### Components

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Vertical Rate Compensated Thermal Detector
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

Features

• Resets itself, nothing to replace, testable
• Withstands shock and vibration
• Wide temperature setting
• Long lasting stainless steel shell
• Wide spacing, reduces installation cost
• Factory set and hermetically-sealed in stainless steel – permanently protects internal mechanism

Applications

Vertical Rate Compensated Thermal Detectors are designed for use in both “ordinary” or “hazardous” locations. These highly reliable devices have been installed in schools, factories, offices, libraries, paint spray booths, and range hoods.

The detectors are used with an AUTOPULSE control unit as an alarm initiating device to sense overheat or fire, to alert personnel, and actuate fire suppression systems.

Description

The Vertical Rate Compensated Thermal Detectors are designed to compensate for thermal lag. When a rate-compensation heat detector operates, the actual operating temperature will be approximately equal to the rated operating temperature, regardless of the rate at which the air is being heated. The rate-compensation detector consists of a pair of expansion struts and electrical contacts enclosed by an expansion shell.

The two contact points are mounted on, but electrically insulated from, the two curved struts which have a low coefficient of expansion. Contacts and struts make up the internal strut assembly. This assembly is mounted under compression in a tubular stainless steel shell. The shell's coefficient of expansion is much higher than that of the strut assembly.

Increase in temperature causes the shell to expand. This decreases compression on the strut and the contacts make their motion being magnified by the action of the strut assembly. Note that the shell is the temperature-sensitive, activating component – always totally in direct contact with the surrounding air.

The outer shell is made of a rapidly expanding alloy which closely follows changes in surrounding air temperature. The inner struts are made of a lower expanding alloy. Designed to resist thermal energy absorption and sealed inside the shell, the struts follow temperature changes more slowly.

A slow rate fire will heat the shell and struts together. At the “set point,” the unit will trigger, sending a signal to the AUTOPULSE control unit. A momentary rush of warm air up to 40 °F (4 °C) per minute may expand the shell, but not enough to trigger the detector. By ignoring momentary warm air increases, the detector virtually eliminates false alarms.

If a fast rate fire starts, the shell will expand rapidly. The struts will close signaling the control unit. The faster the fire rate of growth, the sooner the detector will react.

The detectors may be mounted to any approved junction box with 7/8 (22 mm) inch diameter opening by using 1/2 – 14 NPT mounting nuts. Four lead wires are provided to facilitate supervision of system wiring. On units up to 375 °F (191 °C) – No. 18 AWG teflon insulated wire is supplied. Above 375 °F (191 °C) – No. 16 AWG TGTT insulated wire is used. The device may be wired in or out of conduit, depending on local preference and codes.

For ceiling heights up to 15 ft (4.6 m), a spacing of 15 ft (4.6 m) between detectors is utilized. Locations with ceiling heights greater than 15 ft (4.6 m) require reduced spacing. Contact Applications Engineering for assistance in locating detectors in high ceiling applications.

• A minimum setting of 100 °F (38 °C) above ambient temperature is recommended.

Technical Information

Electrical Rating (resistive): . . . . . . . . . . . 5 amps @ 125 VAC
0.5 amps @ 125 VDC
2 amps @ 24 VDC
1 amps @ 48 VDC

Color Coding:
140 °F (60 °C) . . . . . . . . . . . . . . . . . . . . Yellow
160 °F (71 °C) . . . . . . . . . . . . . . . . . . . Yellow
190 °F (88 °C) . . . . . . . . . . . . . . . . . . . White
225 °F (107 °C) . . . . . . . . . . . . . . . . . . . White
325 °F (163 °C) . . . . . . . . . . . . . . . . . . . Red
450 °F (232 °C) . . . . . . . . . . . . . . . . . . . Green
600 °F (315 °C) . . . . . . . . . . . . . . . . . . . Orange
725 °F (385 °C) . . . . . . . . . . . . . . . . . . . Orange
Technical Information (Continued)

Maximum Torque Tolerance:
- Without Thread Lubricant: 20 ft lb (27.1 N m)
- With Teflon Tape Lubricant: 3 ft lb (4.1 N m)

Weight: 5 3/8 oz (152.3 g)

Compliances

Hazardous Fitting Required

- Locations for UL, ULC Listings,
- Applications MEA and FM Approval

Class I, Groups A, B, C and D
- In accordance with National Electric Code

Class II, Groups E, F and G
- In accordance with National Electric Code

Class II, Groups B, C and D;
- In accordance with National Electric Code

E, F and G
- and/or local authority

Note: Only units with stainless steel shell and head are approved for Class 1, Group A locations.

