno. Se trata de una reacción exotérmica, es decir, se cede calor al entorno.

El elemento reductor se denomina combustible y el elemento oxidante comburente.

Para que se produzca la combustión, es necesario que el oxígeno entre en contacto íntimo con sustancias combustibles.

Esta circunstancia sólo puede darse en los vapores o gases. Por lo tanto, en el caso de los sólidos y líquidos, es necesario un aporte de calor que bien por fusión o por evaporación, los transforme en vapor.

Triangulo y tetraedro del fuego

El triángulo del fuego es una teoría que reúne los tres factores fundamentales para que aquel se produzca.

En dicho triángulo cada lado simboliza uno factor diferente.

Clasificacion del fuego según Normativa Norteamericana

La clasificación oficial USA es la adoptada por la NFPA (National Fire Protection Assotiation) y tiene una influencia generalizada en los países de su entorno, así como en gran parte de la flota mundial. En esta clasificación agrupa las clases B y C de la UNE en una sola, clase B, ya que considera que tanto en unos como en otros, lo que realmente sufre la ignición son los vapores emitidos y los gases, pues los líquidos en sí no pueden arder al no combinarlos con el combustible. No obstante la NFPA, si considera como la normativa Europea los fuegos eléctricos y les adjudica la clase C.
En el cuadro siguiente se puede apreciar las distintas clasificaciones del fuego según las distintas normativas:

	UNE	Europea	NFPA
SÓLIDOS	A	A	A
LÍQUIDOS	B	B	B
GASES	C	C	B
METALES	D	D	D
ELÉCTRICOS	-	E	C

De acuerdo a lo antes expuesto y ya con el conocimiento de que un data center entra dentro de la denominación de fuego tipo A, B,C seleccionamos un sistema con NOVEC 1230 como ya establecimos el agente con mejor cobertura y más amigable con el medio ambiente.
A esto agregamos un sistema de detección de la marca Kidde una marca líder en el mercado con un tipo de operación de máxima seguridad y con una enorme flexibilidad de conexiones.

1.7 Manual de operación y mantenimiento sistema detección y extinción

Adjunto a este reporte encontrara el manual de operación del sistema

Mantenimiento

Cumpliendo las normas de la NFPA este sistema debe recibir una revisión de mantenimiento cada 6 meses por una empresa certificada.

DETECCION TEMPRANA

Para la detección temprana utilizaremos el sistema XTRALIS Vesda VLF-250 LaserFOCUS-250 Detector with Display.
En las aplicaciones más exigentes, donde la eficiencia del negocio se basa en el tiempo de funcionamiento máximo y la seguridad mejorada, es fundamental instalar una solución de detección de incendios que pueda ofrecer el más alto nivel de precisión y estabilidad.

El VESDA VLF es un detector de humo, de temprana advertencia, diseñado
para proteger importantes y pequeñas áreas, en su compañía. (inferiores a
250m2).

El detector trabaja tomando continuamente muestras de aire del ambiente a través de orificios situados en una red de tuberías. El aire se filtra y pasa por una cámara de detección, donde la tecnología Láser de dispersión de la luz, detecta la presencia de cantidades muy pequeñas de humo.
La información sobre el estado del detector de humo puede ser transferida a la pantalla del mismo, a relés o tarjetas de interfaz opcionales.

Funcionamiento innovador

El VLF puede instalarse y ponerse en funcionamiento de forma inmediata, sin necesidad de una interfaz especial ni de herramientas de programación de software.

Durante el funcionamiento, su exclusiva pantalla circular proporciona al usuario
información instantánea acerca de la concentración de humo y las alarmas
generadas en el ambiente protegido, incluso a distancia. En el supuesto de
producirse un fallo, el usuario tan sólo tiene que abrir la puerta de acceso para mantenimiento y activar la función Instant Fault Finder (Localizador instantáneo de averías) para determinar la naturaleza del fallo en cuestión. Posteriormente, esta información puede remitirse a la empresa de mantenimiento asegurando así que los técnicos conozcan por adelantado las labores que deberán acometer en la instalación.

Medición de flujo ultrasónico

El medidor de flujo ultrasónico (derechos en trámite) utilizado en el VLF proporciona una lectura directa del flujo de aire que circula por las tuberías. El sistema es inmune a los cambios de temperatura y presión del aire y no se ve afectado por la contaminación. VLF es el primer detector de humo por muestras de aire que utiliza un medidor de flujo ultrasónico.

Este es una nueva generación de detectores de humo de VESDA, que utiliza tecnologías y software avanzados para ofrecer la detección de humo más temprana y precisa. La gama de dispositivos VESDA está diseñada para proteger a las personas y los activos, incluso en los entornos más difíciles donde los métodos de detección estándar fallan o son propensos a falsas alarmas, o en áreas que pueden no haber sido protegidas anteriormente.

VESDA entrega ...

La detección de alerta más temprana con el nivel más alto de inmunidad de alarma falsa
Costes de instalación y mantenimiento reducidos.
Vida útil prolongada del dispositivo utilizando técnicas de filtración avanzadas
Capacidades de monitoreo remoto y reportes más ricos a través de conectividad TCP / IP

Sobre Novec1230

El Fluido de Protección contra Incendios 3M™ Novec™ 1230 es un agente limpio extintor de incendios que se desarrolló como reemplazo del halón y como alternativa a los hidrofluorocarbonos (HFC): pertenece a la familia de químicos llamados halocarbonos, un grupo que incluye a los HFC y a las fluoroacetonas. El fluido Novec 1230 es una fluoroacetona, mientras que los agentes limpios químicos como el FM-200™ y el ECARO-25® son HFC (HFC-227ea, HFC-125). El fluido Novec 1230 posee un potencial de calentamiento global (PCG) de menos de 1, mientras que estos HFC presentan un PCG de más de 3000. El fluido Novec 1230 presenta el mayor margen de seguridad para su uso entre los agentes limpios, incluyendo al gas inerte.
Agente limpio para supresión de incendio diseñado para el futuro
Cuando usted especifica un sistema de protección contra incendios, sus opciones pueden determinar si una persona, un activo valioso o incluso si una empresa entera podrá sobrevivir a un incendio. Cuando ese sistema utiliza el fluido Novec 1230, usted puede ofrecer con seguridad a su cliente una solución que:

Extingue el fuego en segundos, antes de que comience y mucho antes de la descarga de los sistemas a base de agua.

Ayuda a proteger equipos electrónicos y documentos en papel irremplazables. Debido a que el fluido Novec 1230 es una solución para extinción de incendios que no utiliza agua, no deja residuos y no es un conductor eléctrico.

Proporciona el mayor margen de seguridad para el contacto humano en comparación con cualquier solución de agente limpio.

No está sujeto a la eliminación gradual del Halón 1301 o de los HFC para estar en conformidad con los acuerdos y regulaciones globales, incluyendo el Protocolo de Montreal.

Viene con una garantía ambiental: la Garantía Blue Sky℠ de 3M™, diseñada para ofrecer una mayor tranquilidad.

Se almacena como un líquido y se descarga como un gas.

Es apropiado para peligros de incendio de Clase A, B y C.

¿Cómo funciona el fluido Novec 1230?

El fluido Novec 1230 extingue un incendio antes de que comience, removiendo rápidamente el calor. En un sistema típico de inundación total, el fluido se almacena como un líquido en cilindros presurizados con nitrógeno. Los sensores de detección automática activan su descarga cuando el fuego se encuentra aún en forma incipiente, extinguiéndolo en pocos segundos.

El fluido Novec 1230 se evapora 50 veces más rápido que el agua. De hecho, usted podría sumergir un libro de tapa blanda en un recipiente con el fluido Novec 1230 y luego de un minuto, retirarlo y continuar leyendo donde había dejado.

METROTEC
Seguridad y Automatización Inteligente

DATA SHEET

DISCHARGE NOZZLES FOR FK-5-1-12

DESCRIPTION

The function of the Fike discharge nozzle is to control the agent flow and distribute the agent throughout the protected enclosure in a uniform, predetermined pattern and concentration. The discharge nozzle size refers to the size of schedule 40 or 80 pipe that it can be connected to. The discharge nozzle is mounted to allow the agent to be discharge on a horizontal axis.

The nozzle orifice area is determined be performing a hydraulic calculation using the Fike Engineered Flow Calculation program. Nozzle orifice drilling must be done at Fike factory, or at a UL listed nozzle drill station.

180° Nozzle

360° Nozzle

ORDERING INFORMATION

Nozzle Size in. (mm)	360° Engineered Nozzles	180° Engineered Nozzles	Nozzle Length (Approx.) in. (mm)
	Part Number	Part Number	
1/2 (15)	80-124-50-XXXXX	80-122-50-XXXXX	2.165 (55)
3/4 (20)	80-124-75-XXXXX	80-122-75-XXXXX	2.165 (55)
1 (25)	80-124-100-XXXXX	80-122-100-XXXXX	2.52 (64)
1-1/4 (32)	80-124-125-XXXXX	80-122-125-XXXXX	2.95 (75)
1-1/2 (40)	80-124-150-XXXXX	80-122-150-XXXXX	3.54 (90)
2 (50)	80-124-200-XXXXX	80-122-200-XXXXX	4.13 (105)
Material		Brass	

Note: FK-5-1-12 nozzles need to be installed pointing down only.

APPROVALS:

- UL Listed
- ULC Listed
- FM Approved

Xtralis® VESDA® VLF

VLF-250

The Xtralis VESDA VLF-250 detector is a very early warning smoke detector designed to protect small, business-critical environments of less than 250 m^2 (2500 sq. ft.).

The detector works by continually drawing air into sampling holes in a pipe network. The air is filtered and passed into a detection chamber where light scattering technology detects the presence of very small amounts of smoke. Detector status information is communicated on the detector display and via relays or optional interface cards.

Out-of-the-box operation

The VLF can be installed and commissioned out-of-the-box without the need for a special interface or software programming tools.

In operation, the unique Smoke Dial display provides the user with an instant understanding of a smoke event, even from a distance. Should a fault occur, the user simply opens the field service door and activates the Instant Fault Finder feature to determine the specific fault condition. This information can then be passed onto their fire service company, ensuring that service technicians arrive onsite fully prepared.

Ultrasonic Flow Sensing

The patent-pending Ultrasonic Flow Sensing used in the VLF provides a direct reading of the sampling pipe flow rate. The system is immune to air temperature and pressure changes and is unaffected by contamination. The VLF is the first air sampling smoke detector to use ultrasonic flow sensing.

Features

- Out-of-the-Box Installation and Commissioning
- Ultrasonic Airflow Sensing
- Laser-Based Absolute Smoke Detection
- Pre-engineered pipe network designs
- Programmable Alarm Thresholds
- Clean air barrier optics protection
- Instant Recognition Display
- Instant Fault Finder™
- AutoLearn™ Smoke
- AutoLearn™ Flow
- Field Service Access Door
- Multiple Event Logging in separate logs
- Event log – up to 18000 events
- Offline/online configuration capability
- Up to 250 m^2 (2500 sq. ft.) coverage*

Listings/Approvals

- UL
- ULC
- FM
- CFE
- LPCB
- VdS
- VNIIPO
- AFNOR
- ActivFire
- CE - EMC and CPD
- EN 54-20
  - Class A (12 holes / 0.12% obs/m)
  - Class B (12 holes / 0.35% obs/m)
  - Class C (12 holes / 0.80% obs/m)

  Classification of any configuration is determined using ASPIRE2.

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

xtralis®

VESDA®

Xtralis® VESDA® VLF

VLF-250

Specifications

Input Power	
Voltage:	24V DC Nominal (18-30 V DC)
Current @ 24 VDC:	220 mA nominal, 295 mA in alarm
Dimensions (W x H x D)	255 mm x 185 mm x 90 mm ($9^{7}/_{8}$ in x $7^{1}/_{8}$ in x $3^{1}/_{2}$ in)
Weight	Approx. 2 kg (4.4 lbs)
IP Rating	IP30
Mounting	Upright, inverted or horizontal
Operating Conditions†	
Detector Ambient:	0 °C to 40 °C (32 °F to 104 °F)
Sampled Air:	0 °C to 40 °C (32 °F to 104 °F)
Humidity:	5% to 95% (non-condensing)
Sampling Network	
Maximum pipe lengths:	1 x 25 m (80 ft) (Max. 12 holes) 2 x 15 m (50 ft) per branch (Max. 6 holes per branch)
Sampling Hole Options:	Pre-Engineered Option or Maximum Pipe length in accordance with Pipe Modelling Design Tool (ASPIRE2™)

Air Inlet Pipe
Accepts both metric and American standard pipe sizes.
Metric: 25 mm (1.05 in.) American Pipe: IPS 21 mm (¾ in.)

