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Building Codes Division
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AUTOPULSE® 542R AGENT RELEASING CONTROL UNIT

Data/Specifications

DESCRIPTION

The AUTOPULSE® 542R is a six zone FACP for single and dual hazard agent releasing applications. The AUTOPULSE 542R provides reliable fire detection, signaling and protection for commercial, industrial and institutional buildings requiring agent-based releasing. The AUTOPULSE 542R is compatible with System Sensor's i3 detectors which are conventional smoke detectors that can transmit a maintenance trouble signal to the FACP indicating the need for cleaning and a supervisory 'freeze' signal when the ambient temperature falls below the detector rating of approximately 45 °F (7.22 °C). In addition, the control panel is compatible with conventional input devices such as two-wire smoke detectors, four-wire smoke detectors, pull stations, waterflow devices, tamper switches and other normally-open contact devices. Refer to Device Compatibility Document for a complete listing of compatible devices.

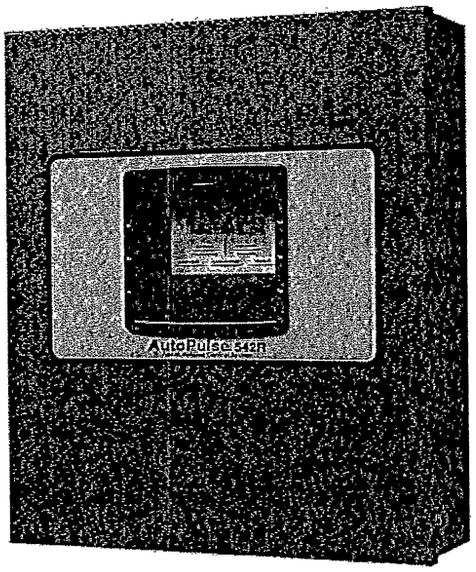
Four outputs are programmable as NACs (Notification Appliance Circuits) or releasing circuits. Three programmable Form-C relays (factory programmed for Alarm, Trouble and Supervisory) and 24 VDC special application resettable and non-resettable power outputs are also included on the main circuit board. The AUTOPULSE 542R supervises all wiring, AC voltage, battery charger and battery level.

Activation of a compatible smoke detector or any normally open fire alarm initiating device will activate audible and visual signaling devices, illuminate an indicator, display alarm information on the panel's LCD, sound the piezo sounder at the FACP, activate the FACP alarm relay and operate an optional module used to notify a remote station or initiate an auxiliary control function.

The AUTOPULSE 542R(E) releasing panel offers the same features as the AUTOPULSE 542R but allows connection to 220/240 VAC. Unless otherwise specified, the information in this data sheet applies to both the 110/120 VAC and 220/240 VAC versions of the panels.

FEATURES

- Designed for agent releasing standards NFPA 12, 12A, 12B and 2001
- Disable/Enable control per input zone and output zone
- Extensive transient protection
- Dual hazard operation
- Adjustable pre-discharge, discharge and waterflow delay timers
- Cross-zone (double-interlock) capability
- Six programmable Style B (Class B) IDCs (Initiating Device Circuit)
- System Sensor i³ series detector compatible
- Four programmable Style Y (Class B) output circuits – (special application power)
- Strobe synchronization
  - System Sensor
  - Wheelock
  - Gentex
  - Faraday
  - Amseco
- Three programmable Form-C relays
- 7.0 amps total 24 VDC output current
- Resettable and non-resettable output power
- Built-in Programmer
- Short circuit RAC supervision



007701

- ANN-BUS for connection to optional (up to eight total of any of the following):
  - ANN-80 Remote LCD Annunciator
  - ANN-I/O LED Driver
  - ANN-S/PG Printer Module
  - ANN-RLY Relay Module
  - ANN-LED Annunciator Module
- 80-character LCD display (backlit)
- Real-time clock/calendar with daylight savings time control
- History log with 256 event storage
- Piezo sounder for alarm, trouble and supervisory
- 24 volt operation
- Low AC voltage sense
- Outputs programmable for:
  - Releasing Circuits
- NACs programmable for:
  - Silence Inhibit
  - Auto-Silence
  - Strobe Synchronization
  - Selective Silence (horn-strobe mute)
  - Temporal or Steady Signal
  - Silenceable or Non-silenceable
  - Release Stage Sounder
- Automatic battery charger with charger supervision
- Optional Dress Panel DP-51050 (red)
- Optional Trim Ring TR-CE (red) for semi-flush mounting the cabinet
- Optional CAC-5X Class A Converter Module for Outputs and IDCs
- Optional 4XTM Municipal Box Transmitter Module
- Optional Digital Alarm Communicators (411, 411UD, 411UDAC)

FEATURES (Continued)

PROGRAMMING AND SOFTWARE:

- Custom English labels (per point) may be manually entered or selected from an internal library file
- Programmable Abort operation
- Three programmable Form-C relay outputs
- Pre-programmed and custom application templates
- Continuous fire protection during online programming at the front panel
- Program Check automatically catches common errors not linked to any zone or input point

USER INTERFACE:

- Integral 80-character LCD display with backlighting.
- Real-time clock/calendar with automatic daylight savings adjustments.
- ANN-Bus for connection to remote annunciators.
- Audible or silent walk test capabilities.
- Piezo sounder for alarm, trouble, and supervisory.

CONTROLS AND INDICATORS

LED INDICATORS

- FIRE ALARM (red)
- SUPERVISORY (yellow)
- TROUBLE (yellow)
- AC POWER (green)
- ALARM SILENCED (yellow)
- DISCHARGED (red)
- PRE-DISCHARGE (red indicator)
- ABORT (yellow indicator)

CONTROL BUTTONS

- ACKNOWLEDGE
- ALARM SILENCE
- SYSTEM RESET (lamp test)
- DRILL

AC Power – TB1

- **AUTOPULSE 542R:** 120 VAC, 50/60 Hz, 2.3 amps
- **AUTOPULSE 542R(E):** 240 VAC, 50 Hz, 1.15 amps
- **Wire size:** minimum #14 AWG (2.0 mm^2) with 600V insulation
- Supervised, nonpower-limited

Battery (sealed lead acid only) – J12:

- **Maximum Charging Circuit – Normal Flat Charge:** 27.6 VDC @ 1.4 amp Supervised, nonpower-limited
- **Maximum Charger Capacity:** 26 Amp Hour battery (two 18 Amp Hour batteries can be housed in the FACP cabinet. Larger batteries require separate battery box such as the BB-26 or BB-55).
- **Minimum Battery Size:** 7 Amp Hour

Initiating Device Circuits – TB4 and TB6

- Alarm Zones 1 – 5 on TB4
- Alarm Zone 6 on TB6
- Supervised and power-limited circuitry
- Style B (Class B) or Style Z (Class A) with optional converter module
- **Normal Operating Voltage:** Nominal 20 VDC
- **Alarm Current:** 15 mA minimum
- **Short Circuit Current:** 40 mA maximum
- **Maximum Loop Resistance:** 100 Ohms
- **End-of-Line Resistor:** 4.7K Ohms, 1/2 watt (Part No. 71252)
- **Standby Current:** 4 mA

Notification Appliance and Releasing Circuit(s) – TB5 and TB7

- Four output circuits
- Style Y (Class B) or Style Z (Class A) with optional converter module
- Special application power
- Supervised and power-limited circuitry
- **Normal Operating Voltage:** Nominal 24 VDC
- **Maximum Signaling Current:** 7.0 amps (3.0 amps maximum per NAC)
- **End-of-Line Resistor:** 4.7K Ohms, 1/2 watt (Part No. 71252)
- **Maximum Wiring Voltage Drop:** 2 VDC

Refer to the Device Compatibility Document for compatible listed devices.

Form-C Relays – Programmable – TB8

- Relay 1 (factory default programmed as Alarm Relay)
- Relay 2 (factory default programmed as fail-safe Trouble Relay)
- Relay 3 (factory default programmed as Supervisory Relay)
- Relay Contact Ratings:
  - 2 amps @ 30 VDC (resistive)
  - 2 amps @ 30 VAC (resistive)

Auxiliary Trouble Input – J6

The Auxiliary Trouble Input is an open collector circuit which can be used to monitor external devices for trouble conditions. It can be connected to the trouble bus of a peripheral, such as a power supply, which is compatible with open collector circuits.

Special Application Resettable Power – TB9

- **Operating Voltage:** Nominal 24 VDC
- **Maximum Available Current:** 500 mA – appropriate for powering 4-wire smoke detectors (see Note 1)
- Power-limited circuitry

Note 1: Total current for resettable power, nonresettable power and output circuits must not exceed 7.0 amps.

Special Application Resettable or Nonresettable Power – TB9

- **Operating Voltage:** Nominal 24 VDC
- **Maximum Available Current:** 500 mA (see Note 1)
- Power-limited circuitry
- Jumper selectable by JP31 for resettable or nonresettable power

PRODUCT LINE INFORMATION

AUTOPULSE 542R: Six zone, 24 volt Agent Release Control Panel (includes backbox, power supply, technical manual, and a frame & post operating instruction sheet) for single and dual hazard deluge and preaction applications.

AUTOPULSE 542R(E): Same as above but allows connection to 220/240 VAC.

CAC-5X: Class A Converter Module can be used to convert the Style B (Class B) Initiating Device Circuits to Style D (Class A) and Style Y (Class B) Output Circuits to Style Z (Class A).

Note: Two Class A Converter modules are required to convert all four Output Circuits and six Initiating Device Circuits.

4XTM: Transmitter Module provides a supervised output for local energy municipal box transmitter and alarm and trouble reverse polarity. It includes a disable switch and disable trouble LED.