Listings and Approvals*

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<td>California State Fire Marshal (CSFM)</td>
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* Listings and Approvals are under FENWAL

Ordering Information

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<td>600 °F (316 °C) Stainless Steel, Coupling Head, Vertical Rate Compensated Detector</td>
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AutoPulse

Detection and Control Components

Horizontal Rate Compensated Thermal Detector
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

Features
- Resets itself, nothing to replace, testable
- Withstands shock and vibration
- Wide temperature setting
- Long lasting stainless steel shell
- Wide spacing, reduces installation cost
- Factory set and hermetically-sealed in stainless steel – permanently protects internal mechanism

Applications
Horizontal Rate Compensated Thermal Detectors are designed for locations where appearance is a factor. The attractive, functional design lends physical protection of the unit while making it suitable for commercial, industrial, mercantile and public buildings, institutions, and ships in non-hazardous locations (those classified as “ordinary” under the National Electric Code).

Flush mounted units are designed to fit standard 4 in. octagonal electrical boxes. Canadian Electrical Code requires mounting only to an electrical junction box. These highly reliable devices have been installed in schools, factories, offices, libraries, paint spray booths, and range hoods.

The detectors are used with an AUTOPULSE control unit as an alarm initiating device to sense overheat or fire, to alert personnel, and actuate fire suppression systems.

Description
The Horizontal Rate Compensated Thermal Detectors are designed to compensate for thermal lag. When a rate-compensation heat detector operates, the actual operating temperature will be approximately equal to the rated operating temperature, regardless of the rate at which the air is being heated. The rate-compensation detector consists of a pair of expansion struts and electrical contacts enclosed by an expansion shell.

The two contact points are mounted on, but electrically insulated from the two curved struts which have a low coefficient of expansion. Contacts and struts make up the internal strut assembly. This assembly is mounted under compression in a tubular stainless steel shell. The shell’s coefficient of expansion is much higher than that of the strut assembly.

Increase in temperature causes the shell to expand. This decreases compression on the strut and the contacts make their motion being magnified by the action of the strut assembly. Note that the shell is the temperature-sensitive, activating component – always totally in direct contact with the surrounding air.

The outer shell is made of a rapidly expanding alloy which closely follows changes in surrounding air temperature. The inner struts are made of a lower expanding alloy. Designed to resist thermal energy absorption and sealed inside the shell, the struts follow temperature changes more slowly.

A slow rate fire will heat the shell and struts together. At the “set point,” the unit will trigger, sending a signal to the AUTOPULSE control unit. A momentary rush of warm air up to 40 °F (4 °C) per minute may expand the shell, but not enough to trigger the detector. By ignoring momentary warm air increases, the detector virtually eliminates false alarms.

If a fast rate fire starts, the shell will expand rapidly. The struts will close signaling the control unit. The faster the fire rate of growth, the sooner the detector will react.

The detectors may be mounted to any approved junction box with 7/8 in. (22 mm) diameter opening by using 1/2 – 14 NPT mounting nuts. Four lead wires are provided to facilitate supervision of system wiring. On units up to 375 °F (191 °C) – No. 18 AWG teflon insulated wire is supplied. Above 375 °F (191 °C) – No. 16 AWG TGGT insulated wire is used.

For ceiling heights up to 15 ft (4.6 m), a spacing of 15 ft (4.6 m) between detectors is utilized. Locations with ceiling heights greater than 15 ft (4.6 m) require reduced spacing. Contact Applications Engineering for assistance in locating detectors in high ceiling applications.