Area Coverage
Up to 250 m^2 (2500 sq. ft.) depending on local codes and standards

Relay Outputs
3 changeover relays (Fire 1, Action, Fault), Contacts rated 2A @ 30 VDC (max). NO/NC Contacts

Cable Access
3 x 25 mm (1.05 in.) cable entries (1 rear entry, 2 top entry)

Cable Termination
Screw Terminals 0.2-2.5 mm^2 (30-12 AWG)

Interfaces
Shown in Terminal Block Connections diagram, to right, plus an RS232 Programming Port.
General Purpose Input (GPI) interface offers: Reset, Disable, Standby, Alarm set 1, Alarm set 2 and External Input functions.

Alarm Threshold Setting Range	
Alert, Action,	0.025 - 2.00% obs/m (0.008 - 0.625% obs/ft)
Fire 1, Fire 2	0.025 - 20.00% obs/m (0.008 - 6.25% obs/ft)
Individual Alarm Delays	0 – 60 seconds
Two Alarm Threshold Settings	Either time or GPI based

Display
- 4 Alarm State Indicators
- Smoke Level Indicator
- Reset, Disable and Test Controls
- Fault and Disabled Indicators
- Instant Fault Finder
- Smoke and Flow AutoLearn Controls

Event Log
Up to 18000 events, time and date stamped in separate, non-volatile, logs for:
Smoke Level, Flow Level, Detector Status and Faults

AutoLearn Smoke & Flow
- Automatically set acceptable alarm thresholds for both smoke and flow levels
- Minimum 15 minutes, maximum 15 days (default 14 days)
- During AutoLearn thresholds are NOT changed from pre-set values

Warranty Period
2 years

Ordering Information:
VLF-250-00 Xtralis VESDA VLF. European language set. English display labels
VLF-250-01 Xtralis VESDA VLF. European language set. International display labels
VLF-250-02 Xtralis VESDA VLF. English + Asian language set. International display labels
VLF-250-04 Xtralis VESDA VLF. English + Russian language set. International display labels
VLF-250-05 Xtralis VESDA VLF. English + Eastern Euro language set. International display labels
VIC-010 VESDAnet Interface Card, VIC-020 Multifunction Control Card (MCC)
VIC-030 Multifunction Control Card (MCC) with Monitored Powered Output (MPO)
VSP-005 Filter Cartridge, VSP-722 Aspirator for Xtralis VESDA VLF-250

Display:

The display provided to the user includes a Smoke Dial and alarm and status indicators.

When the field service access door is open, the user has access to the RESET, DISABLE, Fire Test, AutoLearn and Instant Fault Finder functions.
When the Instant Fault Finder function is activated, the Smoke Dial converts to a fault indicator, with the dial segment numbers corresponding to the faults listed below.

Legend of fault indicators:

1	Filter	6	External Device/PSU
2	Aspirator	7	Interface card
3	High flow	8	Field wiring
4	Low flow	9	AutoLearn Fail
5	n/a	10	Detector failure

Terminal Block Connections:

1	GPI	
2	GPI	
3	Display TX	
4	Display RX	
5	Display Common Ground	
6	Display Power -	
7	Display Power +	
8	Power Return 0 VDC	From power supply unit
9	Power In 24 VDC	
10	Power Return 0 VDC	To next detector (if more than 1 detector per Power Supply Unit)
11	Power Out 24 VDC	
12	NC	
13	Common	Fault relay
14	NO	
15	NC	
16	Common	Action relay
17	NO	
18	NC	
19	Common	Fire 1 relay
20	NO	

Approvals Compliance

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

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Doc. no. 07854_09 Part: 20293

xtralis®
VESDA®

TRIKDIS

PRODUCT CATALOGUE

RELIABLE ADAPTABILITY

FOR SECURITY SYSTEMS

We are designing and manufacturing alarm messaging equipment for security companies that are looking to use new communications solutions and gain a technological edge.

UAB TRIKDIS was established in 1996 as a joint initiative between scientists from Kaunas University of Technology and one of the first Lithuanian security companies “Jungtis”.

From there we grew to an independent company, working with both small and big security companies around the world.

Our first VHF/UHF radio transmitters were created back in the year 2000.

Most of them are still in use for transmitting signals from various secured objects. Using the experience and knowledge we’ve gathered through years, we developed cellular and Internet (Ethernet) communicators with more advanced features.

" Our mission

help security companies to adapt to the new communication technologies for the alarm messaging.

TRIKDIS

protegus
intelligent security & control

Modernize your security, accelerate innovation

Protegus is a flexible, security automation app that enables management of alarm system right in your pocket.

Multiple locations, one login

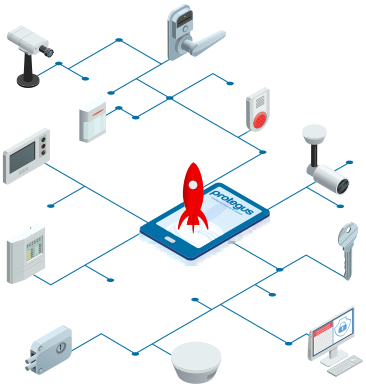
Manage multiple locations from one dashboard. Consolidate security acrross multiple locations and streamline security across your alarm systems.

Event notifications

Customers will receive messages with detailed information about events. This is useful for both companies and home users as they will know what happened and when, including who armed or disarmed the system.

Give your customers complete control.

With Protegus, manage keyholders, monitor all activity, and even assign mobile keys from any device, anywhere, at any time.



Remotely control equipment

Control gates, air conditioning, heating, lights or other connected equipment and check temperature at any time.

PROTEGUS

App customized to your brand

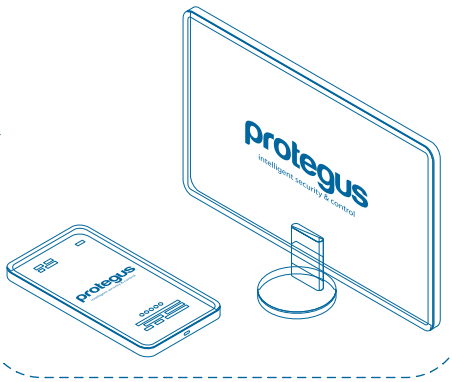
Offer your clients a self-service app without investing in its development. This will increase the value and appeal of your company's security services.

TRIKDIS

Cloud

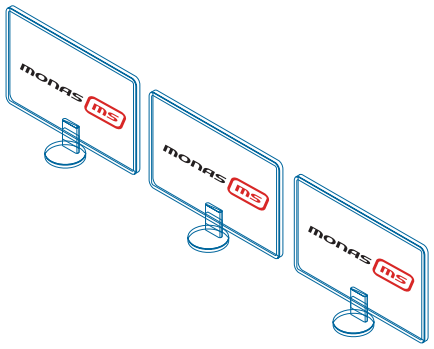
protegus
intelligent security & control

End User



App for Any Alarm Panel

Alarm Monitoring Software



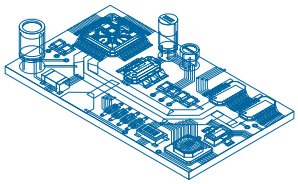
Universal Communicators

VHF/UHF

LAN

2G/3G/4G

Any Security Panel



Alarm Reception Center

Full Alarm System

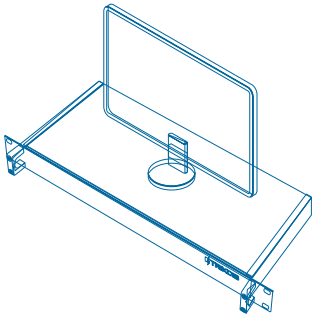
Cellular Control Panels

SP231

Wireless KIT

2G/4G

Any Other Monitoring Software



USE

3M

Novec™

Brand

Fluido de protección contra incendios 3M™ Novec™ 1230

Fiable. Seguro. Sostenible.

3M Science. Applied to Life.™

Protección contra incendios segura y sostenible... para su tranquilidad.

El fluido de protección contra incendios 3M™ Novec™ 1230 es un agente de limpieza sintético de última generación, diseñado para equilibrar los aspectos de la seguridad de las personas, la eficacia y el medio ambiente.

El fluido Novec 1230 tiene un excelente perfil medioambiental:

- Potencial nulo de destrucción de la capa de ozono
- Potencial de calentamiento global de menos de uno
- Permanencia en la atmósfera de cinco días
- Amplio margen de seguridad de los espacios ocupados

Protección de sus activos más críticos.

El fluido de protección contra incendios 3M™ Novec™ 1230 se utiliza principalmente en sistemas de extinción fijos para la protección de activos críticos en recintos cerrados. El tiempo de extinción es muy rápido, no conduce la electricidad y no deja residuos. Por eso, es ideal para aplicaciones donde es importante mantener el funcionamiento de los equipos electrónicos durante y después de que se descargue el sistema para evitar daños en activos valiosos y críticos.

El fluido Novec 1230 ofrece el mayor margen de seguridad en relación con todos los demás agentes de limpieza, lo que lo hace la solución ideal para espacios ocupados.

Desde salas de control hasta archivos de museo... los tenemos todos cubiertos.

Centros de procesamiento de datos

- Salas de informática
- Instalaciones de almacenamiento de datos
- Centros de control (por ejemplo, aeropuertos)

Sector industrial y de la energía

- Salas de control, salas de transformadores
- Salas de turbinas

Hospitales y laboratorios

- Salas de TC y resonancia
- Salas de limpieza, laboratorios

Marina y aviación

- Salas de máquinas y motores
- Salas de control y pintura
- Salas de almacenamiento

Instalaciones petroquímicas de gas y petróleo

- Instalaciones de bombeo
- Salas de compresores de gas
- Plataformas petrolíferas en alta mar

Medios de transporte

- Buques de la marina mercante
- Vehículos de transporte masivo
- Coches de carreras

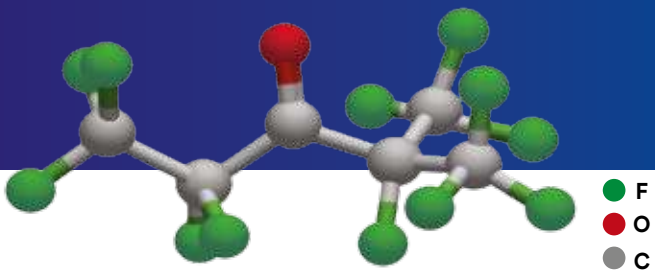
Instalaciones culturales

- Archivos, bibliotecas, museos

Telecomunicaciones

- Instalaciones de teléfonos móviles, salas de conmutadores

Detiene los incendios. Antes de que comiencen.



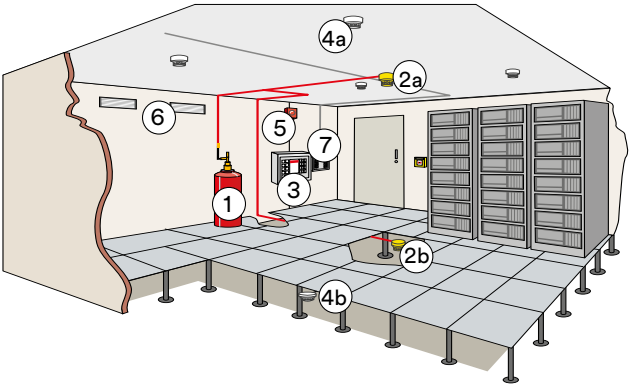
El fluido de protección contra incendios 3M™ Novec™ 1230 es fluorocetona C6 con la fórmula química $CF_3CF_2C(O)CF(CF_3)_2$. Se trata de un líquido a temperatura ambiente con un punto de ebullición de 49 °C. Cuando se libera a través de una boquilla especialmente diseñada para el extintor, el fluido Novec 1230 se vaporiza inmediatamente y se distribuye como gas en cuestión de segundos.

El fluido Novec 1230 se distribuye tridimensionalmente y se difumina muy rápidamente en todas las áreas críticas (por ejemplo, salas de servidores).

El **efecto de extinción** del fluido Novec 1230 se basa únicamente en el enfriamiento y no, como con los gases inertes, en el principio del desplazamiento de aire (y reducción de oxígeno). Si el fluido Novec 1230 entra en contacto con el fuego, elimina el calor, por lo que ya no pueden producirse las reacciones de combustión.

Sistema de extinción de incendios que utiliza el fluido Novec 1230

1 Cilindros del agente extintor
2 Boquilla
a) Techo b) Doble suelo
3 Dispositivo de detección y control de incendios
4 Detector automático de incendios
a) Techo b) Doble suelo
5 Sirena de alarma
6 Liberación de la presión
7 Detector de humos de aspiración



Características principales de un vistazo.