- **ANN-80:** LCD Annunciator is a remote LCD annunciator that mimics the information displayed on the FACP LCD display. Recommended wire type is un-shielded.
- **ANN-LED:** Annunciator Module mounts in the DP-51050LED Dress Panel and provides three LEDs for each zone: Alarm, Trouble and Supervisory.
- **ANN-RLY:** Relay Module, which can be mounted inside the cabinet, provides 10 programmable Form-C relays.
- **ANN-S/PG:** Serial/Parallel Printer Gateway module provides a connection for a serial or parallel printer.
- **ANN-I/O:** LED Driver Module provides connections to a user-supplied graphic annunciator.

DP-51050: Dress panel (red) is available as an option. The dress panel restricts access to the system wiring while allowing access to the membrane switch panel.

DP-51050LED: Dress panel is available as an option. The dress panel restricts access to the system wiring while allowing access to the membrane switch panel. It also allows the installation of an optional ANN-LED annunciator module.

TR-CE: Trim-ring (red) is available as an option. The trim-ring allows semi-flushing mounting of the cabinet.

BB-26: Battery box, holds up to two 26 Amp Hour batteries and CHG-75.

BB-55: Battery box, houses two 55 Amp Hour batteries.

BAT Series Batteries

SYSTEM SPECIFICATIONS

SYSTEM CAPACITY

- Annunciators: 8

ELECTRICAL SPECIFICATIONS

- **AUTOPULSE 542R (FLPS-7 Power Supply):** 120 VAC, 50/60 Hz, 2.3 amps
- **AUTOPULSE 542R(E) (FLPS-7 Power Supply):** 240 VAC, 50 HZ, 1.15 amps
- **Wire Size:** Minimum 14 AWG (2.0 mm^2) with 600 V insulation, supervised, nonpower-limited

CABINET SPECIFICATIONS

Door: 19.26 in. (48.92 cm) high x 16.82 in. (42.73 cm) wide x 0.72 in. (1.82 cm) deep

Backbox: 19.00 in. (48.26 cm) high x 16.65 in. (42.29 cm) wide x 5.25 in. (13.34 cm) deep

Trim Ring (TR- CE): 22.00 in. (55.88 cm) high x 19.65 in. (49.91 cm) wide

SHIPPING DIMENSIONS

- Height: 20.00 in. (50.80 cm)
- Width: 22.50 in. (57.15 cm)
- Depth: 8.50 in. (21.59 cm)

TEMPERATURE AND HUMIDITY RANGES

This system meets NFPA requirements for operation at 32-120 °F (0-49 °C) and at a relative humidity 93% ± 2% RH (non-condensing) at 90 °F ± 3 °F (32 °C ± 2 °C). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 60-80 °F (15-27 °C).

NFPA STANDARDS

- NFPA 12 CO_2 Extinguishing Systems (High Pressure Only)
- NFPA 12A Halon 1301 Extinguising Systems
- NFPA 72 National Fire Alarm Code for Local Fire Alarm Systems and Remote Station Fire Alarm Systems (requires an optional Remote Station Output Module)
- NFPA 2001 Clean Agent Fire Extinguishing Systems

LISTINGS AND APPROVALS

The listings and approvals below apply to the basic AUTOPULSE 542R and AUTOPULSE 542R(E) control panels. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- UL: S4935
- ULC: Pending
- FM: Pending
- CSFM: Pending
- MEA: Approved

ORDERING INFORMATION

Part No.	Description
433607	AUTOPULSE 542R FACP, 120 VAC
433608	AUTOPULSE 542RE FACP, 220/240 VAC

ANSUL®

Detection and Control Components

AutoPulse

1451 Ionization Smoke Detector

Features

- Unique dual unipolar sensor
- Stable operation up to 1200 ft. per minute (6 meters per second) air velocities
- Removable cover for field cleaning
- Two visible LEDs "blink" in standby
- Sealed against dirt, insects, and back pressure
- Field metering of detector sensitivity
- Field adjustable sensitivity
- Built-in test switch
- Low standby current
- Built-in tamper-resistant feature
- Designed for direct surface or electrical box mounting
- 360° field viewing angle of the visual alarm LEDs
- Insect-resistant screening
- Easy lug-in of the head to base
- SEMS screws for easy wiring

Applications

The 1451 ionization smoke detectors are intended for use in commercial, industrial, and institutional buildings. The detectors are placed primarily in clean, indoor environments where early warning fire detection is required. The detectors are used in combination with an Ansul AUTOPULSE® Control System and an Ansul fire suppression system for automatic detection, alarm, equipment control, and fire suppression system release capabilities.

Description

The 1451 ionization smoke detector contains a unique dual source, dual unipolar chamber detection design which will sense the presence of smoke particles produced by fast combustion as well as slow smoldering fires. Additional key features include a blinking LED standby status indicator, an easily visible alarm indication and provide for convenient field test and metering.

The 1451 ionization smoke detector has two chambers: an outer sampling chamber and an inner balance chamber. Smoke or invisible combustion gases can freely penetrate the outer chamber, but the inner chamber is virtually closed to prevent easy entry. With both chambers ionized by a single radioactive source, a very small current flows in the circuit. The presence of visible smoke or invisible gases have a great influence upon the current flow in the outer chamber and will cause a change in the voltage ratio between the chambers. This difference is then amplified inside the detector and transmitted to the Ansul AUTOPULSE Control System to which it is connected. The LED indicator mounted on the detector will light steadily and any remote annunciators will activate at this time to indicate that the detector is in alarm.

Technical Information

Form A: ..... 2.0A at 30 VAC/DC

Form C: ..... 0.6A at 110 VDC, 2.0A at 30 VDC
1.0A at 125 VAC, 2.0A at 30 VAC

Stand-by Current: ..... 120 microamps

Sensitivity: ..... 1.9% nominal

Weight: ..... 0.5 lb. (277 g)

Size: ..... 3.2 in. High x 4.0 in. diameter
(81 mm x 102 mm)

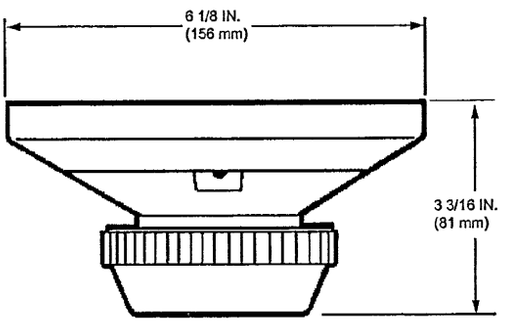
Construction: ..... Flame retardant white Noryl® plastic

Temperature: ..... 32 °F to 120 °F (0 °C to 49 °C)

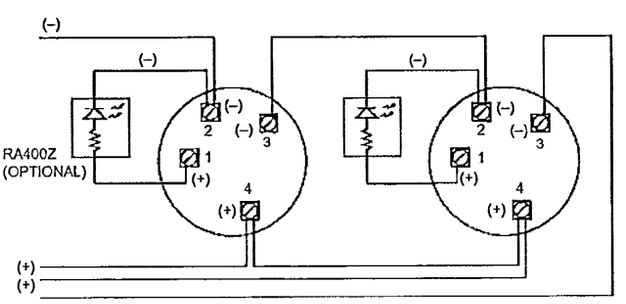
Humidity Range: ..... 10-93% RH (non-condensing)

Maximum Air Velocity: ..... 1200 feet per minute
(6 meters per second)

1451 IONIZATION SMOKE DETECTOR WITH BASE



B401B/B401BR-750 OPTIONAL NFPA CLASS "A" WIRING



Technical Information (Continued)

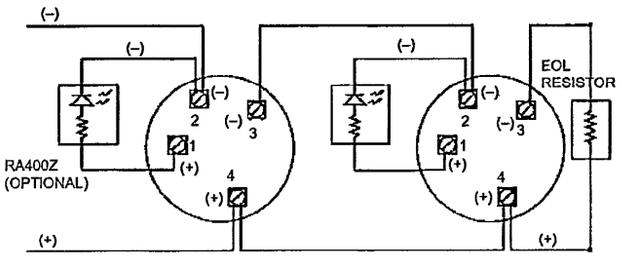
Base Model	Loop Type	Current Limit Resistor	Contact Type	Standby Voltage	Current Draw on Alarm
B401B	2-Wire	No	——	8.5-35 VDC	10-100 mA*
B401BR-750	2-Wire	Yes	——	17-32 VDC	10-39 mA
B402B	2/4 Wire	Yes	Form A/C	17-32 VDC	14-39 mA

* Limited by control unit

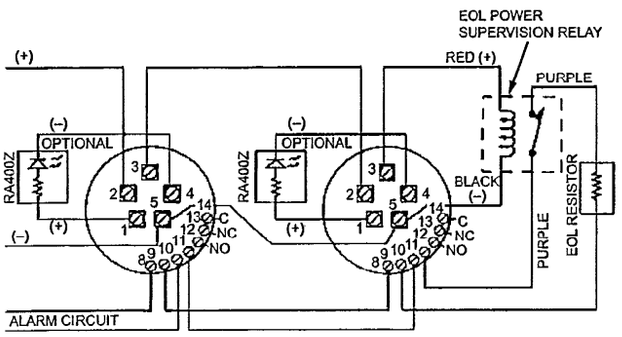
Detector Base/Control Unit Compatibility

Detector Base (Part No.)	AUTOPULSE 1000, 2000, 3000, 4000	AUTOPULSE FOUR	AUTOPULSE 442R, 442D	AUTOPULSE IQ-301 MMX-2
B401B (417996)	No	No	Yes	Yes
B401BR-750 (78997)	Yes	Yes	No	No
B402B (79011)	2 or 4 wire	2 or 4 wire	4-wire only	4-wire only

B401B BASE/B401BR-750 BASE WIRING DIAGRAM



1451 DETECTOR W/B402B BASE WIRING DIAGRAM



Mounting Guidelines

The detector bases are designed for surface mounting. The detector head can be inserted or removed from the base without disrupting the wiring connections.