A minimum setting of 100 °F (38 °C) above ambient temperature is recommended.
Technical Information

Electrical Rating (resistive):
- 5 amps @ 125 VAC
- 0.5 amps @ 125 VDC
- 2 amps @ 24 VDC
- 1 amp @ 48 VDC

Color Coding:
- 190 °F (88 °C) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . White
- 225 °F (107 °C) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . White
- 275 °F (135°C) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Blue
- 325 °F (163 °C) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Red

Weight: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 10 oz (283.5 g)

Listings and Approvals*

Ordinary | Hazardous
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UL | S492 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . E19310
ULC | CS-341-E . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . CS-341-E
Factory Mutual (FM) | 17302 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . J.I.OV3HO.AE
MEA | 12-95-E . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 12-95-E
California State Fire Marshall (CSFM) | Approved . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Approved

* Listings and Approvals are under FENWAL

Ordering Information

| Part No. | Description                                | Shipping Weight ||
|---------|-------------------------------------------|-----------------|
| 71226   | 190 °F (88 °C) Horizontal Rate Compensated Detector | 0.5 (0.23)       |
| 71227   | 225 °F (107 °C) Horizontal Rate Compensated Detector | 0.5 (0.23)       |
| 71228   | 275 °F (135 °C) Horizontal Rate Compensated Detector | 0.5 (0.23)       |
| 71229   | 325 °F (163 °C) Horizontal Rate Compensated Detector | 0.5 (0.23)       |
Detection and Control Components

DCR1 UV/IR Flame Detector
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

Features
- Meets FM Specification class number 3260
- Compatible with standard 4 wire interface
- No moving parts or field modification required
- Surfaces are smooth, non-shedding, scuff resistant, and accessible for wipe down
- All surfaces are resistant to acids and solvents
- Resistant to false alarms to sunlight, fluorescent lights, incandescent lights, flashlights, and infrared heaters
- Two red LEDs indicate Normal Operation, Trouble Condition, and Alarm

Applications
The DCR1 UV/IR Flame Detector is designed primarily for use in Clean Room or Wet Bench applications. The DCR1 has a sealed Fire Resistant (FR) polypropylene housing designed to the IEC 529 IP67 rating for protection from a wide variety of acids and solvents. This means that occasional submersion will not damage the detector.

The DCR1 detector uses stable, proven UV/IR technology, and is used extensively in clean room applications. The detector is rated over a wide operating temperature range for those applications where drying or heating elements are used. The detector interfaces to the AUTOPULSE Control Systems.

Description
The DCR1 UV/IR Flame detector is a microprocessor controlled device programmed with state-of-the-art fire algorithms. Each algorithm is designed to recognize a different type of flame signature while rejecting common false sources. When the conditions of the fire algorithms are met, the detector notifies the control unit of the hazard.

The microprocessor is also continuously performing system tests for trouble conditions which would impair its ability to detect a flame and declare an alarm. These tests include: input power, sensor circuits, relay circuits, as well as other internal systems.

All modes of operation are indicated by two LEDs located on the front of the detector. A brief flash of the LEDs every 8 seconds indicates Normal mode. Both LEDs remain on for Alarm mode and a trouble indication will result in the LEDs flashing a code to indicate the type of trouble.

The DCR1 detector has both an Alarm Relay and a Trouble Relay. The normally closed Trouble Relay will open contacts when the detector has a fault condition.

The IP67 sealed polypropylene housing is fitted with a 1/4 in. NPT fitting for a 3/8 in. diameter polypropylene tube. The cabling is run inside the tube and must be sealed by using an appropriate fitting at a junction box or the plenum wall. All connections are made at the cabling as required for the application.

The detector is mounted using the bracket located on the back of the housing. The detector should be mounted securely to a flat surface with the cable exiting from the bottom or either side. Do not mount detector with cable exiting the top. Remove the bracket from the housing by sliding the detector from the bracket. The bracket may be welded (plastic weld) or screwed to the mounting surface. The mounting location must be strong enough to allow the detector to be snapped into place. The detector meets the vibration standard set in FM's Approval Standard Class 3820, Sept. 1979 (0.022 in. displacement, 10 Hz to 30 Hz sweep cycled at 2 cpm for 4 hours). The detector should not be exposed to excessive vibration.