- Tiempo de extinción muy rápido
- Amplio margen de seguridad para el ser humano
- Sin daños en los activos y materiales expuestos
- No es conductor eléctrico y no es corrosivo
- Minimiza el tiempo de inactividad, lo que ayuda a la continuidad de la empresa
- Potencial de calentamiento global insignificante (GWP = 1)
- Potencial nulo de destrucción de la capa de ozono
- No está expuesto al reglamento europeo sobre gases fluorados ni a ninguna otra directiva ni normativa internacional, por lo que es una buena inversión en seguridad
- Ahorra espacio: los requisitos de espacio en el suelo son limitados
- Fácil de transportar y rellenar

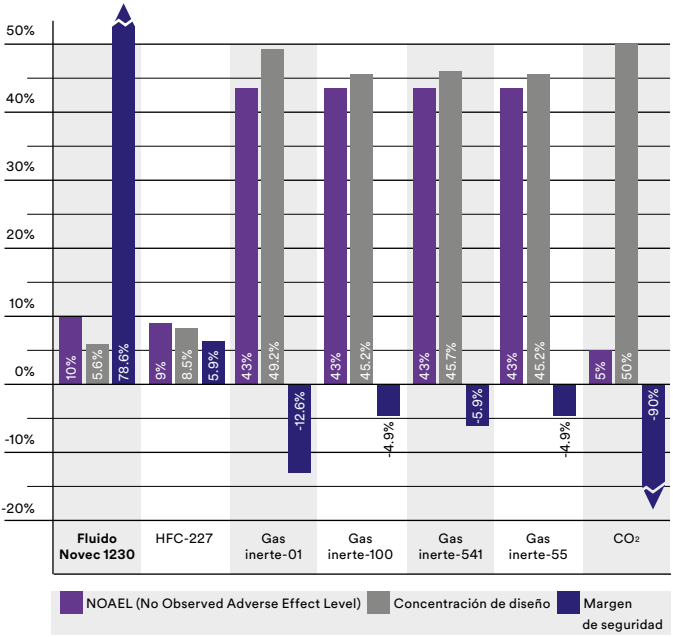
Aprobaciones

Seguro para las personas.

No todos los agentes de extinción de incendios ofrecen el mismo nivel de seguridad a las personas. La revisión del límite permitido en presencia de humanos y la concentración de diseño es la mejor guía para valorar el efecto potencialmente peligroso de un agente. El **NOAEL** (No Observed Adverse Effect Level) es el límite establecido internacionalmente para los diversos agentes extintores. La **concentración de diseño** es la cantidad de agente extintor necesaria para apagar el fuego de forma segura. El **margen de seguridad para los humanos** se calcula a partir de la diferencia relativa entre la concentración de diseño y el NOAEL específico.

El fluido Novec 1230 proporciona el más amplio margen de seguridad para su uso en espacios ocupados.

Basado en la norma EN 15004 de fuegos de mayor riesgo de clase A y la NFPA 12 para CO_2



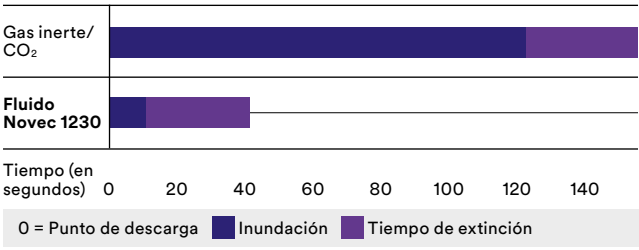
Extingue incendios. Rápido.

El efecto de extinción de incendios completo de 3M™ Novec™ 1230 se hace notar en cuestión de segundos... Cuando se libera en un sistema que está diseñado correctamente, el fluido Novec 1230 se evapora rápidamente y se distribuye uniformemente por el espacio protegido en un plazo de 10 segundos. Absorbe el calor del fuego, por lo que interrumpe la reacción en cadena y, **en 40 segundos como máximo, se apaga el fuego.**

Y dado que el sistema de extinción de incendios en el que se utiliza el fluido Novec 1230 extingue los incendios mucho más rápido en comparación con los sistemas basados en gas inerte o CO_2, se pueden reducir significativamente los daños en activos de alto valor. Esto significa que la actividad empresarial puede continuar normalmente.

El fluido Novec 1230 apaga incendios con mayor rapidez que el gas inerte/CO_2

Comparación del tiempo de descarga (segundos)*



La extinción puede producirse durante la fase de inundación.

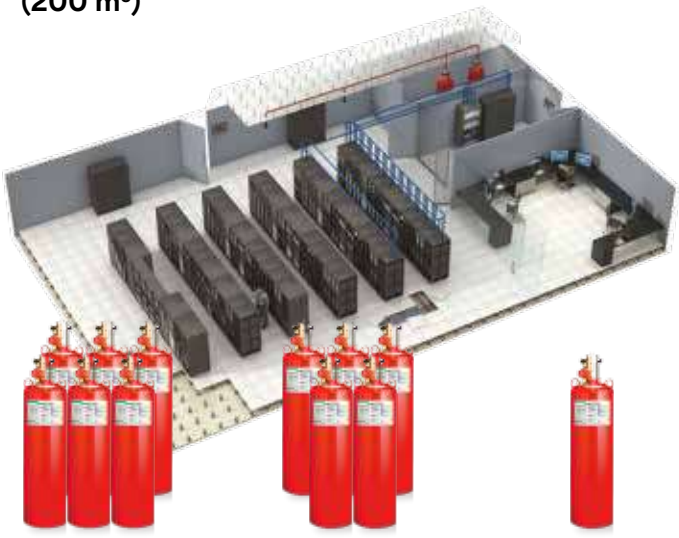
*Para lograr el 95 % de la concentración mínima de diseño para incendios de mayor riesgo de clase A. Fuente: NFPA

Ahorra espacio.

Cuando el espacio es escaso, los sistemas de extinción de incendios que requieren varios cilindros pueden ser un problema. El fluido de protección contra incendios 3M™ Novec™ 1230 se almacena como líquido, mientras que los gases inertes o CO_2 se almacenan como gas. Esto quiere decir que necesita muchos menos cilindros para almacenar el fluido Novec 1230, lo que da más flexibilidad a la hora de seleccionar el sitio. Para espacios reducidos, los cilindros pueden instalarse dentro del área protegida, lo que elimina la necesidad de tener una sala de almacenamiento independiente.

A largo plazo, el fluido Novec 1230 puede ayudar a ahorrar espacio y disminuir el coste asociado a esto.

Cilindros necesarios para un sistema de extinción de mayor riesgo de clase A típico (200 m^3)



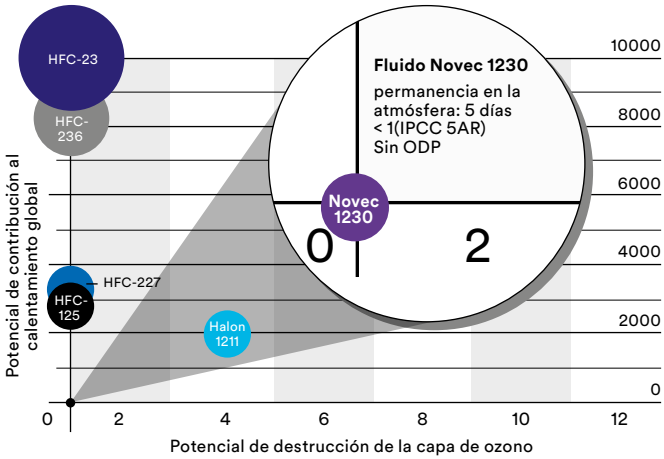
Gas inerte	CO_2	**Fluido Novec 1230**

Ayuda a proteger su empresa. Y el medio ambiente.

El fluido de protección contra incendios 3M™ Novec™ 1230 cuenta con el perfil medioambiental más alto de agentes de limpieza sintéticos que existen hoy en día. El fluido Novec 1230 posee un potencial nulo de destrucción de la capa de ozono y un potencial de calentamiento global de menos de 1 gracias a que su permanencia en la atmósfera es de solo cinco días, lo que ayuda a proteger el medio ambiente, así como sus valiosos activos.

El fluido Novec 1230 no se ve afectado por el reglamento europeo sobre gases fluorados, ni por ninguna otra directiva ni normativa internacional.

Comparación de huella ambiental



El tamaño de la burbuja se corresponde con la permanencia en la atmósfera del agente.

Garantía 3M™ Blue Sky℠.

Nuestra garantía 3M™ Blue Sky℠ le ofrece la tranquilidad de saber que su inversión en el fluido de protección contra incendios 3M™ Novec™ 1230 seguirá siendo segura en el futuro. Si el fluido Novec 1230 se prohíbe o se restringe su uso como agente de protección contra incendios en un plazo de 20 años desde su instalación debido a sus propiedades ambientales, le reembolsaremos el precio de compra del fluido.

El fluido Novec 1230 cuenta con el respaldo de los equipos de ventas globales, asistencia técnica y atención al cliente de 3M, con laboratorios de servicio técnico en Estados Unidos, Sudamérica, Europa, Oriente Medio, Japón y Sudeste de Asia.

www.3m.com.es/3M/es_ES/novec-es/

J393440

Impreso en España. Por favor recicle.

Area Data

Sistema Modular de Detección y Extinción

Modular Protection® Corporation

Sistema Modular, integrado en una unidad, de detección y extinción de incendio por inundación de agente **NOVEC 1230 (3M)** (***agua que no moja***). La mas moderna y segura alternativa a los HFCs, no conductor, baja concentración y no agresivo para la capa de ozono

El sistema **MODULAR** es completamente ensamblado en origen (USA). Montado en un bastidor de acero, esta compuesto por el cilindro contenedor de agente Novec, panel de extinción, tobera, detección cruzada Clase A para prevenir falsas descargas, pulsadores manuales (extinción y aborto), sirena y señal luminosa estroboscópica.

El sistema **MODULAR** requiere mínimo tiempo de instalación ya que viene precableado y listo para usar (Plug & Play).

Ideal para salas de servidores, comunicaciones, cintotecas, vaults, shelters, salas de máquinas, bibliotecas, etc

La instalación de las toberas (Nozzles) se realizan de acuerdo a los requerimientos de UL Listing y FM Approval.

.

Unit Size	Dimension L	W	H	Clearance Depth	Wall W	Space H
100	12"	14"	84"	24"	18"	85"
200	14"	14"	84"	26"	18"	85"
300	18"	14"	84"	30"	18"	85"
400	24"	20"	88"	36"	30"	90"
600	24"	20"	98"	36"	30"	100"

El **Novec 1230** a presión normal es un líquido no conductor de la electricidad y de rápida evaporación.

Trabaja por inundación y sus disparos se realizan presurizados con Nitrógeno. Sus principales ventajas son una menor concentración de diseño (5%), mayor margen de seguridad, y fundamentalmente su efecto nulo sobre la capa de ozono dado que su período de desintegración en la atmósfera es de 5 días (FM200: 36 años).

Underwriters Laboratories Inc.

Area Data - Republica Arabe Siria 2953 piso 6 CP 1425 - Capital - Rep. Argentina
Te: 54 11 4 800 1539 e-mail: info@areadata.com.ar www.areadata.com.ar

Novec™ 1230
Fire Protection Fluid

Introduction

3M™ Novec™ 1230 Fire Protection Fluid, dodecafluoro-2-methylpentan-3-one, ($CF_3CF_2C(O)CF(CF_3)_2$), is a clear, colorless and low odor fluid, one of a long line of 3M products designed as a replacement technology for ozone depleting substances (ODSs).

Novec 1230 fluid is an effective fire extinguishing agent in standard fire scenarios where halons historically have been used and where halon alternatives are now being used.

Typical Applications

Novec 1230 fluid can effectively be applied in streaming, localized flooding, total flooding, inerting and explosion suppression applications in the following areas:

- Data Processing Centers
- Telecommunications
  - Cellular Sites
  - Switching Centers
- Commercial Aviation
  - Aboard Aircraft
  - Airport Crash Rescue Vehicles
- Military Aviation
  - Flightlines
  - Crash Rescue Vehicles
- Military Systems
  - Combat Vehicles
  - Marine Engine Rooms
- Oil & Gas Exploration
  - Platform Helipads
  - Storage Tank Rim Seals
- Transportation
  - Merchant Marine Vessels
  - Mass Transit Vehicles
- Recreation
  - Pleasure Craft
  - Race Cars

Material Specifications

Properties	Novec 1230 Fluid
Dodecafluoro-2-methylpentan-3-one	99.0 mole %, minimum
Nonvolatile residues	0.05 g/100 ml, maximum
Acidity and water content	Specifications are under development.