All detector bases can be mounted to a 3 1/2 in. octagon, 4 in. octagon, or a 4 in. square outlet box.

Listings and Approvals*

UL. S911
California State Fire Marshal (CSFM). 7271-1209:126
Factory Mutual Research Corporation (FMRC). . . 0Q1A0.AY
MEA. 427-91-E

* Listings and Approvals are under SYSTEM SENSOR

Ordering Information

Part No.	Description	Shipping Weight lb.	(kg)
78996	1451, Ionization Detector	1	(0.4)
417996	B401B Standard Base	0.5	(0.2)
78997	B401BR-750 Standard Base	0.5	(0.2)
79011	B402B Relay Base	0.5	(0.2)
73887	MOD400R Sensitivity Tester	0.5	(0.2)
417671	RA400Z Remote LED Annunciator	2	(0.9)
417675	M02-04 Test Magnet	0.5	(0.2)
417699	EOL, Power Supervision Relay	1	(0.4)

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ANSUL®

Detection and Control Components

AutoPulse

2151 Photoelectric Smoke Detector

Features

- Unique optical sensing chamber
- Built-in signal processing
- 3.0% nominal sensitivity
- Removable cover for field cleaning
- Visible LED "blinks" in standby
- Sealed against dirt, insects, and back pressure
- Field metering of detector sensitivity
- Built-in magnetic test switch
- Low standby current
- Built-in tamper-resistant feature
- Designed for direct surface or electrical box mounting
- 360° Field viewing angle of the visual alarm LEDs
- Insect-resistant screening
- Easy plug-in of the head to base
- SEMS screws for easy wiring
- Air velocity up to 3000 feet per minute (914 meters per minute)

Applications

Photoelectric detectors are recommended in areas where slow smoldering fires are likely to ignite. In areas where small combustion particles are usually present from fork-lift trucks, cooking stoves, etc., they are less likely than ionization detectors to produce false alarms. The detectors are used in combination with an Ansul AUTOPULSE® Control System and an Ansul fire suppression system for automatic detection, alarm, equipment control, and fire suppression system release capabilities.

Description

The 2151 photoelectric smoke detector contains a unique optical sensing chamber designed to sense the presence of smoke particles produced by a wide range of combustion sources and meet the performance criteria designed by UL 268. An integrated circuit incorporates signal processing to reduce false alarms and sample/hold circuitry to provide easy field metering of sensitivity.

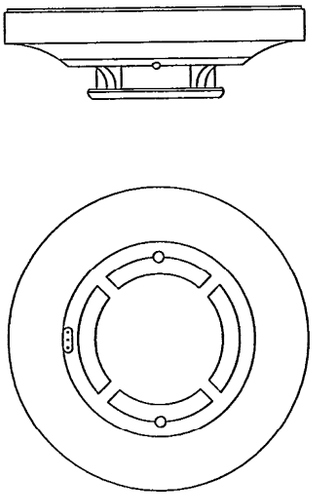
The 2151 photoelectric detector incorporates the light scatter principle within its sensing chamber and solid-state circuitry allowing it to react to either smoldering or flaming fires.

The high-impedance circuitry of the detector allows a single loop to power multiple detectors with very low power consumption. Two externally-mounted LED indicators are provided which will blink as long as the detector is powered and will light steadily when the detector is in alarm.

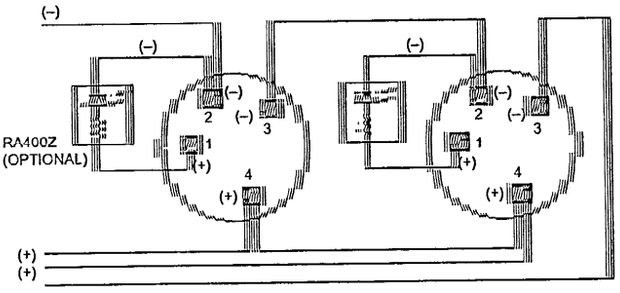
Technical Information

Stand-by Current: ..... 85 microamps
Sensitivity: ..... 3.0% nominal
Weight: ..... 0.5 lb. (277 g)
Size: ..... 1.7 in. High x 4.0 in. diameter (84 mm x 102 mm)
Construction: ..... Flame retardant white thermo plastic
Temperature: ..... 32 °F to 120 °F (0 °C to 49 °C)
Humidity Range: ..... 10-93% RH (non-condensing)
Maximum Air Velocity: ..... 3000 feet per minute (15 meters per second)

2151 PHOTOELECTRIC SMOKE DETECTOR WITH BASE



B110LP OPTIONAL NFPA CLASS "A" WIRING



Technical Information (Continued)

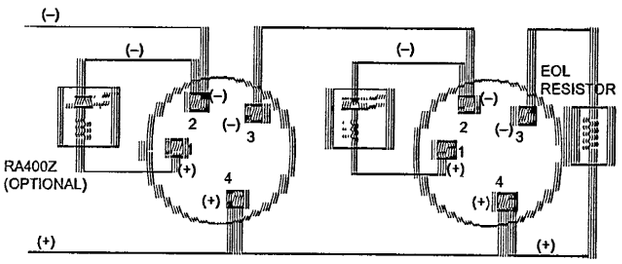
Base Model	Loop Type	Current Limit Resistor	Contact Type	Standby Voltage	Current Draw on Alarm
B110LP	2-Wire	No	——	12-24 VDC	10-100 mA*
B401	2-Wire	No	——	12-24 VDC	10-100 mA*
B401B	2-Wire	No	——	8.5-35 VDC	10-100 mA*
B401BR-750	2-Wire	Yes	——	17-32 VDC	10-39 mA
B402B	2/4 Wire	Yes	Form A/C	17-32 VDC	14-39 mA

* Limited by control unit

Detector Base/Control Unit Compatibility

Detector Base (Part No.)	AUTOPULSE 1000, 2000, 3000, 4000	AUTOPULSE FOUR	AUTOPULSE 442R, 442D	AUTOPULSE IQ-301 MMX-2
B110LP (430025)	No	No	Yes	Yes
B401 (423026)	No	No	Yes	Yes
B401B (417996)	No	No	Yes	Yes
B401BR-750 (78997)	Yes	Yes	No	No
B402B (79011)	2 or 4 wire	2 or 4 wire	4-wire only	4-wire only

B110LP BASE WIRING DIAGRAM



Mounting Guidelines

The detector bases are designed for surface mounting. The detector head can be inserted or removed from the base without disrupting the wiring connections.

All detector bases can be mounted to a 3 1/2 in. octagon, 4 in. octagon, or a 4 in. square outlet box.

Listings and Approvals*

UL. S911

California State Fire Marshal (CSFM). 7271-1209:159

Factory Mutual Research Corporation (FMRC) . . . Approved

MEA. 205-94-E

* Listings and Approvals are under SYSTEM SENSOR

Ordering Information

Part No.	Description	Shipping Weight lb.	(kg)
430023	2151, Photoelectric Detector	1	(0.4)
430025	B110LP Standard Base	0.5	(0.2)
430026	B401 4 in. Dia Base	0.5	(0.2)
428138	F110 Trim Ring, Low Profile	0.5	(0.2)
73887	MOD400R Sensitivity Tester	0.5	(0.2)
417671	RA400Z Remote LED Annunciator	2	(0.9)
417675	M02-04 Test Magnet	0.5	(0.2)
417699	EOL, Power Supervision Relay	1	(0.4)

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AutoPulse

Electric Manual Pull Station

Features

- UL Listed/FM Approved
- Approved for ADA
- Dual action
- Die-cast metal construction
- Terminal block
- Optional auxiliary contacts
- Flush mounts on single gang box
- Surface mount back box available
- Weatherproof back box available
- High-gloss red enamel finish
- Customized labels
- Keyed to match AUTOPULSE control units

Applications

The Electric Manual Pull Station is a cost-effective, feature-packed, non-coded manual fire alarm pull station. It was designed to meet multiple applications with the installer and end-user in mind.

The pull station provides the AUTOPULSE 442R, AUTOPULSE 442D, AUTOPULSE IQ-301 and AUTOPULSE IQ-396X with an alarm initiating input signal. Its innovative design, durable construction, and multiple mounting options make the pull station simple to install, maintain, and operate.

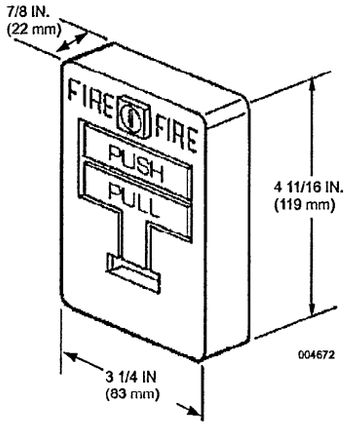
Description

The Electric Manual Pull Station is a high quality, die-cast metal dual action fire alarm pull station available with a SPST, DPST or DPDT switch, with terminal strip connections. The contacts are rated for 1 Amp at 30 VDC. Gold plating on the contacts avoid the risk of corrosion. All models in the series have been tested by UL for compliance to the latest requirements of the American with Disabilities Act (ADA).