DIMENSIONS
The DCR1 housing has a wall thickness of approximately 1/8 in (3 mm). The lenses and back plate are welded into place using an ultra sonic process. The ultra sonic process uses special tools to focus the energy internally. This provides a hermetic seal for the electronics, ensuring that vapor and liquids cannot intrude. All detectors are then tested for housing integrity.
Technical Information
Input Voltage: 12 to 30 Volts DC, @ 25 ma
Current Draw: @24 VDC: 28 ma normal mode, 54 ma alarm mode
Relay Contacts: 1.0 Amps @ 30 VDC resistive
Alarm Relay: 1.0 Amps @ 30 VDC resistive
Trouble Relay: 1.0 Amps @ 30 VDC resistive
Connections: 24 gauge, 8 conductor cable (6 ft (1.8 m) std. length)
(15 and 20 ft (4.6 and 6.1 m) cable available on special order)
Temperature Range: 32 °F to 167 °F (0 °C to 75 °C)
Humidity Range: 10% to 90%
Weight: Approximately 1 lb (0.5 kg)

Responsivity: UV: 185 to 260 nanometers
IR: 0.715 – 3.5 microns

Range: within 3 seconds to a 4 in. (102 mm) DIA
Isopropyl alcohol or polypropylene fire at 8 feet
Field of View: 120° full cone

CABLE CONNECTIONS

CABLE WIRING

WIRING DIAGRAM

Listings and Approvals
FM Approved

Ordering Information

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Detection and Control Components

UV-IR 20/20LB “SharpEye” Flame Detector
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

Features
- UV/IR Dual spectrum design
- Multiple detection levels – Pre-Alarm, Alarm and Saturated Signal
- High speed response
- Automatic and manual built-in test
- User-programmable configuration
- Explosion-proof
- Standard 4-wire connection
- Mean Time Between Failures (MTBF) minimum 100,000 hours
- 3 year warranty
- Optional air shield for tough environmental conditions
- Optional swivel mount

Applications
The 20/20LB UV/IR Flame Detector has been designed as a general-purpose flame detector. It has applications in a wide range of industrial and commercial facilities, where the threat of accidental fire involves hydrocarbon fuels, such as gasoline, hydraulic fluid, paint, various solvents, aviation fuel, natural gas, propane, etc. Typical field applications include: aircraft facilities, automotive manufacturing, petrochemical facilities, printing, painting facilities, munitions handling, power generation, and warehousing of flammable liquids and gases.

Description
The standard detector housing is a heavy-duty copper-free aluminum housing casting. The housing finish is epoxy enamel. The detector housing is also available in stainless steel upon request. The viewing window is protected by two guard bars that also serve as part of the self-check diagnostic path. The viewing window and back cover are each sealed with a special “O” ring to prevent intrusion of dust, salt spray, and foam/water fire fighting agents. The circuit boards are conformally coated and shock-mounted to minimize damage from mechanical vibration and impact. The detector is explosion-proof and meets NEMA 250 for type 6P and tested per MIL-STD-810-C.

The “SharpEye” 20/20LB is a self-contained dual spectrum flame detector. The sensor band pass has been carefully selected to ensure the greatest degree of spectral matching to the radiant energy emissions of fire, and the lowest degree of matching to non-fire stimuli.

The microprocessor design allows for unique field programmability. Its multiple detection levels allow for Pre-Alarm, Alarm and Saturated Signal response. In addition, the 20/20LB offers a customer programmable time delay.

The UV channel incorporates a special logic circuit that reduces false alarms caused by solar radiation and other non-fire UV sources. The UV channel sensitivity is stabilized over the working temperature range. The IR sensor reacts to radiation between 2.5 to 3.0 microns. Only radiation in this range lasting for a preset time and threshold, having an intermittent pattern characteristic to fire will register an alarm signal.

The signals from both sensors are analyzed for frequency, intensity and duration. Simultaneous matching of radiant energy in both sensors triggers an alarm signal. A saturated signal will also result in an alarm signal.

An optional Air Shield provides constant pressurized air on the lens of the detector. Use of the shield protects the viewing window from the accumulation of dirt and dust. This reduces the frequency of maintenance and cleaning cycles in tough environmental conditions. The air shield is installed on the front of the detector with two screws and an air quick connect fitting connected to the air pressure source.

In addition to the basic alarm evaluation circuit, the 20/20LB incorporates an automatic self-test function that verifies the cleanliness of the lens and proper operation of the sensors and all electronic circuitry.

The 20/20LB utilizes Mil-spec. electronic components and materials. The MTBF is calculated to be 100,000 hours (11+ years). This outstanding performance permits a 3-year warranty on the entire detector, not just the sensors.