Fire Extinguishing Performance

The extinguishing performance of Novec 1230 fluid has been shown in small- and large-scale tests. The initial effectiveness has been demonstrated in military applications such as on flightlines and in standard fire scenarios as part of an Underwriters Laboratories and Factory Mutual listing.

3M™ Novec™ 1230 Fire Protection Fluid Features

Novec 1230 fluid's environmental profile, toxicity characteristics, and fire performance make it a sustainable solution as a halon replacement alternative to Halons, HFCs and PFCs.

An advantage of a liquid agent is that it can be shipped in drums and totes rather than pressurized cylinders. That means that you can air freight Novec 1230 fluid in bulk quantities if needed for refills instead of the very limited quantities of gases that can be air shipped.

If a leak occurs in the extinguisher or system after superpressurization, the N_2 can easily be vented and the agent retained while repairing the cylinder seal or gasket. With gases, the agent would be lost.

The liquid is pourable, low in viscosity and easy to handle. It can easily be pumped with hand or electric pumps.

Novec 1230 fluid can be used both as a streaming agent (e.g., hand-held extinguishers) or as a total flooding agent in fixed systems.

Novec 1230 fluid is compatible with a wide range of materials of construction. It is stable in storage.

Properties Description

Not for specification purposes

All values determined at 25°C (77°F) unless otherwise specified

Typical Physical Properties	Novec 1230 Fluid
Chemical Formula	$CF_3CF_2C(O)CF(CF_3)_2$
Molecular Weight	316.04
Boiling Point @ 1 atm	49.0°C (120.2°F)
Freezing Point	-108°C (-162.4°F)
Critical Temperature	168.66°C (335.6°F)
Critical Pressure	18.65 bar (270.44 psi)
Critical Volume	494.5 cc/mole (0.0251 ft^3/lbm)
Critical Density	639.1 kg/m^3 (39.91 lbm/ft^3)
Density, Sat. Liquid	1.60 g/ml (99.9 lbm/ft^3)
Density, Gas 1 ATM	0.0136 g/ml (0.851 lbm/ft^3)
Specific Volume, Gas 1 ATM	0.07333 m^3/kg (1.175 ft^3/lb)
Specific Heat, Liquid	1.1030 kJ/kg°C (0.2634 BTU/lb°F)
Specific Heat, Vapor @1 ATM	0.891 kJ/kg°C (0.2127 BTU/lb°F)
Heat of Vaporization @ boiling point	88.1 kJ/kg (37.9 BTU/lb)
Liquid Viscosity @ 0°C/25°C	0.56/0.39 centistokes
Solubility of Water in Novec 1230 Fluid	<0.001 % by wt.
Vapor Pressure	0.40 bar (5.85 psig)
Dielectric Strength	~60 kV

Novec 1230 Safety and Use Concentration Comparison

All data other than those for Novec 1230 fluid were compiled from published sources.

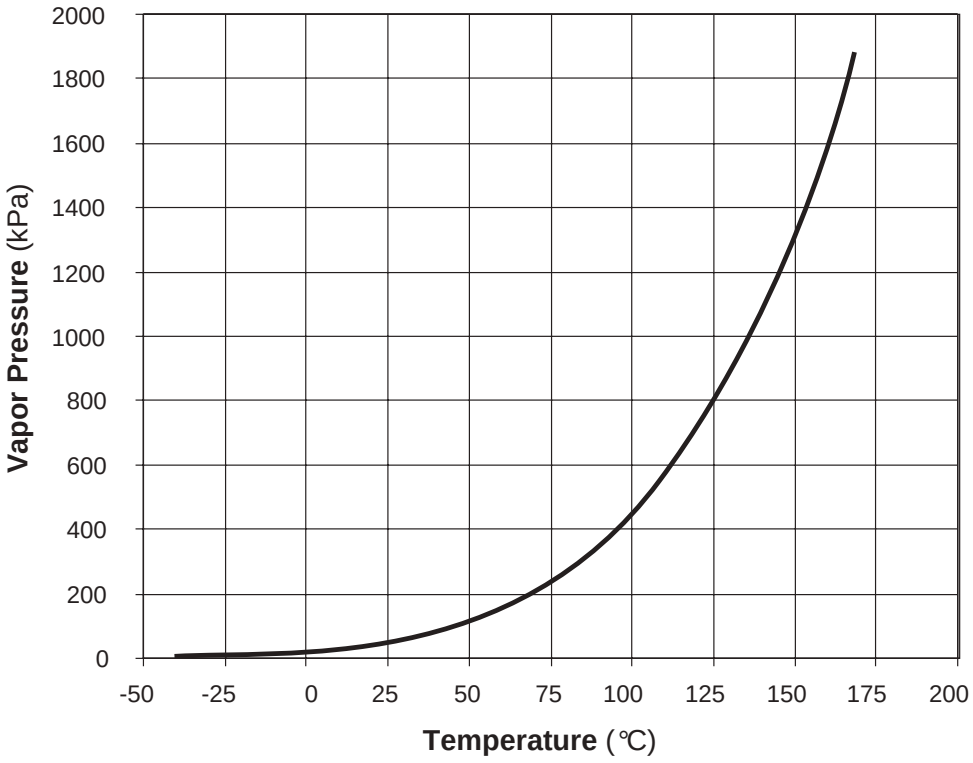
Properties	Halon 1301	HFC-227ea	Novec 1230	Inert Gas	CO_2
Boiling point °C (°F)	-57.8 (-72.04)	-16.4 (2.48)	49.0 (120.2)	-196.0 (-320.8)	Sublimes at low temps
Use Concentration	5%	7.5-8.7%	5-6%	38-40%	30-75%
NOAEL*	5%	9%	10%	43%	<5%
Safety Margin	nil	3-20%	67-100%	7-13%	Lethal at Design Concentrations

* No Observed Adverse Effect Level for cardiac sensitization (halocarbons) and oxygen depletion (inert gas).

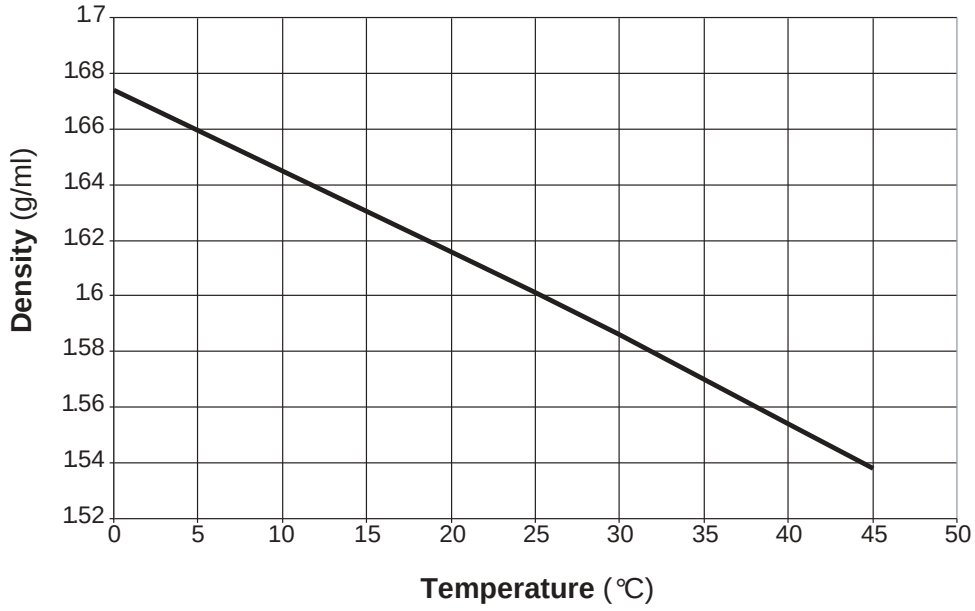
Novec 1230 fluid offers outstanding margins of human safety when compared to halon and to all viable alternatives.

Not for specification purposes

Novec 1230 Fluid
Vapor Pressure vs. Temperature

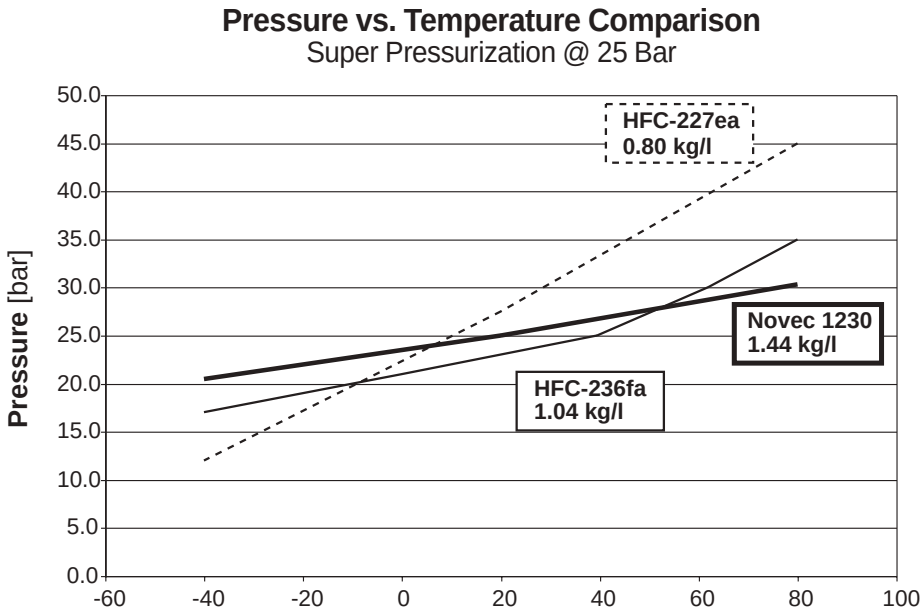


Novec 1230 Fluid
Liquid Density vs. Temperature



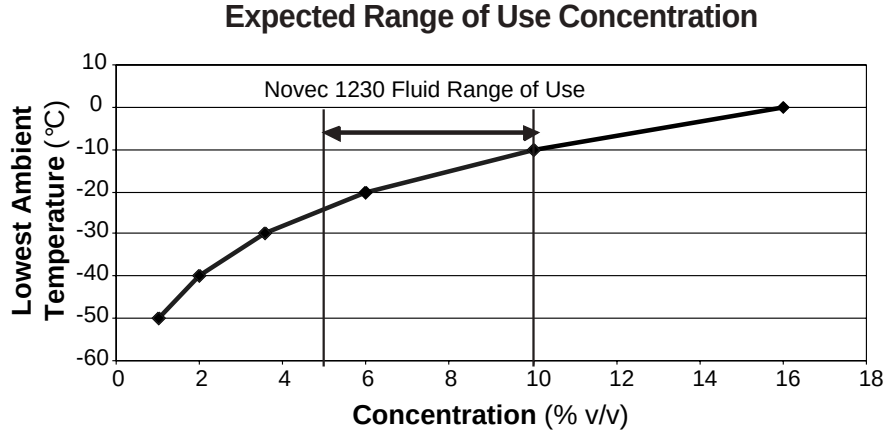
Not for specification purposes

The following graph displays the unique properties that differentiate Novec 1230 fluid from other agents. Over a wide range of temperatures, a high boiling material like Novec 1230 fluid, when superpressurized with nitrogen in a cylinder, does not vary significantly in storage pressure like the lower boiling gasses. Note the pressure delta of only 10 bar for Novec 1230 fluid, whereas with some low boiling gases, there can be as much as a 33 bar delta over the same temperature range. The maximum fill density for Novec 1230 fluid is 1.8 times greater than lower boiling gases over the -40°C to 80°C range. This is important in applications where there is an expected wide range of temperatures, such as military vehicles, aircraft, or aboard ships that may enter tropical or arctic waters.



Source: NFPA 2001 and 3M Labs

Although most applications will not be in this temperature range, the following chart illustrates that Novec 1230 fluid is able to effectively vaporize over the expected range of design concentrations at very low ambient temperatures, even though it is a high boiling fluid.