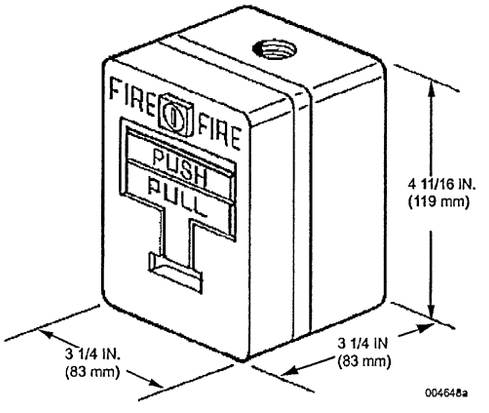
The Electric Manual Pull Station is operated by pushing in the top bar and pulling the handle on the front of the station as far down as it will go; at which point the handle locks into place and is easily visible from up to 50 feet. Opening the station with the key, placing the handle in the normal upright position and re-locking the station resets the pull station.

The addressable ready pull station comes with a bracket on the back for securing the FMM-101 Mini Monitor Module. The terminal block provides clamping plates for easy connection to the SLC loop and N. O. switch contacts. An end-of-line resistor for the AUTOPULSE IQ-301 and AUTOPULSE IQ-396X is factory installed across the switch contacts.

STANDARD PULL STATION



WEATHERPROOF PULL STATION



Abort Switch

Features

- Stackable, screw-terminal, contact blocks
- Compatible with AUTOPULSE® control units
- Surface-mount assemblies listed by Underwriters Laboratories, Inc.
- Components mounted on stainless steel switch plate

Applications

The Abort Switch is used to momentarily interrupt the release circuit signal when the control unit is in the alarm condition. As long as the abort pushbutton is held in, the fire suppression system will not release. **(Note:** When the control unit is programmed for IRI compliance, the abort will not be effective after pre-discharge.) When the pushbutton is released, the release circuit is activated (unless the control unit has been reset to the non-alarm condition).

Description

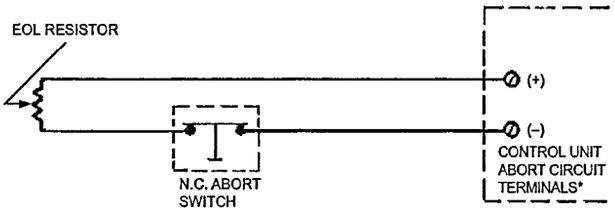
The Abort Switch assembly consists of a momentary-contact pushbutton switch, normally-open contact block, normally-closed contact block, and stainless steel switch plate with silk-screened label. Surface-mount assemblies include a single-gang weather-proof box with three 1/2 in. I.P.S. threaded conduit outlets and gasket.

The stackable, screw-terminal contact blocks are rated for 28 VDC @ 1.1 amp make/break or 6 amp continuous carry.

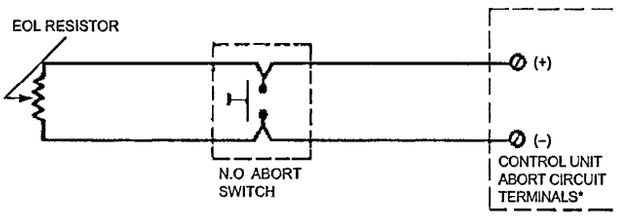
Listings and Approvals

The switch is UL listed (S3623) when installed in the surface-mount box (with gasket) that is provided with the surface-mount assembly.

TYPICAL WIRING DIAGRAMS
ABORT SWITCH (SERIES)



ABORT SWITCH (PARALLEL)



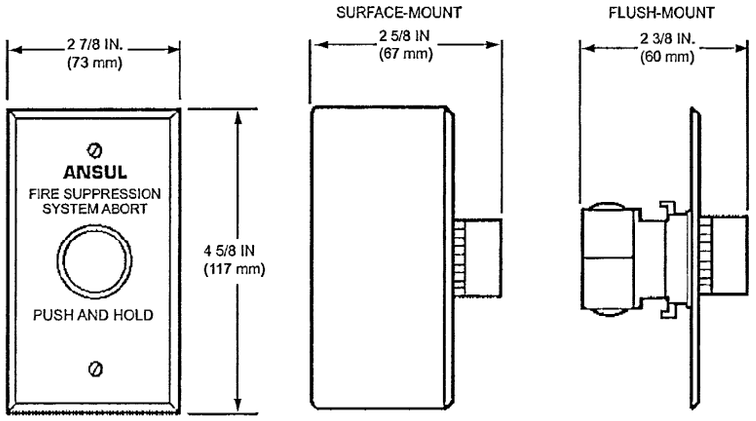
* SEE CONTROL UNIT MANUAL FOR SPECIFIC WIRING REQUIREMENTS.

Ordering Information

Part No.	Description	Shipping Weight lb.	(kg)
76494	Abort Switch, Surface-Mount	1.0	(0.45)
76495	Abort Switch, Flush-Mount	1.0	(0.45)
76485	Extra Contact Block, N.C.	0.25	(0.11)
76486	Extra Contact Block, N.O.	0.25	(0.11)

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MOUNTING DIMENSIONS



ANSUL INCORPORATED, ONE STANTON STREET, MARINETTE, WI 54143-2542 715-735-7411 Form No F-95111 ©1995 Ansul Incorporated Litho in U S A

AutoPulse

Electronic Sounder with Strobe

Description

The electronic sounder with strobe provides either independent or simultaneous audible and visual alarm indication. The electronic sounder is UL listed for primary or secondary signaling and the strobe is suitable for primary signaling in public mode for life safety applications.

The strobe complies with the Americans with Disabilities Act (ADA) and the demanding requirements of the UL 1971 Standard for the Hearing Impaired. Both 15 and 75 candela strobes are available to meet the light intensity requirements for the space being protected.

One of eight different warning tones can be selected during installation by arranging four programming switches. The electronic sounder/strobe mounts directly to a 4 in. (102 mm) square back box with an optional semi-flush plate.

Screw terminations provide secure attachment for field wiring of up to 12 AWG wire size.

Technical Information

Input Terminals: ..... 18 to 12 AWG

Size: ..... 5.125 in. x 5.125 in. x 4.625 in. (130 mm x 130 mm x 117 mm)

Weight: ..... 0.9 lb.

Color: ..... Red

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

Mounting — Surface: ..... 4 in. x 4 in. x 1.5 in. (102 mm x 102 mm x 38 mm) standard back box

Semi-flush: ... 4 in. x 4 in. x 1.5 in. (102 mm x 102 mm x 38 mm) standard back box with SFP mounting plate (order separately)

Voltage Range: ..... 20 – 31 VDC

Strobe Current (15 Candela)

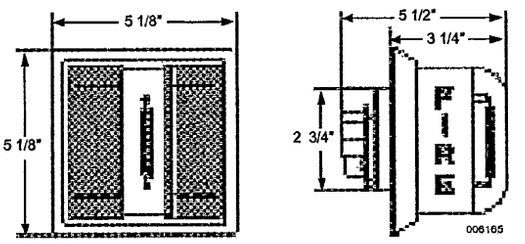
Operating: ..... 74 mA – regulated
74 mA – FWR unfiltered

Strobe Current (75 Candela)

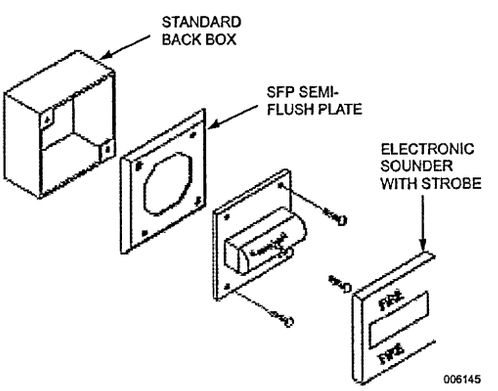
Operating: ..... 200 mA – regulated
200 mA – FWR unfiltered

Sounder Current: ... Dependent on tone selected, see chart

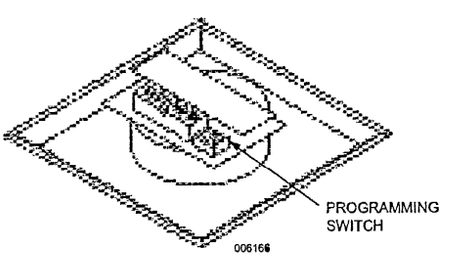
DIMENSIONS



MOUNTING WITH OPTIONAL SEMI-FLUSH PLATE



TONE SELECTION SWITCHES



Alarm Bell – 6 or 10 Inch

Features

- High sound output with low current draw
- Low frequency aluminum shells for better audibility through walls, doors, and other structures
- Integral RFI suppression to minimize induced noise on the alarm circuit
- Mounting options for surface, semi-flush, outdoor, and concealed conduit installation
- Built-in trimplate makes semi-flush mounting simpler and less expensive
- Screw terminals permit fast in-out field wiring of 22-12 AWG wire
- Polarized for DC supervision of alarm circuit
- Operate on filtered or unfiltered DC

Description

Ansul alarm bells may be used to alert the occupant before and/or during actuation of the Ansul automatic fire suppression system and/or a general fire alert.

The Ansul motor driven alarm bell is designed to meet the special requirements of fire alarm/release systems where low power consumption and high sound output is essential. Due to its low current drain, high level output sound can be achieved with multiple units on a single 2-wire output circuit.

The bells are constructed of high quality materials to ensure reliability and long life. The basic mechanism, gong and accessories have a baked, red enamel finish. Holes are located to mount to a standard 4 in. (102 mm) square outlet box. A weatherproof back box is available for outdoor use.