The optional Swivel Mount allows the 20/20LB Flame Detector to be aligned in the direction of the protected area. The detector is placed on the ball joint of the swivel mount and secured to the holding plate. When the correct position is located the detector is held in place by tightening the locking screw at the back cover of the detector.
Technical Information

Operating Voltage: 18 – 32 VDC
Power Consumption: 100 mA in standby, 125 mA in alarm

Dry Contact Relays:
- Alarm: 2 Amps at 30 VDC, 2 Amps at 250 VAC
- Fault and Accessory: 2 Amps at 30 VDC, 2 Amps at 250 VAC
- Option: 4 to 20 mA output

Electrical Interface: Standard 4-wire connection with cascading capability. Complete electrical interface protection

Dimensions: 5 3/16 x 5 3/16 x 4 3/4 in. Deep (132 x 132 x 120 mm Deep)

Electrical Connection: Standard 3/4 in. 14 NPT conduit

Temperature Range:
- Operating: –40 °F to 160 °F (–40 °C to 70 °C)
- Storage: –65 °F to 185 °F (–55 °C to 85 °C)

Detection Range for 1 ft² (0.093 m²) Fire:
- Gasoline: 50 ft (15.2 m)
- Diesel Oil: 25 ft (7.6 m)
- N-Heptane: 50 ft (15.2 m)
- Alcohol: 12 ft (3.7 m)

Response Time:
- Maximum: 0.02 second for Saturated Signal
- Typical: 3 seconds for 1 ft² (0.093 m²) gasoline fire
- Adjustable: Time delay up to 30 seconds

Field of View: 90° horizontal, 90° vertical

Explosion-proof enclosure:
- NFPA Class I Division: 1, 2 groups B*, C and D
- NFPA Class II Division: 1, groups E, F and G
- Provides for installation of a swivel mount.

* Requires seal at detector

Ordering Information

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<td>Swivel Mount</td>
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<td>(0.9)</td>
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<td>417937</td>
<td>Air Shield</td>
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<td>(0.9)</td>
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<td>437167</td>
<td>Fire Simulator</td>
<td>8</td>
<td>(3.6)</td>
</tr>
</tbody>
</table>

* Listings and Approvals are under SPECTREX, INC.
IR 20/20I “SharpEye” Flame Detector
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

Features

• Triple spectrum design
• Sensitivity selection
• User-programmable configuration
• Automatic and manual built-in test
• Standard 4-wire connection
• Mean Time Between Failures (MTBF) minimum 100,000 hours
• 3 year warranty
• Optional swivel mount

Applications

The IR 20/20I Flame Detector has been designed as a general-purpose flame detector. It has applications in a wide range of industrial and commercial facilities, where the threat of accidental fire involves hydrocarbon fuels, such as gasoline, hydraulic fluid, paint, various solvents, aviation fuel, natural gas, propane, acetylene, etc. Typical field applications include: automotive manufacturing, petrochemical facilities, printing, munitions handling, power generation, and warehousing of flammable liquids and gases.

Description

The “SharpEye” 20/20I is a self-contained triple spectrum flame detector. The sensor band pass has been carefully selected to ensure the greatest degree of spectral matching to the radiant energy emissions of fire, and the lowest degree of matching to non-fire stimuli. The patented triple IR circuit design scans for oscillating IR radiation (1 to 10 Hz) in the spectral bands ranging from 4.0 to 5.0 microns. This highly advanced detector uses programmed algorithms which check the ratio and correlation of data received by the three sensors. Only detection of radiation emissions matching the spectral fingerprint of fire will produce an alarm, making the 20/20I highly resistant to false alarms.

The microprocessor design allows for unique field programmability not found in similar detectors. The 20/20I incorporates both Automatic and Manual BIT (Built In Test). In addition, the detector offers a customer programmable time delay.

The “SharpEye” 20/20I is extremely sensitive. The patented triple IR design offers two to three times the detection distance of any conventional IR or UV/IR detector. It can detect a 1 ft x 1 ft (305 mm x 305 mm) gasoline pan fire at 200 ft (61 m) in less than 5 seconds. The sensitivity is user-programmable, offering 4 ranges of detection.