Source: Tropodegradeable Halocarbons and Main Group Element Compounds
April 1999, Halon Options Technical Working Conference - NMERI

Source: NMERI and 3M Labs

Compatibility of "O" Rings with Novec 1230 Fluid
Exposure Time: 1 Week@25°C, 100°C

Elastomer Type	Exposure Temp.	Change in Shore A Hardness	% Change in Weight	% Change in Volume
Neoprene	25°C	-1.8	-0.6	-1.2
	100°C	-2.2	+2.3	+0.8
Butyl rubber	25°C	-2.7	+0.2	+0.1
	100°C	-4.0	+4.3	+4.2
Fluoroelastomer	25°C	-6.2	+0.7	+0.6
	100°C	-12.6	+9.5	+10.6
EPDM	25°C	-4.7	+0.6	+0.3
	100°C	-5.7	+3.3	+2.4
Silicone	25°C	N/A	+3.1	+2.8
	100°C	-5.4	+6.0	+5.1
Nitrile	25°C	-0.7	-0.3	-0.5
	100°C	+2.5	+4.6	+0.7

Effects of Boiling Novec 1230 Fluid on Various Metals

Metals	Effect
Aluminum Alloy 6262 T6511	A
Brass Alloy UNS C36000	A
AISI Type 304L stainless steel	A
AISI Type 316L stainless steel	A
Copper UNS C12200	A
ASTM A 516, Grade 70 carbon steel	A

A. No discoloration or destruction of fluid or metal at temperature indicated, 10 days minimum exposure, 49°C.

A study conducted by MIT examined the atmospheric loss mechanisms for Novec 1230 fluid. The authors of this study determined that this compound does not react with hydroxyl radical (OH) but that substantial decay occurs when exposed to UV radiation. The authors measured the UV cross-section for Novec 1230 fluid, finding a maximum wavelength of absorbance at 306 nm.

Since this compound shows significant absorbance at wavelengths above 300 nm, photolysis in the lower atmosphere will be a significant sink for this compound. The authors conclude that, "In fact, the absorption spectrum is similar to that of acetaldehyde, a species whose lifetime against solar photolysis is about 5 days. The absorption cross sections of Novec 1230 fluid are somewhat larger; hence, we expect the atmospheric lifetime of Novec 1230 fluid against solar radiation to be of the order of 3-5 days."

Recent laboratory measurements of the photodissociation rate of Novec 1230 fluid found it to be equivalent to that for acetaldehyde, within experimental error. Hence, an atmospheric lifetime of 5 days is appropriate for Novec 1230 fluid.

The potential for Novec 1230 fluid to impact the radiative balance in the atmosphere (i.e., climate change) is limited by its very short atmospheric lifetime and low global warming potential (GWP). Using a measured IR cross-section and the method of Pinnock et. al., the instantaneous radiative forcing for Novec 1230 fluid is calculated to be 0.50 $Wm^{-2}ppbv^{-1}$. This radiative forcing and a 5-day atmospheric lifetime results in a GWP value of 1 using the WMO 1999 method and a 100-year integration time horizon. Compounds with such short atmospheric lifetimes do not pose a risk with respect to potential climate change.

Novec 1230 fluid is expected to rapidly degrade to fluorinated alkyl radicals similar to those produced by other fluorochemicals. Studies of the atmospheric chemistry of these radical species and their degradation products have concluded that they have no impact on stratospheric ozone. This, combined with its very short atmospheric lifetime, leads to the conclusion that Novec 1230 fluid has an ozone depletion of zero.

Before using this product, please read the current product Material Safety Data Sheet (available through your 3M sales or technical service representative) and the precautionary statement on the product package. Follow all applicable precautions and directions.

3M™ Novec™ 1230 Fire Protection Fluid Environmental Properties Comparison

Not for specification purposes

All data other than those for Novec 1230 fluid were compiled from published sources

Properties	Novec 1230	Halon 1211	Halon 1301	HFC-227ea	HFC-236fa	HCFC Blend B
Ozone Depleting Potential (ODP)	0.0	4.0	12.0	0.0	0.0	0.014
Global Warming Potential–IPCC 2001[1]	1	1300[2]	6900[2]	3500	9400	120[3]
Atmospheric Lifetime (years)	0.014	11.0	65	33	220.0	1.4
SNAP (Yes/No)	Yes[4]	No	No	Yes	Yes	Yes/ Phase-out

[1] IPCC Intergovernmental Panel on Climate Change Method 100 Year (ITH)

[2] Global Warming Potential 1998 WMO Method 100 Year (ITH)

[3] Data based on HCFC-123 only—also contains CF_4

[4] U.S. EPA has expressed its intent to approve. Commercial sale of Novec 1230 fluid is permitted.

Toxicity Profile

Novec 1230 fluid is a fluorinated ketone. It is safe for its intended use when used as directed. Acute toxicity testing completed shows that Novec 1230 fluid is low in toxicity. The effective toxicity exposure limit is greater than 100,000 ppm (>10% v/v) for both the acute 4-hour inhalation exposure and the acute cardiac sensitization No Observed Adverse Effect Level, or NOAEL. The acute cardiac sensitization Lowest Observed Adverse Effect Level, or LOAEL, is greater than 100,000 ppm (>10% v/v). See the Toxicity Properties Comparison table below.

Toxicity Properties Comparison

Not for specification purposes

Properties	Novec 1230	Halon 1211	Halon 1301	HFC-227ea	HFC-236fa	HCFC Blend B
Physical State @ 25°C	Liquid	Gas	Gas	Gas	Gas	Liquid
LC-50 4-hour acute inhalation (UNO) (% v/v)	> 10[1]	20 (15 min)	>80	> 80	> 80	3.2
NOAEL / LOAEL Cardiac sensitization (% v/v)	10.0/ >10.0[1, 3]	1.0/ 2.0[2]	5.0/ 7.5	9.0/ 10.5	10.0/ 15.0	1.0/ 2.0

[1]Huntingdon, UK results, 2000

[2]NOAEL–Dupont data, EC-50 (LOAEL)–Beck, Clark and Tinston data, 1973 & 82

[3]Although a test conducted at a high cardiac sensitization dose of 15% was not fully completed, no cardiac sensitization or deaths were observed.

Packaging and Availability

Novec 1230 fluid is currently available in 2645 lb. (1200 kg) intermediate bulk containers (IBCs), 353 lb. (160 kg) drums and 11 lb. (5 kg) glass sample jugs.

A cylinder containing Novec 1230 fluid superpressurized with nitrogen varies only 150 psi over a temperature range of 220°F (105°C). Also, because it is packaged in IBCs and drums, it can be air freighted without the restrictions on gaseous alternatives.

3M™ Novec™ 1230 Fire Protection Fluid Resources & Distribution

3M™ Novec™ 1230 Fire Protection Fluid is supported by global sales, technical and customer service resources, with technical service laboratories in the U.S., Europe, Japan, Latin America and Southeast Asia. Users benefit from 3M's broad technology base and continuing attention to product development, performance, safety and environmental issues.

Extensive O.E.M. policies and equipment design guidelines have been prepared for system retrofit, installers and equipment manufacturers in support of Novec 1230 fluid.

For additional technical information on Novec 1230 fluid in the United States, or for the name of a local distributor, call 3M Performance Materials Division, **800 810 8513**.

For other 3M global offices, and information on additional 3M products, visit our web site at **www.3m.com/specialtymaterials**

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Issued: 01/02

ELECTRONIC
Compatible with VS & VM control systems
ADDRESSING

Technology that saves lives

Releasing Module
GSA-REL

FM APPROVED 7300-1483: 0150
S3424

Overview

The GSA-REL is an analog addressable module that communicates directly with the fire alarm panel Signature loop controller. The GSA-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 GSA-REL interfaces with a number of conventional devices. These provide manual actuation of abort, release, and service disconnect functions. Together with the GSA-REL, they comprise a complete fire suppression package. There is no need for a separate releasing panel because the GSA-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 GSA-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 GSA-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 GSA-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.

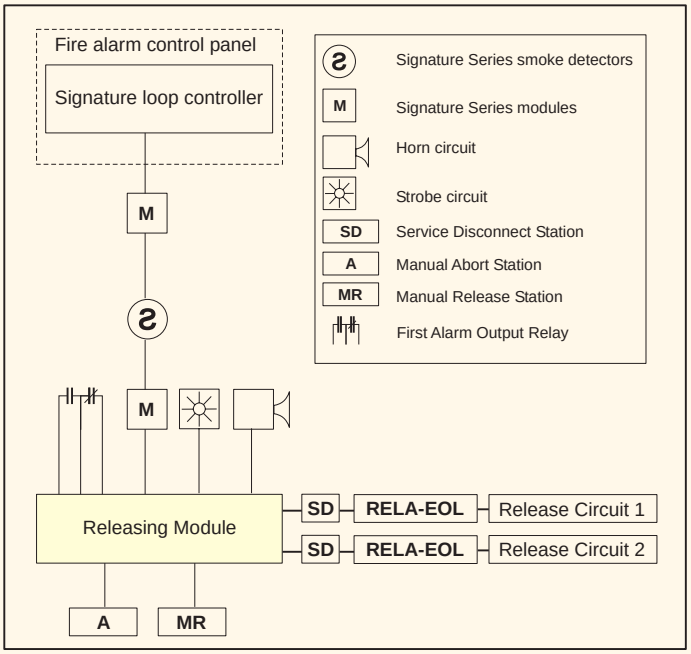
A primary goal of any fire suppression system is to prevent the release of extinguishing agent unless it is absolutely necessary. There is no margin for error. But no matter what measures are taken to prevent the unwanted release of extinguishing agent, the fact remains that no suppression system is 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 GSA-REL releasing module. These detectors provide unsurpassed reliability and immunity from false alarms. The GSA-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 GSA-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 GSA-REL

The GSA-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 GSA-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 GSA-REL. The explanations that follow summarize each element of the module.



Release Circuits. The GSA-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 GSA-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 GSA-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 GSA-REL requires 24 Vdc (power limited). See the specification table for details.

Operation

The GSA-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 GSA-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 GSA-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 GSA-REL installation manual when setting up or configuring this component.

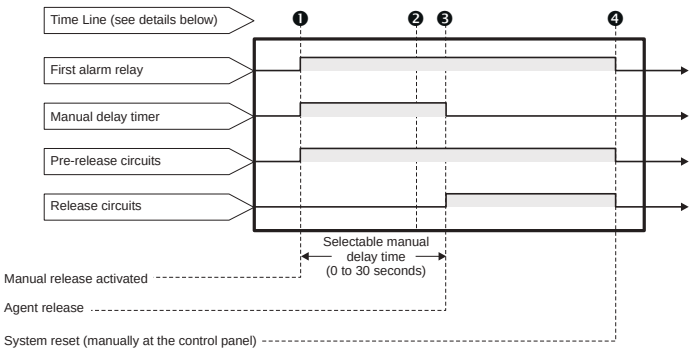
Normal State

In its normal operating state the GSA-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.

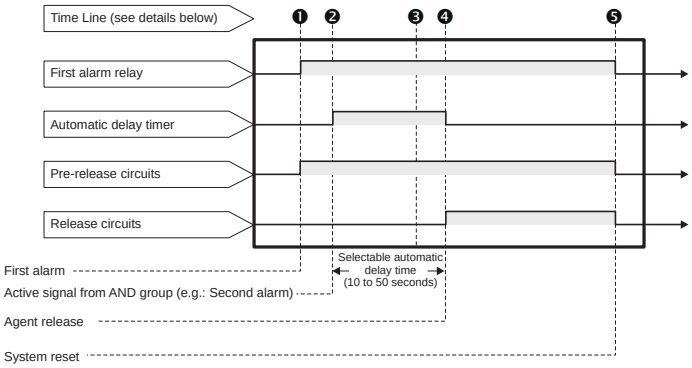
❹ A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

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: MIR2 systems do not support matrix groups. See *Programming the GSA-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 GSA-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 GSA-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 GSA-REL is compatible with VS Series and VM Series fire alarm control panels. You may install the GSA-REL in any of the following enclosures:

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

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

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

- 2-PPS(-220)
- 2-PPS/6A(-220)
- MIRBPSxA*
- APSxA*
- SIGA-APS(-220)
- MIRBPSx*, APSxA

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

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

Abort stations. The GSA-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 GSA-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)