Technical Information

Input Terminals: . . . . . 22 to 12 AWG

Bell Sizes: . . . . . 6 in. (152 mm) and 10 in. (254 mm)

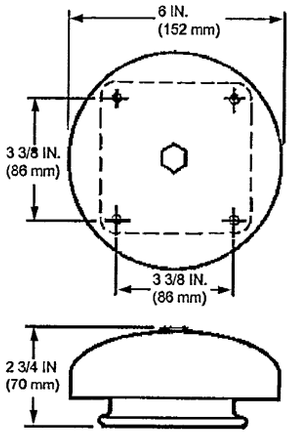
Voltage Rating: . . . . . 18 – 31 VDC

Current Draw: . . . . . 30 mA

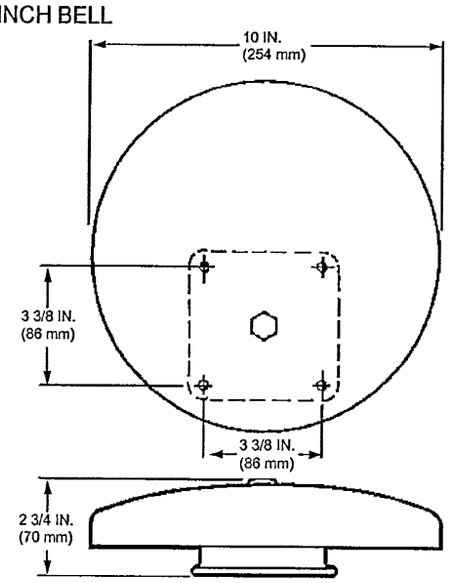
Decibel Level: . . . . . 92 dBA @ 10 ft. (3048 mm)

Operating Temperature: . . –31 °F to 150 °F (–35 °C to 66 °C) @ 95% humidity (when used with WBB, weatherproof back box)

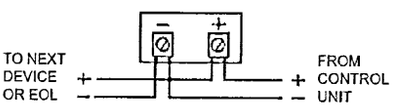
6 INCH BELL



10 INCH BELL



WIRING FOR BELL



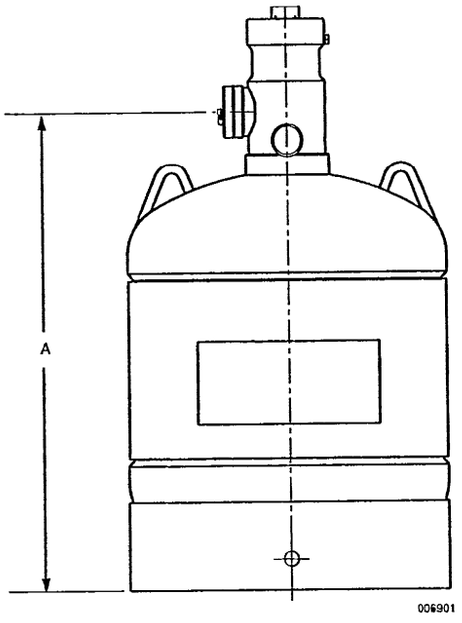
SAPPHIRE SUPPRESSION SYSTEMS

Agent Tank Shipping Assembly

The agent tank assemblies are manufactured in accordance with DOT 4BW450 and consist of a tank fitted with a valve and internal siphon tube. Eight partial filled tank sizes are available. A nameplate is adhered to the tank displaying the agent weight and gross weight. Tanks are superpressurized with dry nitrogen to 360 psi (25 bar) at 70 °F (21 °C). All tanks are available in multiple fill increments.

Note: Quantity of agent will have to be specified on customer P.O. when ordering factory filled tank shipping assemblies.

Also, when low pressure switch and liquid level indicator installed options are required, they must be specified when ordering.



Component	Material	Approvals
Tank	Steel	DOT4BW450
Valve	Brass	
Valve/Tank Assembly		UL Listed ULC Listed FM Approved

Shipping Assembly Part No./TC	Nominal Tank Size lbs.	(kg)	Agent Quantity lbs.	(kg)	Approximate Empty Weight lbs.	(kg)	Dimension "A" in.	(cm)	Diameter in.	(cm)	Valve Size
570635	20	(9.1)	10 to 21	(4.5 to 9.5)	33	(15)	12	(30.4)	10	(25.4)	1 in.
570633	50	(22.7)	20 to 46	(9.1 to 21)	41	(18.6)	19.8	(50.2)	10	(25.4)	1 in.
570634	90	(40.8)	37 to 88	(17 to 40)	57.5	(26)	32.8	(83.3)	10	(25.4)	1 in.
570638	140	(63.5)	58 to 138	(26 to 62.6)	108	(49)	23.5	(59.6)	16	(40.6)	2 in.
570639/570657	280	(127)	116 to 280	(52.6 to 127)	158	(71.7)	40.2	(102)	16	(40.6)	2 in.
570640/570652	390	(177)	161 to 388	(73 to 176)	198	(90)	53.3	(135)	16	(40.6)	2 in.
570641/570653	450	(204)	194 to 459	(88 to 204)	233	(106)	64.3	(163)	16	(40.6)	2 in.
570586/570654	850	(386)	375 to 851	(170 to 386)	456	(207)	57.7	(146.6)	24	(61)	3 in.

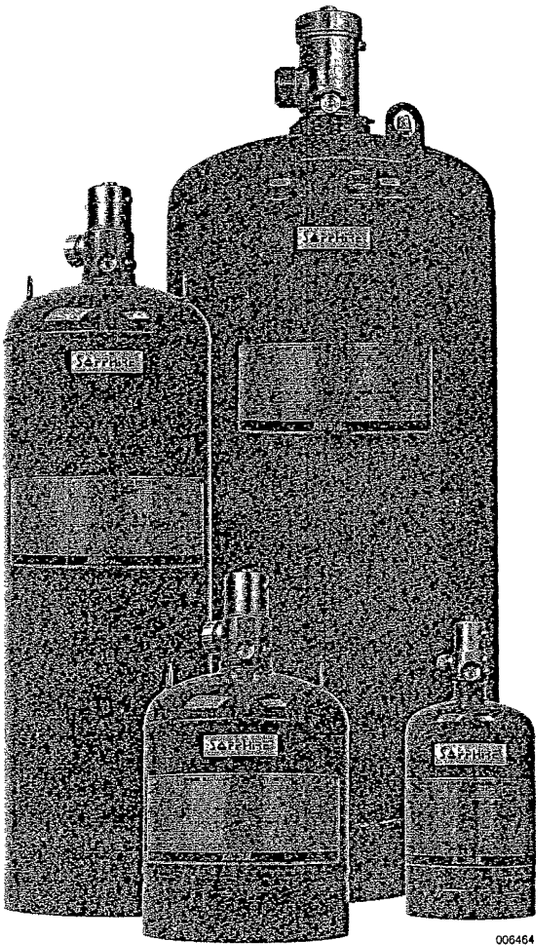
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ANSUL®

CLEAN AGENT FIRE SUPPRESSION SYSTEMS DATA SHEET

SAPPHIRE™ ENGINEERED SYSTEM

SAPPHIRE™ SUPPRESSION SYSTEMS



FEATURES

- UL/ULC Listed
- FM Approved
- Effective Total Flooding on Class A, B, and C Fires
- Clean Agent Suitable for Protection of High-Value Assets
- Long-Term, Sustainable Alternative To Halon, HFCs and PFCs

APPLICATION

The SAPPHIRE™ Engineered System utilizes 3M™ Novec™ 1230 Fire Protection Fluid as the suppression agent. Novec 1230 fluid can effectively be applied in total flooding fire suppression applications in the following areas:

- Data Processing Centers
- Tape Storage
- Vaults
- All normally occupied or unoccupied electronic areas where equipment is either very sensitive or irreplaceable
- Telecommunications including Cellular sites and Switching Centers
- Military Systems including Combat Vehicles and Marine Engine Rooms
- Transportation including Merchant Marine Vessels and Mass Transit Vehicles
- Recreation including Pleasure Craft and Race Cars

ENVIRONMENTAL IMPACT

The SAPPHIRE Clean Agent Fire Suppression System utilizes 3M Novec 1230 Fire Protection Fluid. This fluid has 0.0 ozone depletion potential, an atmospheric lifetime of just five days, and a global warming potential of 1.0. Novec 1230 fluid is registered with the U.S. EPA under TSCA and European ELINCS. It has met the requirements of registration under SNAP (Significant New Alternatives Policy) and is approved for use as an alternative to Halon 1301 for total flooding applications in occupied spaces.

DESCRIPTION

The Ansul SAPPHIRE Engineered System is an automatic, fixed nozzle, fire suppression system using 3M Novec 1230 Fire Protection Fluid for Class A, B, and C fires.

The system is designed and installed in accordance with the National Fire Protection Association (NFPA) Standard 2001, "Clean Agent Fire Extinguishing Systems." It is listed by Underwriters Laboratories, Inc. (UL), Underwriters of Canada (ULC), and approved by Factory Mutual (FM).

The system is capable of automatic detection and actuation and/or remote manual actuation.

The detection portion of the fire suppression system allows for automatic detection by means of the AUTOPULSE Control System. Several different detection options are available.

Exposure to Novec 1230 fluid at design concentrations up to 10% (NOAEL) is not hazardous to health. Refer to NFPA 2001, Section 1-6 "Safety," for exposure requirements. As with halons, the EPA and the National Fire Protection Association recommend that unnecessary exposure to any agent be avoided and that personnel evacuate protected areas as quickly as possible to avoid the decomposition products of the fire.

A system installation and maintenance manual is available containing information on system components and procedures concerning design, operation, inspection, maintenance, and recharge.