A 4-20 mA and RD-485 interface as well as the standard alarm, accessory and fault relays make the 20/20I the most diverse detector available.

The standard detector housing is a heavy-duty copper-free aluminum housing casting. The housing finish is epoxy enamel. The detector housing is also available in stainless steel upon request. Total detector weight is 7.8 lb (3.5 kg). The viewing window and back cover are each sealed with a special “O” ring to prevent intrusion of dust, salt spray, and foam/water fire fighting agents. The circuit boards are conformally coated and shock-mounted to minimize damage from mechanical vibration and impact. The detector is explosion-proof and meets NEMA 250 for type 6P and tested per MIL-STD-810-C.

The 20/20I utilizes Mil-spec. electronic components and materials. The MTBF is calculated to be 100,000 hours (11+ years). This outstanding performance permits a 3-year warranty on the entire detector, not just the sensors.

An optional Air Shield provides constant pressurized air on the lens of the detector. Use of the shield protects the viewing window from the accumulation of dirt and dust. This reduces the frequency of maintenance and cleaning cycles in tough environmental conditions. The air shield is installed on the front of the detector with two screws and an air quick connect fitting connected to the air pressure source.

The optional Swivel Mount allows the 20/20LB Flame Detector to be aligned in the direction of the protected area. The detector is placed on the ball joint of the swivel mount and secured to the holding plate. When the correct position is located the detector is held in place by tightening the locking screw at the back cover of the detector.
Technical Information

Operating Voltage: 18 – 32 VDC
Power Consumption: 150 mA in standby, 200 mA in alarm
Dry Contact Relays:
  Alarm: 2 Amps at 30 VDC, 5 Amps at 250 VAC
  Fault and Accessory: 5 Amps at 30 VDC, 5 Amps at 250 VAC
Electrical Interface: Standard 4-wire connection with cascading capability. Complete electrical interface protection.
Electrical Connection: Standard 3/4 in. 14 NPT conduit
Available Outputs: 4-20 mA, RS-485
Spectral Response: Three IR band channels
Temperature Range:
  Operating: –40 °F to 160 °F (–40 °C to 70 °C)
  Storage: –65 °F to 185 °F (–55 °C to 85 °C)
Dimensions: 5 3/16 x 5 3/16 x 4 3/4 in. Deep (132 x 132 x 120 mm Deep)
Detection Range for 1 ft² (0.093 m²) Fire at Highest Sensitivity Setting:
  Gasoline: 200 ft (60.9 m)
  Diesel Oil: 140 ft (42.7 m)
  Alcohol: 150 ft (45.7 m)
  JP4: 150 ft (45.7 m)
Response Time:
  Typical: 5 seconds
  Adjustable: Time delay up to 30 seconds
Field of View: 90° horizontal, 90° vertical
Explosion-proof enclosure:
  NFPA: Class I Div. 1, groups B*, C and D
  NFPA: Class II Div. 1, groups E, F and G
Provides for installation of a swivel mount.

* Requires seal at detector

Alarm Response Time Versus Range for Standard Fire
(Standard fire is 1 ft x 1 ft (0.3 m x 0.3 m) gasoline pan fire with maximum wind speed of 6.5 ft/sec (2 m/sec))

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<th>Detector Sensitivity</th>
<th>Range in feet (m)</th>
<th>Response Time</th>
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<tr>
<td>1</td>
<td>50 (15)</td>
<td>3 sec</td>
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<tr>
<td>2</td>
<td>100 (30)</td>
<td>5 sec</td>
</tr>
<tr>
<td>3</td>
<td>150 (45)</td>
<td>8 sec</td>
</tr>
<tr>
<td>4</td>
<td>200 (60)</td>
<td>10 sec</td>
</tr>
</tbody>
</table>

Other Fuels
The detector will react to other types of fires as follows:

<table>
<thead>
<tr>
<th>Type of Fuel</th>
<th>% of Maximum Range at Each Sensitivity Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>100%</td>
</tr>
<tr>
<td>N-Heptane</td>
<td>100%</td>
</tr>
<tr>
<td>Alcohol 95%</td>
<td>75%</td>
</tr>
<tr>
<td>JP4</td>
<td>75%</td>
</tr>
<tr>
<td>Kerosene</td>
<td>75%</td>
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<tr>
<td>Diesel Fuel</td>
<td>50%</td>
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Listings and Approvals*