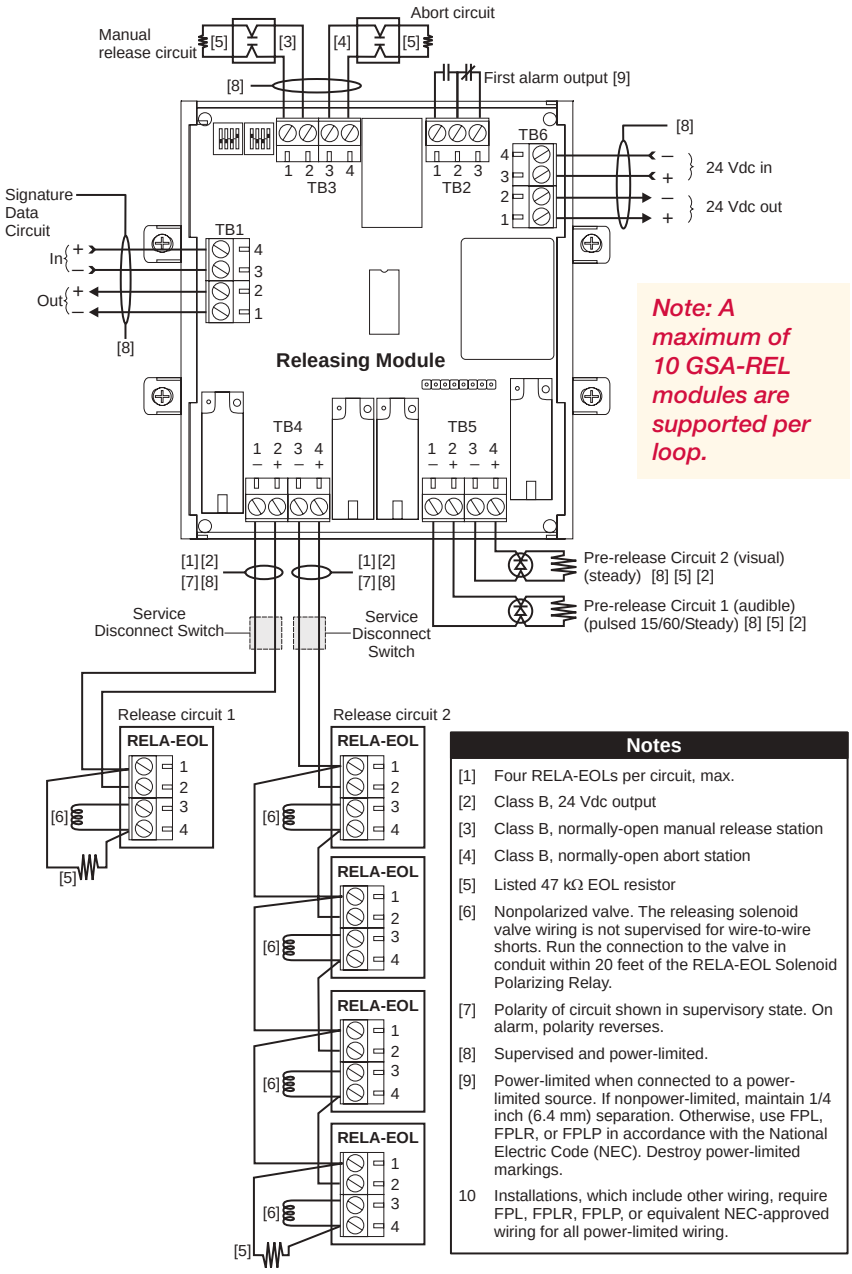
	Delay	SW5	SW6	SW7	
	10	0	0	0	*The length of time that the deluge is inhibited when the releasing function is initiated by the control panel (i.e.: after receiving an alarm).*
	20	0	0	1	
	30	0	1	0	
	40	0	1	1	
DEFAULT	50	1	0	0	

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 GSA-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.

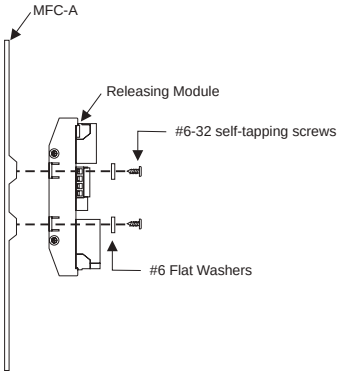
[7] Polarity of circuit shown in supervisory state. On alarm, polarity reverses.

[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

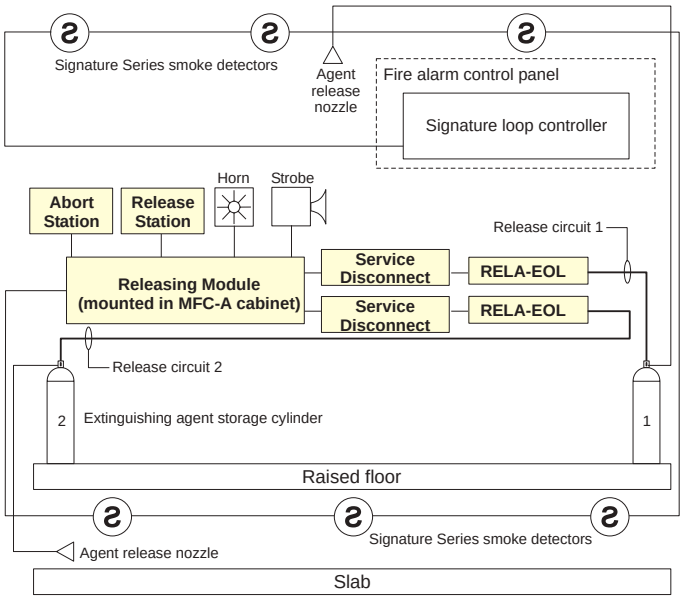


LED Operation

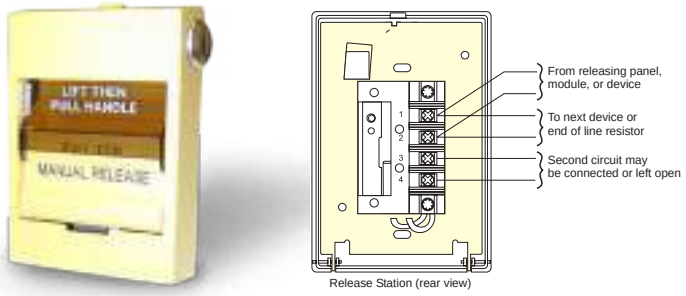
LED	Color	Pattern	Function
DS1	Red	Flashing	Data (alarm conditions)*
DS2	Green	Flashing	Data (normal conditions)*
DS3	Red	Steady	Alarm
DS4	Green	Steady	Power
DS5	Yellow	Steady	Abort
DS6	Yellow	Steady	Trouble
DS7	Red	Steady	Release Active

**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.*

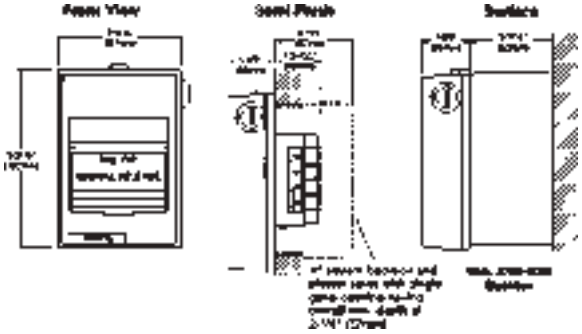
Typical application of GSA-REL accessories (computer room)



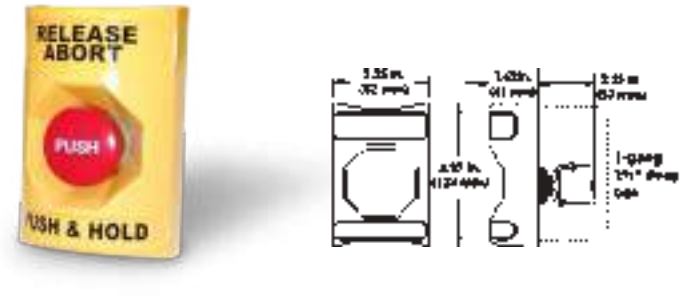
Manual Release Station



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.

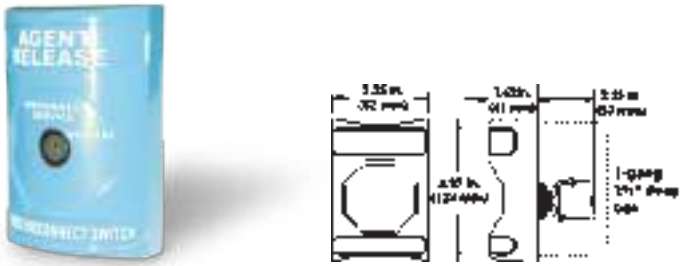


Abort Station



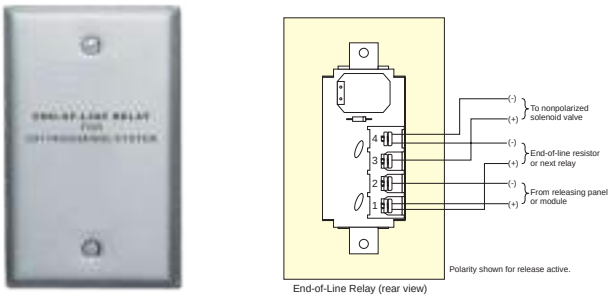
The abort station is a normally-open, non-latching device. It is used to prevent the release of agent into the protected area after the release sequence has begun.

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 GSA-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



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 GSA-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
	Circuit capacitance	0.1 µF, max
Abort 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. non- latching
	Circuit capacitance	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	5.2 to 19.95 Vdc
	Supervisory current	1000 µA
	Alarm current	1000 µA
Environmental condiitions	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 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 GSA-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 GSA-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)
GSA-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)

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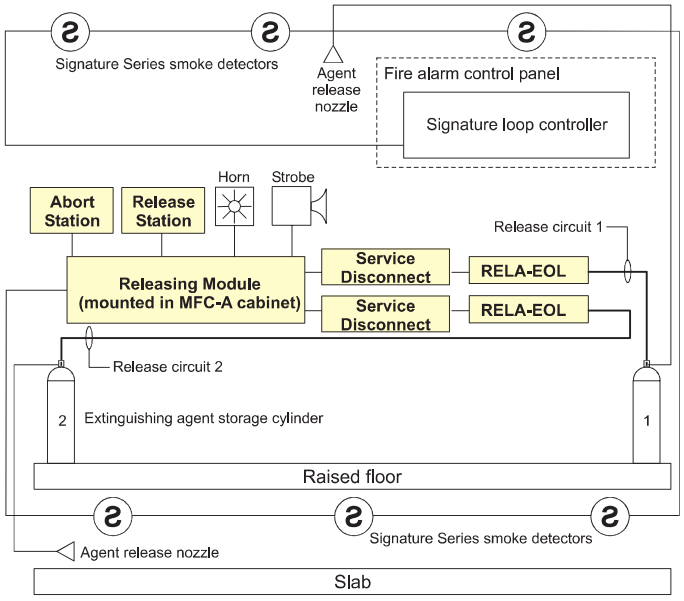
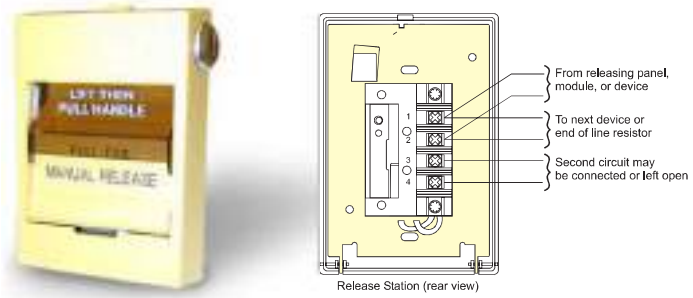
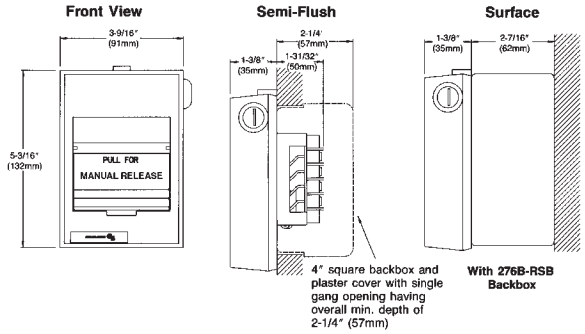
Typical application of GSA-REL accessories (computer room)



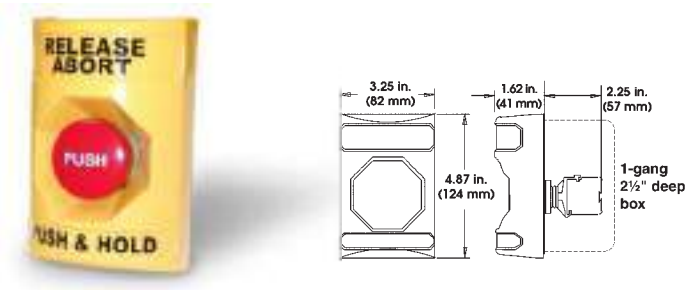
Manual Release Station



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.