The system is installed and serviced by authorized distributors that are trained by the manufacturer.

Basic Use -- The SAPPHIRE Engineered Clean Agent Fire Suppression System is particularly useful for suppressing fires in hazards where an electrically non-conductive medium is essential or desirable; where clean up of other agents present a problem; or where the hazard is normally occupied and requires a non-toxic agent.

ANSUL®

EXTINGUISHING AGENT DATA SHEET

3M™ NOVEC™ 1230 FIRE PROTECTION FLUID

SAPPHIRE™ SUPPRESSION SYSTEMS

FEATURES

- UL/ULC listed as a component of the SAPPHIRE™ Suppression System
- Effective, total flooding performance on Class A, B, and C fires
- Long-term, sustainable alternative to Halons, HFCs and PFCs
- Clean agent suitable for protection of high-value assets

DESCRIPTION

3M™ NOVEC™ 1230 Fire Protection Fluid, referenced as FK-5-1-12 in NFPA 2001 and ISO 14250, is a fluorinated ketone (or fluoroketone) with a chemical structure of $CF_3CF_2C(O)CF(CF_3)_2$. It is a clear, colorless, odorless, liquid that is super-pressurized with nitrogen and stored in high-pressure cylinders as part of a SAPPHIRE Suppression System.

APPLICATIONS

Although stored in liquid form, NOVEC 1230 fluid will turn to a gas upon discharge making it an effective total flooding agent for a variety of hazards. As a clean agent, it leaves no residue behind and will not affect sensitive high-value electronics. Typical applications include:

- Telecommunication switch rooms
- Computer and electronic control rooms
- Hazards aboard ships
- Critical military applications

ENVIRONMENTAL IMPACT

NOVEC 1230 fluid has 0.0 ozone depletion potential, an atmospheric lifetime of just five days, and a global warming potential of 1.0. NOVEC 1230 fluid is registered with the U.S. EPA under TSCA (Toxic Substances Control Act) and ELINCS (European List of Notified Chemical Substances). It has met the requirements of registration under SNAP (Significant New Alternatives Policy) and is approved for use as an alternative to Halon 1301 for flooding applications in occupied spaces.

PERFORMANCE

NOVEC 1230 fluid suppresses fires via its cooling effect. It has been tested and listed at a design concentration of 4.2% (Class A/C hazards) and 5.85% minimum (Class B hazards) in conjunction with a SAPPHIRE total flooding system. With the NOAEL (No Observable Adverse Effect Level) measured at 10%, NOVEC 1230 fluid provides a substantial margin of safety in occupied spaces.

APPROVALS

NOVEC 1230 Fire Protection Fluid complies with NFPA 2001: *Standard for Clean Agent Fire Extinguishing Systems.* It is listed by Underwriters Laboratories (UL) and Underwriters Laboratories of Canada (ULC) as a component of the SAPPHIRE™ Suppression System. Containers meet the applicable U.S. Department of Transportation (DOT) specifications.

PHYSICAL PROPERTIES

Chemical formula	$CF_3CF_2C(O)CF(CF_3)_2$
Molecular weight	316.04
Boiling point @ 1 atm	49.2 °C (120.6 °F)
Freezing point	–108 °C (–162.4 °F)
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, 1 atm	0.0733 m^3/kg (1.175 ft^3/lb)
Liquid viscosity @ 0 °C/25 °C	0.56/0.39 centistokes
Heat of vaporization @ BP	88.1 kJ/kg (37.9 BTU/lb)
Solubility of H_2O in NOVEC 1230 liquid	<0.001% by wt.
Vapor pressure @ 25 °C	0.40 bar (5.85 psig)
Dielectric strength relative to N_2 @ 25 °C	2.3

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ANSUL INCORPORATED
ONE STANTON STREET
MARINETTE, WI 54143-2542
715-735-7411

Form No. F-2003127

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SAPPHIRE™
SUPPRESSION SYSTEMS

Warning Signs

Two warning signs are available for warning personnel that the space is protected by a SAPPHIRE system and no one should enter after a discharge without being properly protected. Each sign is made of aluminum and contains four mounting holes for ease of installation.

Component	Material	Approvals
Warning Sign	Aluminum	UL Listed ULC Listed FM Approved

Shipping Assembly Part No.	Description
570580	Warning Sign
570581	Agent Discharge Warning Sign



006894



006895

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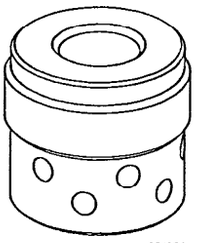
Discharge Nozzles

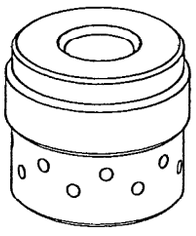
The discharge nozzles are available in a 180° and 360° pattern and are designed to uniformly distribute the Novec™ 1230 agent throughout the hazard area.

The 180° nozzle has seven ports and the 360° nozzle has sixteen ports. Six sizes of nozzles are available, 1/2 through 2 in.

The hydraulic flow program will determine the nozzle size and orifice size required.

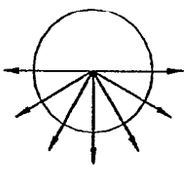
Note: When ordering nozzles, orifice size must be specified when ordered.


004824


004823

Component	Material	Threads	Approvals
1/2 in. Nozzle 3/4 in. Nozzle 1 in. Nozzle 1 1/4 in. Nozzle 1 1/2 in. Nozzle 2 in. Nozzle	Brass	1/2 in. NPT 3/4 in. NPT 1 in. NPT 1 1/4 in. NPT 1 1/2 in. NPT 2 in. NPT	UL Listed ULC Listed FM Approved

Shipping Assembly Part No.	Description
570515	1/2 in Nozzle – 180°
570516	3/4 in. Nozzle – 180°
570517	1 in. Nozzle – 180°
570518	1 1/4 in. Nozzle – 180°
570519	1 1/2 in. Nozzle – 180°
570520	2 in. Nozzle – 180°
570602	1/2 in. Nozzle – 360°
570603	3/4 in. Nozzle – 360°
570604	1 in. Nozzle – 360°
570605	1 1/4 in. Nozzle – 360°
570606	1 1/2 in. Nozzle – 360°
570607	2 in. Nozzle – 360°


180° NOZZLE PATTERN


004840
360° NOZZLE PATTERN

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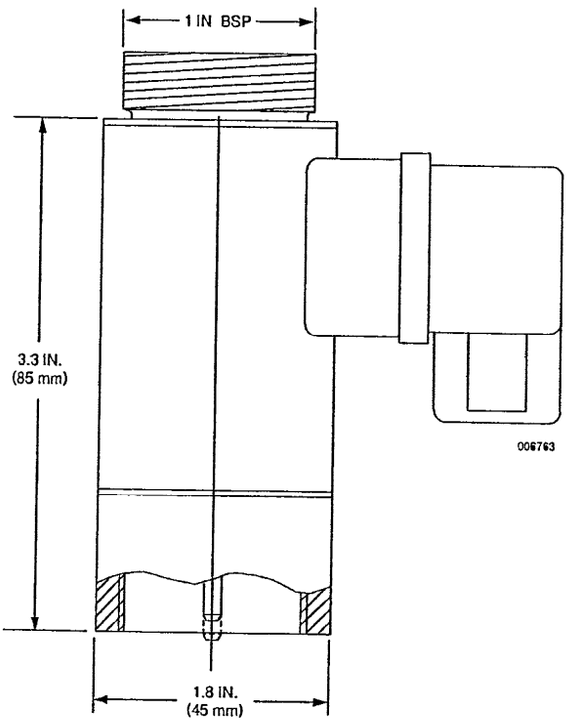
Electric Actuator – 24 VDC

The 24 VDC electric actuator is required to electrically actuate the tank valve. An electric signal is required from the AUTOPULSE Control panel which operates the solenoid in the actuator. This causes the actuator to open the tank valve and discharge the agent. On multiple tank systems, only one actuator is required, on the master valve. The remaining tanks will be actuated pneumatically through 1/4 in. stainless steel hose and a pneumatic actuator installed on the top of each tank valve.

The actuator draw is 0.2A.

Note: Composite cap attached to actuator is used as the reset tool. To reset actuator, put cap in place and turn knurled swivel coupling until cap threads are completely engaged. A small "click" will be heard while resetting.

▸ **Note:** Actuator has a 10-year shelf life.