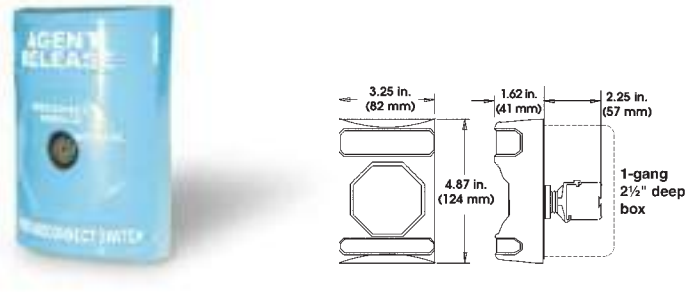


Abort Station



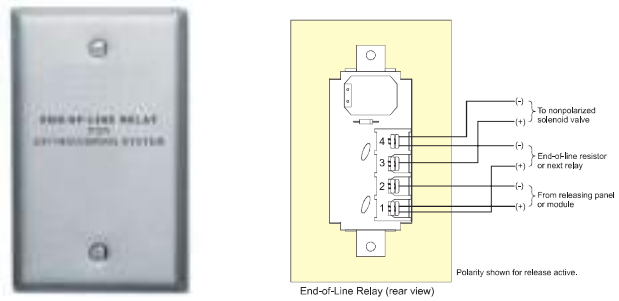
The abort station is a normally-open, non-latching device. It is used to prevent the release of agent into the protected area after the release sequence has begun.

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 GSA-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



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 GSA-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
	Circuit capacitance	0.1 µF, max
Abort 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. non- latching
	Circuit capacitance	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	5.2 to 19.95 Vdc
	Supervisory current	1000 µA
	Alarm current	1000 µA
Environmental condiitions	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 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 GSA-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
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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 GSA-REL to power supply				Wire resistance (Ohms per wire)
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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

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RELA-ABT	Manual Abort Station. English markings, black text on yellow polycarbonate body.	1.0 (0.45)
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Technology that saves lives

Intelligent Fire Alarm Systems

VS1, VS4

FM APPROVED

FDNY COA 6229

7165-1657: 0244

S3000

Overview

Kidde 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 VS1 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 VS4 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. VS4 panels include four NACs that may be wired for either Class A or Class B operation.

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

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

- Intelligent modules, detectors, and bases
- GSA-REL Releasing Modules
- R-Series remote annunciators
- Integrated Carbon Monoxide gas sensing with V-PCOS detectors including distinct audible signaling

Features

- Auto-programming speeds installation time
- Supports V-Series intelligent modules and detectors
- Form C contacts for alarm and trouble, Form A for supervisory
- Electronic addressing with automatic device mapping
- Optional Ethernet port for diagnostics, programming 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
- Supports GSA-REL releasing module for fire suppression
- Class B or Class A wiring
- 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
- 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
- Transmission test frequency by hour
- *Alarm ON* command manually activates alarm condition

Application

Kidde VS 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

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 Kidde fire alarm systems. When combined with VS Series smoke and heat detectors, these systems deliver a level of dependability not previously available for small to mid-sized applications. All Kidde systems are built to exacting reliability benchmarks and meet international standards for quality, in addition to agency listings for dependability.

Clear-cut remote annunciation

Remote annunciation is a strong suit of the VS 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. VS control panels also supports graphic annunciation with optional graphic annunciator interface modules. Each interface provides common control and 32 LEDs.

Signals with a difference

VS Series NACs are configurable to fully support the advanced signaling technology of Kidde 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.

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

Kidde VS 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 VS technology without the expense or disruption of rewiring the entire building. VS 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

Several popular third-party IP/Cellular communicators have been tested with the VS 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 VS control panel compatibility documentation part number 3102354-EN for a full list of compatible communicators.

A complete line of accessories

VS 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

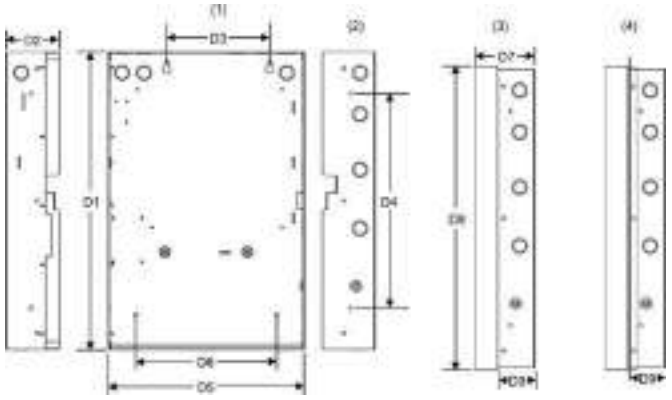
Kidde VS Series life safety systems are simple to set up, yet offer advanced programming features that put these small building panels into a class of their own. The auto programming feature quickly gets the panel operational using factory default settings. Basic zone and point settings can be programmed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

For more advanced system configuration and correlation groups programming, VS Series systems interface to a PC running compatible VS-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 VS 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 VS-CU, or upload and view system reports using the VS-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.

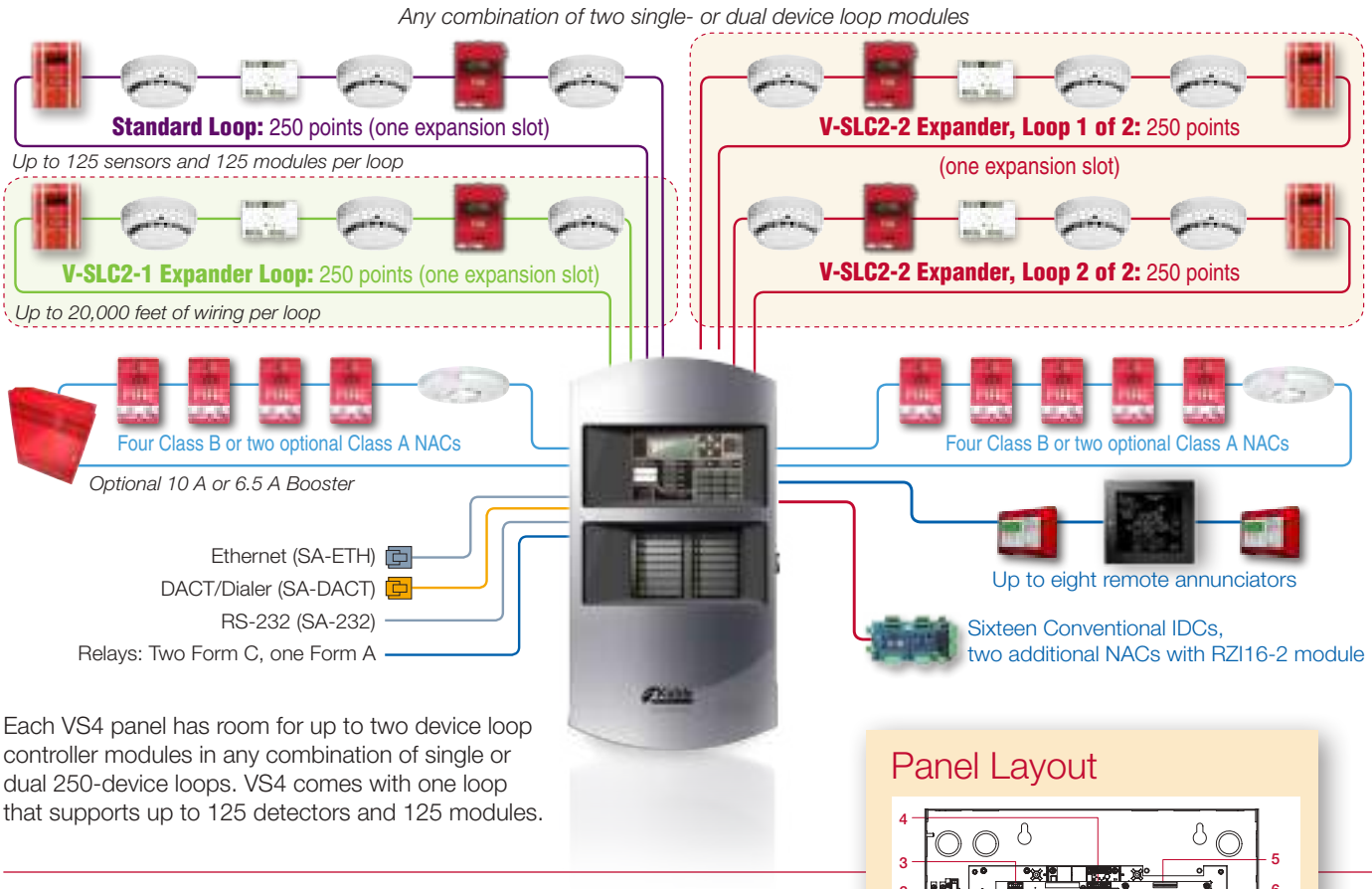
Panel dimensions, in (cm)

Model	D1*	D2	D3	D4	D5*	D6	D7	D8	D9
VS4	28.0 (71.1)	3.85 (9.8)	9.0 (22.8)	22.0 (55.8)	15.75 (40.0)	10.25 (26.0)	4.9 (12.4)	30.1 (76.4)	2.7 (6.8)
VS1	21.5 (54.6)	3.85 (9.8)	7.5 (19.0)	15.5 (39.4)	14.25 (36.2)	10.25 (26.0)	4.9 (12.4)	23.6 (59.9)	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.*

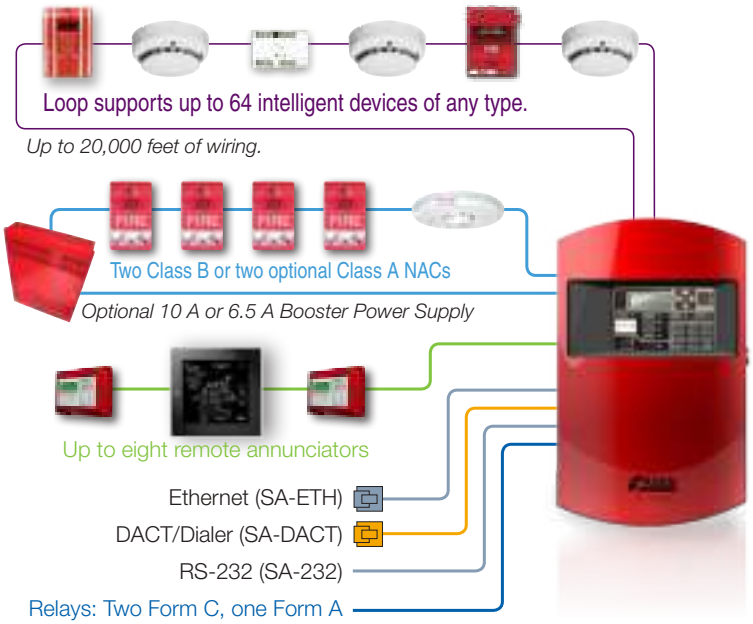
System Layout

VS4



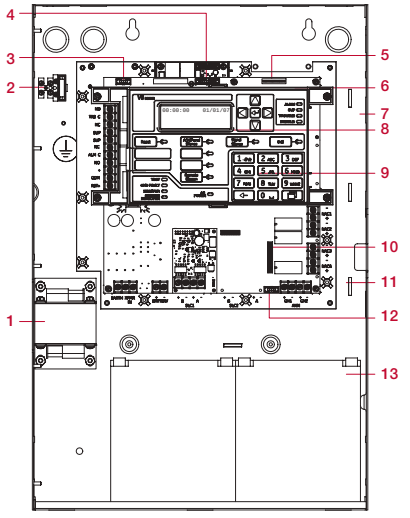
Each VS4 panel has room for up to two device loop controller modules in any combination of single or dual 250-device loops. VS4 comes with one loop that supports up to 125 detectors and 125 modules.

VS1



Each VS1 panel ships with one device loop controller that supports 64 devices of any type. This panel's device capacity cannot be expanded.

Panel Layout



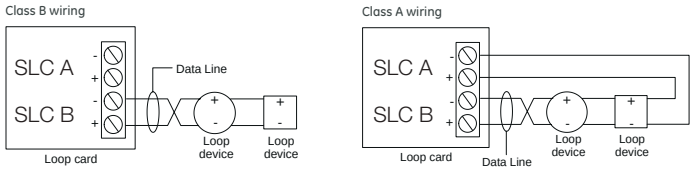
1 Transformer
2 Main AC wiring block & fuse holder
3 RS-232 card connector (J3)
4 Dialer card connection (J8)
5 Ethernet card connector (J1)
6 Main circuit board
7 Panel backbox enclosure
8 Operator interface
9 SLC card connector (J7)
10 Class A card connector (J2)
11 Tie wrap mounts
12 LED expander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

Wiring & Configuration

Device loop

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

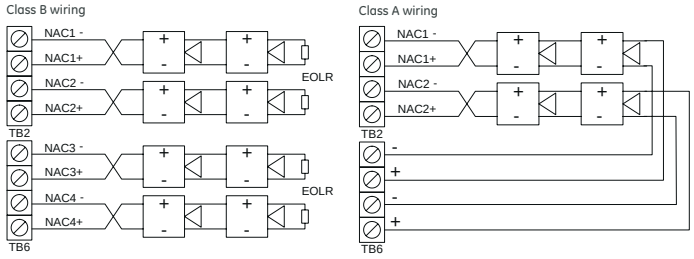
Circuit specifications	VS4	VS1
Device loops	One Class B or A loop, supporting 125 detectors and 125 modules. Expandable to four loops.	One Class B or A loop, supporting 64 devices of any kind.
Communication line voltage	Maximum 20 V peak-to-peak	
Circuit current	0.5 A max	
Circuit impedance	66Ω total, 0.5 µF, max	
Isolators	64 maximum	
Signal Synchronization	Supported on a system-wide basis (all device loops) when using an addressable notification appliance circuit (NAC) module and Genesis or Enhanced Integrity notification appliances.	