Component	Material	Thread Type	Approvals
Electric Actuator	Body: Steel Swivel Nut: Brass Actuation Pin: Stainless Steel	1 in. BSPP	UL Listed ULC Listed FM Approved

Shipping Assembly Part No.	Description
570537	Electric Actuator

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SAPPHIRE™
SUPPRESSION SYSTEMS

Sapphire™ Designer Program
UL: EX4510 FM: 3014140
Project: SIMPLEXGRINNELL
File Name: aurora health.FLC

System Acceptance

System Discharge Time: 9.3 seconds
Percent Agent In Pipe: 16.5%
Percent Agent Before First Tee: 14.7%

Enclosure Number: 1
Enclosure Name: is computer room

Minimum Design Concentration: 5.000%
Adjusted Design Concentration: 5.042%
Predicted Concentration: 5.043%
Maximum Expected Agent Concentration: 5.043% (At 70 F)

Nozzle	Minimum Agent Required	Adjusted Agent Required	Predicted Agent Delivered	Nozzle Pressure (Average)
E1-N1	109.1 lbs	110.0 lbs	110.0 lbs	128 psig
E1-N2	109.1 lbs	110.0 lbs	110.0 lbs	128 psig

Calculation Date/Time: Thursday, May 29, 2008, 9:43:25 AM
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SAPPHIRE™
SUPPRESSION SYSTEMS

Sapphire™ Designer Program
UL: EX4510 FM: 3014140
Project: SIMPLEXGRINNELL
File Name: aurora health.FLC

Consolidated Report

Customer Information

Company Name: MEDICAL CENTER OF AURORA
Address: 1501 SOUTH POTOMAC STREET
AURORA, CO 80012

Phone:
Contact:
Title:

Project Data

Project Name: SIMPLEXGRINNELL
Designer: ROGER PRICE
Number:
Account:
Location: DENVER, CO 80216
Description: IS COMPUTER ROOM

Calculation Date/Time: Thursday, May 29, 2008, 9:43:25 AM
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SAPPHIRE

Consolidated Report
Enclosure Information

Elevation:	5435 ft (relative to sea level)
Atmospheric Correction Factor:	0.82

Enclosure Number:	1
Name:	is computer room
Enclosure Temperature...	
Minimum:	70 F
Maximum:	70 F
Maximum Concentration:	5.043 %
Design Concentration...	
Adjusted:	5.042 %
Minimum:	5.000 %
Minimum Agent Required:	218.1 lbs
Width:	0.0 ft
Length:	0.0 ft
Height:	0.0 ft
Volume:	5832.0 cubic ft
Non-permeable:	0.0 cubic ft
Total Volume:	5832.0 cubic ft
Adjusted Agent Required:	220.0 lbs
Number of Nozzles:	2

Calculation Date/Time: Thursday, May 29, 2008, 9:43:25 AM
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SAPPHIRE

Consolidated Report
Agent Information

Agent: Novec / Propellant N2
(Novec is a trademark of 3M)

Adjusted Agent Required:	220.0 lbs
Container Name:	280 lb Cylinder Assemby
Container Part Number:	570639
Number of Main Containers:	1
Number of Reserve Containers:	0
Manifold:	No Manifold
Starting Pressure:	360 psig
Pipe Take Off Direction:	Horizontal
Agent Per Container:	220.0 lbs
Fill Density:	58.9 lbs / cubic ft
Container Empty Weight:	158.3 lbs
Weight, All Containers + Agent:	378.3 lbs
Floor Area Per Container:	1.40 square ft
Floor Loading Per Container:	271 lbs / square ft

Pipe Network

Part 1 - Pipe

			Pipe			
Description	Start	End	Type	Diameter	Length	Elevation
Main Cyl. X 1	0	1		2 in	3.35 ft	3.35 ft
Pipe	1	2	40T	2 in	0.50 ft	0.00 ft
Pipe	2	3	40T	2 in	10.00 ft	10.00 ft
Pipe	3	4	40T	1 in	3.00 ft	0.00 ft
Pipe/E1-N2	4	5	40T	1 in	0.25 ft	-0.25 ft
Pipe	3	6	40T	1 in	3.00 ft	0.00 ft
Pipe/E1-N1	6	7	40T	1 in	0.25 ft	-0.25 ft

Part 2 - Equivalent Length

Start	End	90	45	Thru	Side	Union	Other	Added	Total

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Part 2 - Equivalent Length

Start	End	90	45	Thru	Side	Union	Other	Added	Total
0	1	0	0	0	0	0		0.00 ft	35.0 ft
1	2	0	0	0	0	0		0.00 ft	0.5 ft
2	3	1	0	0	0	0		0.00 ft	15.5 ft
3	4	0	0	0	1	0		0.00 ft	8.7 ft
4	5	1	0	0	0	0		0.00 ft	3.1 ft
3	6	0	0	0	1	0		0.00 ft	8.7 ft
6	7	1	0	0	0	0		0.00 ft	3.1 ft

Part 3 - Nozzles

Start	End	Flow	Name	Size	Type	Nozzle Area
0	1	220.0 lbs				
1	2	220.0 lbs				
2	3	220.0 lbs				
3	4	110.0 lbs				
4	5	110.0 lbs	E1-N2	1 in	7 Port - BR	0.4057 square in
3	6	110.0 lbs				
6	7	110.0 lbs	E1-N1	1 in	7 Port - BR	0.4057 square in

Parts Information

Total Agent Required: 220.0 lbs
Container Name: 280 lb Cylinder Assemby (Part: 570639)
Number Of Containers: 1
Field1

Nozzle	Type	Diameter	Nozzle Area	Part Number
E1-N1	7 Port - BR	1 in	0.4057 square in	570517
E1-N2	7 Port - BR	1 in	0.4057 square in	570517

Nozzle	Drill Diameter	Drill Size
E1-N1	0.2717 inches	6.90 mm
E1-N2	0.2717 inches	6.90 mm

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Pipe:	Type	Diameter	Length
	40T	1 in	6.50 ft
	40T	2 in	10.50 ft

List of 90 degree elbows:
2 - 1 in
1 - 2 in

List of Tees:
1 - 2 in

System Acceptance

System Discharge Time: 9.3 seconds
Percent Agent In Pipe: 16.5%
Percent Agent Before First Tee: 14.7%

Enclosure Number: 1
Enclosure Name: is computer room

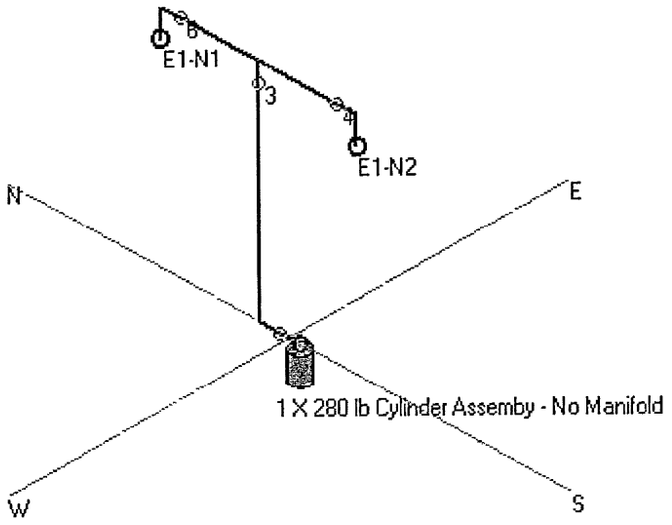
Minimum Design Concentration: 5.000%
Adjusted Design Concentration: 5.042%
Predicted Concentration: 5.043%
Maximum Expected Agent Concentration: 5.043% (At 70 F)

Nozzle	Minimum Agent Required	Adjusted Agent Required	Predicted Agent Delivered	Nozzle Pressure (Average)
E1-N1	109.1 lbs	110.0 lbs	110.0 lbs	128 psig
E1-N2	109.1 lbs	110.0 lbs	110.0 lbs	128 psig

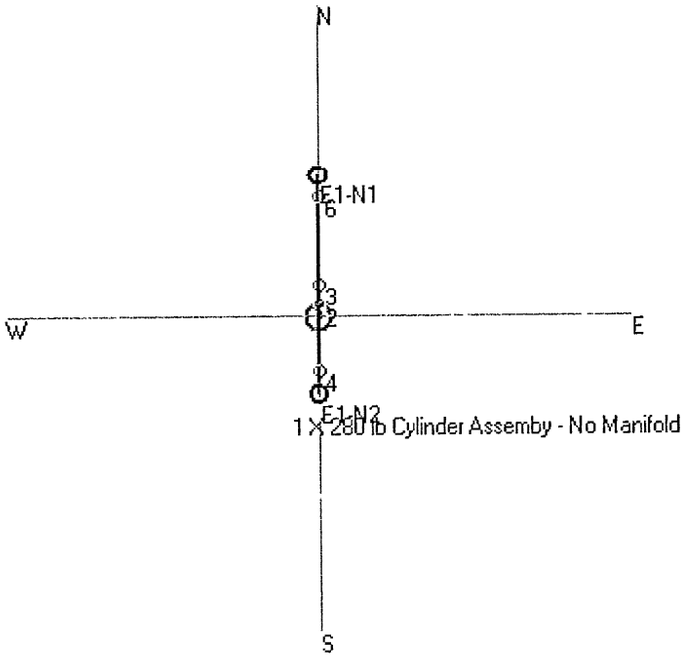
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Consolidated Report

Drawing View: 1



Drawing View: 5

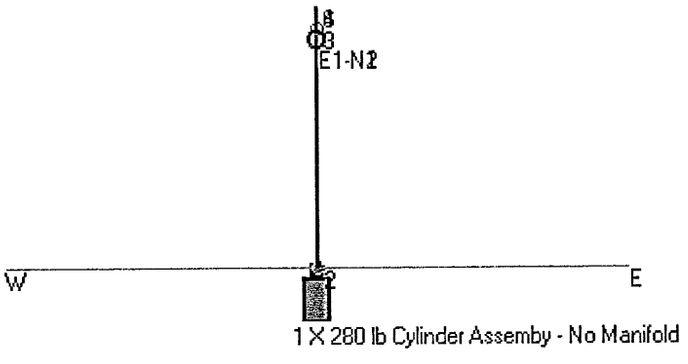


Calculation Date/Time: Thursday, May 29, 2008, 9:43:25 AM

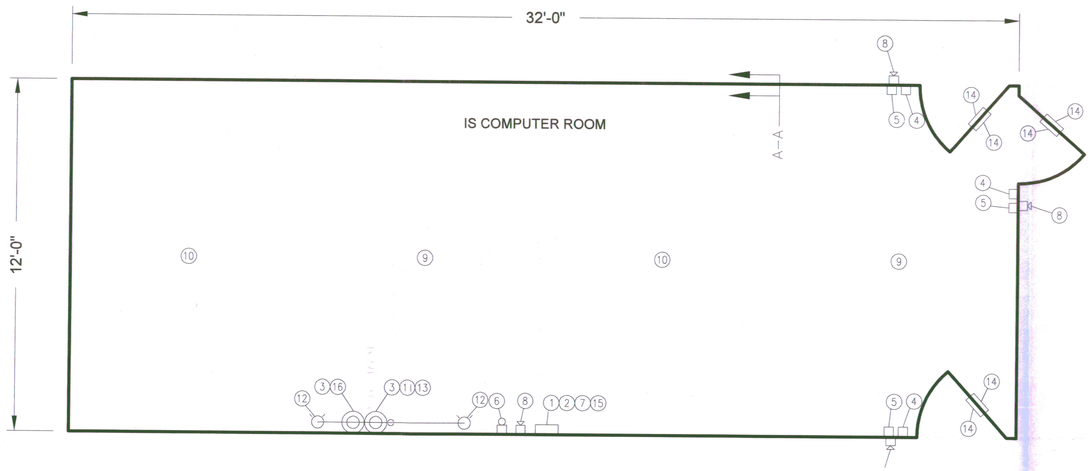
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Consolidated Report

Drawing View: 9



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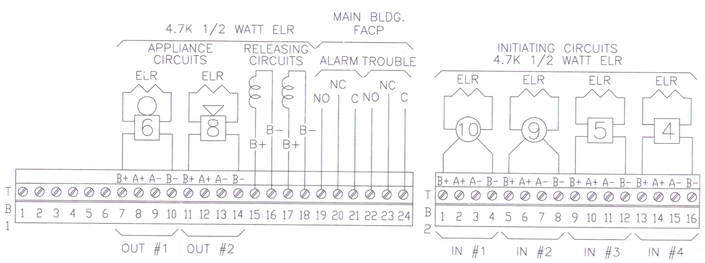


SAPPHIRE FIRE SUPPRESSION / DETECTION PLAN

1/2" = 1'-0"

SEQUENCE OF OPERATION – SAPPHIRE FIRE SUPPRESSION SYSTEM CROSS ZONED				
EVENT	LED'S	ALARM SIGNALS	RELEASE	AUXILIARY RELAYS
SMOKE DETECTOR ON ZONE 1 OR 2	SYSTEM ALARM ZONE 1 OR 2	ALARM BELL	——	BUILDING FIRE ALARM PANEL
2ND–SMOKE DETECTOR FROM OPPOSITE ZONE	SAME AS ABOVE	HORN/STROBE	ACTIVE	A/C SHUTDOWN EQUIPMENT SHUTDOWN
MANUAL PULL STATION	MANUAL RELEASE	HORN/STROBE		BUILDING FIRE ALARM PANEL A/C SHUTDOWN–EQUIP.

MATERIAL LIST			
ITEM NO.	QUANT.	PART NO.	DESCRIPTION
1	1	433607	542R RELEASING PANEL
2	1 PR.	417692	EMERGENCY BATTERIES
3	2	570092	CYLINDER BRACKETS
4	3	551166	MANUAL PULL STATION
5	3	76494	ABORT SWITCH
6	1	417805	ALARM BELL
7	1	417881	ZONE RELAY MODULE
8	4	429694	HORN/STROBE
9	2	427595	IONIZATION DETECTOR W/ BASE
10	2	427596	PHOTOELECTRIC DETECTOR W/ BASE
11	1	570537	ELECTRIC VALVE ACTUATOR
12	2	570517	DISCHARGE NOZZLE 180°
13	1	570639	#220 NOVEC 1230 AGENT FILLED IN CYLINDER
14	6	570191	DOOR SIGNS ("ROOM PROTECTED BY SAPPHIRE SYSTEM")
15	1	76498	MAINTENANCE SWITCH
16	1	570639	#220 NOVEC 1230 AGENT (RESERVE CYLINDER)



NOTES:

1. PROTECTED ROOM HEIGHT 13'-6".
2. ALL DOORS SHALL BE EQUIPPED WITH SMOKE SEAL (BY OTHERS), DOOR CLOSER AND AN AUTOMATIC DOOR DROP TO CONTAIN THE NOVEC 1230 AGENT (BY OTHERS). EMERGENCY SIGNS INSIDE AND OUT OF DOOR.
3. SAPPHIRE CONTROL PANEL SHALL BE INTERCONNECTED WITH THE BASE BUILDING FIRE ALARM PANEL AS A SEPARATE ZONE.
4. 120 VAC DEDICATED CIRCUIT (PROVIDED BY OTHERS).
5. SHUTDOWN OF COMPUTER EQUIPMENT, A/C UNITS AND DAMPERS (BY OTHERS).

BATRP100 542R BATTERY CALC SHEET

DETAIL SHEET: TRANSPORTATION MANAGEMENT

QTY OF MODEL MOD NUMBER	DESCRIPTION	BATTERY STANDBY CURRENT REQUIREMENTS SUPERVISORY 'I' EACH	SUPERVISORY TOTAL 'I'	ALARM 'I' EACH	ALARM TOTAL 'I'
1 542R	CONTROL PANEL	0.088	0.088	3.000	3.000
1 4XZM	ZONE RELAY MOD	0.008	0.008	0.000	0.000
			MAX 'I'		
CONTROL PANEL TOTALS ----->		SPV TOT=	0.096	IN ALM=	3.000

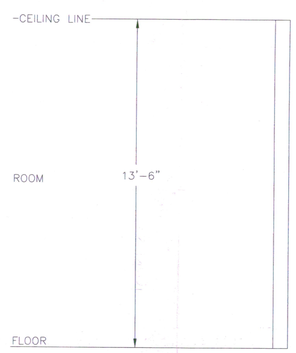
QTY OF MODEL DEV NO.	DEVICE DESCRIPTION	BATTERY STANDBY CURRENT REQUIREMENTS SUPERVISORY EACH	SUPERVISORY TOTAL	ALARM EACH	ALARM AMPS
4 70100523	SMOKE DETECTOR	0.00005	0.0002	0.00005	0.0002
1 70030137	BELL	0.000	0.000	0.075	0.075
4 70030126	HORN/STROBE	0.000	0.000	0.070	0.280
1 20480644	SAPPHIRE RELEASE	0.000	0.000	0.450	0.450
FIELD DEVICE TOTALS ----->		DEV SPV=	0.0002	DEV ALM=	0.8052
SYSTEM TOTALS ------->		SPV TOT=	0.0962	ALM TOT=	3.8052

BATTERY SIZE CALCULATIONS

WITH	24	HOURS OF SUPERVISION
AND	5	MINUTES OF ALARM
RESERVE	100	PERCENT

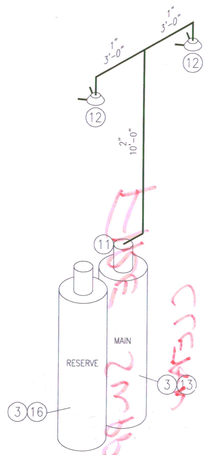
	CURRENT	X HOURS	= TOTAL
SUPERVISION	= 0.0962	X 24	= 2.309
ALARM	= 3.8052	X 0.08	= 0.304
MINIMUM TOTAL AMP HOUR NEEDED IS			2.613
		100%	2.613
TOTAL AMP HOURS WITH RESERVE			5.226

A BATTERY OF 7 AMP HOUR WILL BE USED



SECTION A–A

N.T.S.



PIPING ISOMETRIC

N.T.S.

Wall mounted visible signaling appliances shall be 80 in. minimum and 96 in. maximum above the floor ANSI A-117 Standard.

The contractor (or designee) must provide all nessessary testing equipment and perform all testing required by the Building Division.

At the time of final inspection, fire safety systems must be supervised by an alarm monitoring agency.

Audible alarms signaling devices shall exceed the prevailing sound level in a room or space by 15 dba minimum. Sound levels for alarm signals shall be 120 dba maximum.

THE CONTRACTOR SHALL CONDUCT A "PRE-TEST" OF THE PROJECT AREA BEFORE SCHEDULING AN ACCEPTANCE TEST WITH THE BUILDING DIVISION.

Per the 2006 IFC and 2005 NEC, the contractor must call in a rough wiring inspection on the fire alarm system prior to calling in the fire alarm final inspection.

City of Aurora Building Division plan review does not grant approval for any violations of adopted Fire Code. Code violations uncovered in the field inpections must be corrected.

AURORA BUILDING CODE DIVISION LIFE SAFETY SYSTEMS - **APPROVED** Subject to corrections as indicated and field inspections with functional tests.

BURRELTon 6-30-08

tyco Fire & Security — SimplexGrinnell
6240 Smith Road
Denver, CO 80216
(303) 355-0500
Colorado Registered Contractor #007

APPROVALS

OUT	IN	OUT	IN	OUT	IN

REVISIONS

NO.	DATE	BY	REVISION DESCRIPTION

CONTRACT NAME:

THE MEDICAL CENTER OF AURORA
1501 SOUTH POTOMAC STREET
AURORA, CO 80012

DESCRIPTION:

FURNISH & INSTALL (1) ANSUL SAPPHIRE CLEAN AGENT FIRE SUPPRESSION SYSTEM FOR IS COMPUTER ROOM

SCALE:	AS SHOWN
DRAWN BY:	G SPAWN
CHECKED BY:	R PRICE
THESE PLANS PREPARED AT:	DENVER-043 ENGINEERING DEPARTMENT
CONTRACT NO:	659
DATE:	5/27/08
DRAWING NO:	SAPPHIRE FS-1