Notification appliance circuits (TB2)

VS4 control panels come equipped with four notification appliance circuits. VS1 control panels come with two NACs. Each circuit can be individually configured for continuous, temporal, synchronized, and coded output.

Specifications	VS4	VS1
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	



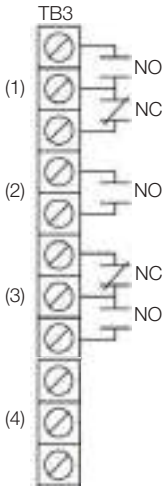
Marking indicates output signal polarity when the circuit is active. Polarity reverses when the circuit is not active. Wire notification appliances accordingly. Notification appliance polarity shown in active state.

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	

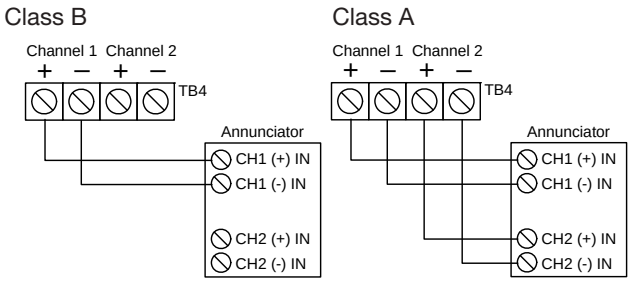
Relay circuits can only be connected to power-limited sources.

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



Option Cards

Kidde VS 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.

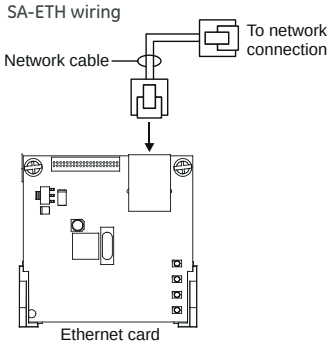
Single and Dual Loop Controller Cards

The V-SLC2-1 is a single loop controller card that can be used with the VS1 as a replacement for the standard 64-point loop, or with the VS4 as a 250-point expansion module.

The V-SLC2-2 is a 500-point dual loop controller card for the VS4 that provides two IDC circuits, each with 125 detector addresses and 125 module addresses.

Specifications	V-SLC2-1	V-SLC2-2
Device Addresses	VS4: one loop, 250 device addresses VS1: 64 addresses	VS4: 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

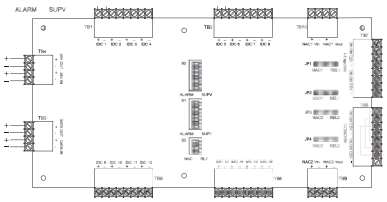


The SA-ETH card provides a standard 10/100 Base T Ethernet network connection for connecting to an intranet, a local network, or the Internet. The card can be used to download configuration programming from the VS-CU to the panel.

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)

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.

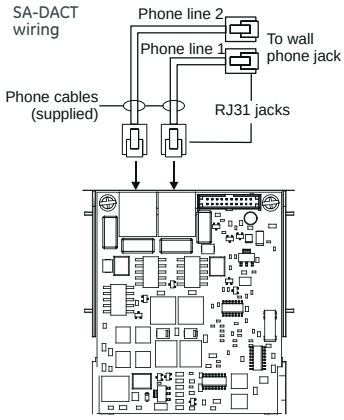
The RZI16-2 requires 18 consecutive addresses on the Signaling Line Circuit (SLC). Addresses are assigned electronically. There are no address switches to set.

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), VS4, 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 VS-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.

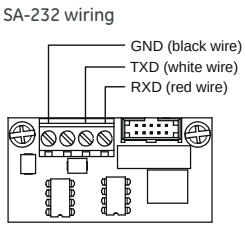
The SA-DACT is installed on the plastic assembly and connects to the main circuit board via a ribbon cable.

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

SA-232 RS-232 interface

The SA-232 card provides an RS-232 interface with VS 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 VS-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)

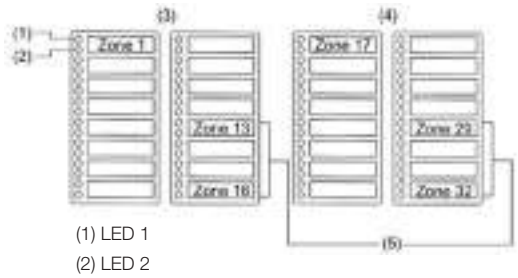
SA-CLA Class A Module (VS1 only)

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 VS1 control panels only. VS4 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-VS LED Display Expander (VS4 only)

The D16L-VS LED Display Expanders provide LED annunciation for up to 16 zones. It provides two LEDs for each zone. Two D16L-VS LED display expanders can be installed in each VS4 panel.



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

Specifications

	VS1	VS4
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 Aux power 2: 500 mA, 24 VDC (1 A possible if you reduce total available NAC power by 500 mA) Output: 28.3 to 21.9 VDC, special application *Note: For a list of compatible devices, see the VS1 and VS4 Series Compatibility List (P/N 3102354-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 VS1 control panel cabinet and two 18 Ah batteries will fit in the VS4 control panel cabinet. If larger batteries are required, use a 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 mm²)	

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1016 Corporate Park Drive
Mebane, NC 27302

Ordering Information

Part	Description
VS4 Fire Alarm Systems	
VS4-G	Four loop system with one 250-point loop installed. 110v, gray door.
VS4-G-2	Four loop system with one 250-point loop installed. 230v, gray door.
VS4-G-2-PG	Four loop system with one 250-point loop installed. 230v, gray door, Portuguese.
VS4-G-2-SP	Four loop system with one 250-point loop installed. 230v, gray door, Spanish.
VS4-GC	Four loop system, one 250-point loop installed. 110v, gray door, LED strips, Canada.
VS4-GD	Four loop system, one 250-point loop installed. 110v, gray door, with dialer.
VS4-GF	Four loop system, one 250-point loop. 110v, gray door, LED strips, French Canada.
VS4-G-PG	Four loop system with one 250-point loop installed. 110v, gray door, Portuguese.
VS4-G-SP	Four loop system with one 250-point loop installed. 110v, gray door, Spanish.
VS4-R	Four loop system with one 250-point loop installed. 110v, red door.
VS4-R-2	Four loop system with one 250-point loop installed. 230v, red door.
VS4-RD	Four loop system, one 250-point loop installed. 110v, red door, with dialer.
SA-TRIM2	VS4 Flush mount trim, black.
VS1 Fire Alarm Systems	
VS1-G	One loop system with one 64-point loop installed. 110v, gray door.
VS1-G-2	One loop system with one 64-point loop installed. 230v, gray door.
VS1-G-2-PG	One loop system with one 64-point loop installed. 230v, gray door, Portuguese.
VS1-G-2-SP	One loop system with one 64-point loop installed. 230v, gray door, Spanish.
VS1-GD	One loop system, one 64-point loop installed. 110v, gray door, with dialer.
VS1-GL	One loop system, one 64-point loop installed. 110v, gray door, English Canada.
VS1-GL-F	One loop system, one 64-point loop installed. 110v, gray door, French Canada.
VS1-G-PG	One loop system with one 64-point loop installed. 110v, gray door, Portuguese.
VS1-G-SP	One loop system with one 64-point loop installed. 110v, gray door, Spanish.
VS1-R	One loop system with one 64-point loop installed. 110v, red door.
VS1-R-2	One loop system with one 64-point loop installed. 230v, red door.
VS1-RD	One loop system, one 64-point loop installed. 110v, red door, with dialer.
SA-TRIM1	VS1 Flush mount trim, black
Option Cards	
V-SLC2-1	Expansion module, one 250-device loop. For VS4 only.
V-SLC2-2	Expansion module, two 250-device loops, 500 devices total. For VS4 only.
RZI16-2	Remote Zone Interface Module. 16 Class B IDCs, 2 Class B Output. Bracket included.
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, Slave, mounts in cabinet on base plate.
SA-CLA	Class A adapter module. Provides Class A capacity on NACs. Mounts in cabinet on main board. VS1 systems only.
D16L-VS	LED Annunciator module, 16 X 2-LED zones (4 programmable for sup). Mounts in cabinet to right of LCD display. For VS4 only.
D8RY-VS	***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 VS4 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.
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.
GSA-REL	Releasing Module
BC-1EQ	Seismic hardening Kit for VS Series panels. Includes battery hardening for BC-1 enclosure and components to harden panel internal components.
Programming Tools	
VS-CU	VS Series configuration and diagnostics utility.
260097	RS232 cable, 4 conductor, DB9 PC interface

ADVANCE FIRE & SECURITY

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Phone: 1(954)772-1700
www.advfireonline.com

Pompano Beach, FL, USA.
11 de agosto de 2017

A QUIEN PUEDA INTERESAR

Referencia: Certificación METROTEC SRL.

Por medio de la presente certificamos que la compañía METROTEC SRL está autorizada para comercializar e instalar en República Dominicana los productos que AF&S representa y distribuye, en particular los sistemas de detección temprana de incendios: Xtralis Vesda entre otros.

Adicionalmente confirmamos que METROTEC SRL cuenta con personal técnico entrenado y con todo nuestro soporte técnico y comercial para ejecutar proyectos y tramitar garantías.
Por su solicitud confirmamos que los equipos son nuevos de fabrica con garantia de

3 años en partes y servicios tecnicos avalados de fabrica por desperfectos de fabricacion

Será un placer atender cualquier inquietud en referencia a nuestra compañía o a nuestra relación con METROTEC SRL.

Cordial saludo,

Edward Fechter.
SALES DIRECTOR

METROTEC
Seguridad y Automatización Inteligente

4 de noviembre del 2022

Junta Central Electoral

Adquisición e instalación de sistemas de detención y supresión de incendios.

Distinguidos Sres.

Nosotros Metrotec, empresa constituida en la Republica Dominicana con más de 22 años en los ramos de seguridad física e industrial, iluminación y automatizaciones utilizamos este medio como documento de certificación de las condiciones propuestas:

- Establecemos que el tiempo de entrega e instalación es de 90 dias calendario luego puesta la orden y formalizada la adjudicación de nuestra empresa.

- La condición de pago es: 0 días luego de la entrega del proyecto, la oferta se mantendrá por 120 días

- La garantía de estos productos es de 2 años en partes y servicios por defectos de fábrica partiendo de la entrega.

- Metrotec asumirá la totalidad de la logística del transporte de los productos.

Cordialmente

Leandro Brea
Gerente General

METROTEC, SRL
www.metrotec.com.do

Presidente Vicini Burgos #4, Gazcue, Santo Domingo, Rep. Dominicana.
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RNC: 1-24-02695-4

3M Electronics Materials Solutions Division
3M Puerto Rico
B7 Tabonuco Street, 1601
San Juan, PR 00968--3028

November 14, 2022

Dear sirs at the Central Electoral Board of the DR

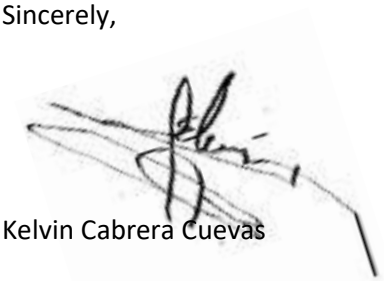
This missive is to attest that Metro Tecnología Metrotec SRL Company is an authorized distributor and installer of clean agent fire suppression systems using 3M™ Novec™ 1230 Fire Suppression Fluids, in the Dominican Republic.

As such they are authorized in the sale and installation of clean agent fire suppression systems using 3M™ Novec™ 1230 Fire Suppression Fluids.

Metro Tecnología Metrotec SRL Company has been trained and consults as a partner with the undersigned on a regular basis on the design, application, management and usage and installation of Fire Suppression Systems using 3M™ Novec™.

If there are any questions regarding the above, please feel free to contact me.

Sincerely,



Kelvin Cabrera Cuevas

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