<table>
<thead>
<tr>
<th>FM</th>
<th>Approved</th>
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<td>CSA</td>
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Ordering Information

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<td>8 (3.6)</td>
</tr>
</tbody>
</table>

* Listings and Approvals are under SPECTREX, INC.
Detection and Control Components

UV/IR 40/40 “SharpEye” Flame Detector
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

Features
• UV/IR Dual-sensor design
• High-speed response – 150 millisecond response to saturated signal
• Solar blind
• Automatic and manual Built-In-Test (BIT)
• Heated window for operation in harsh weather conditions
• Multiple output options for maximum flexibility and compatibility
• Mean Time Between Failures (MTBF) minimum 150,000 hours
• Approved to Safety Integrity Level 2 (SIL2 – TUV)
• 5-year warranty
• Optional tilt mount
• Optional air shield for tough environmental conditions

Applications
The UV/IR 40/40 Flame Detector is designed for use in heavy industrial and commercial environments where the possibility of hydrocarbon-based fuel fires is high and conventional detection methods may be less effective or impractical. Ideal environments for the use of UV/IR detection include on- and off-shore oil and gas installations, chemical plants, storage tank farms, aircraft hangers, power generation facilities, large warehouses, explosives and munitions factories, waste disposal facilities, and/or any environment requiring a FM/CSA, or IECEx/ATEX Hazardous Locations rating.

Description
The “SharpEye” UV/IR 40/40L/LB Flame Detector is an electronic device designed to sense the occurrence of fire and flames and subsequently activates an alarm or an extinguishing system directly or through a control circuit.

The UV/IR Flame Detector is a dual-spectrum optical detector sensitive to two separate ranges of the radiation spectrum, both of which are present in fires. The detector monitors the protected volume by measuring the radiation intensity in it, within two frequency ranges of the electromagnetic spectrum, namely the Ultra-Violet (UV) and the Infra-Red (IR).

The IR sensor in the 40/40L/LB is sensitive to radiation over a range of wavelengths between 2.5 to 3.0 μm where the H2 emission has a unique spectral peak that enables detection of hydrocarbon fires, gas fires, hydroxyl and hydrogen fires, as well as metal and inorganic fires.

The UV sensor is sensitive to radiation between 0.185 and 0.260 μm. The UV channel incorporates a special logic circuit that eliminates false alarms caused by solar radiation and other non-fire UV sources. Furthermore, the UV channel’s sensitivity is stabilized over the working temperature range. Since the preset dual range and level of radiation, as well as the flickering pattern, are characteristics of real fire, all other radiation sources apart from actual fire are not detected, thus avoiding false alarms.

The detector enclosure is an ATEX certified EExd flame-proof enclosure with an integral, segregated, EExe terminal compartment (avoiding exposure of the sensors and electronics to surrounding environment). It carries several hazardous locations ratings, including Class I, Div. 1, Groups B, C & D (FM and CSA); Class II/III, Div. 1, Groups E, F & G (FM and CSA); and a combined approval EExde IIB + H2 T5 (167 °F (75 °C)) or T4 (185 °F (85 °C)).

The “SharpEye” UV/IR 40/40/L/ LB detector is designed to operate as a stand-alone unit directly connected to an alarm system or an automatic fire extinguishing system. The detector can also be a part of a more complex system, where many detectors and other devices are integrated through a common control unit.

The 40/40L/ LB detector uses heated optics. The heater increases the temperature of the optical surface by 5 to 8 °F (3 to 5 °C) above the ambient temperature to improve performance in icing, condensation and snow conditions.

An optional Air Shield provides constant pressurized air on the lens of the detector. Use of the shield protects the viewing window from the accumulation of dirt and dust. This reduces the frequency of maintenance and cleaning cycles in tough environmental conditions. The air shield is installed on the front of the detector with two screws and an air quick connect fitting connected to the air pressure source.

The optional Tilt Mount enables the detector to be rotated up to 60° in all directions, providing accurate directional selection for optimum area coverage. The detector is placed on the holding plate of the tilt mount, pointed downwards, and then secured to the holding plate. The detector is then pointed toward the protected area and is secured in that position by tightening the locking screws on the tilt mount.
Technical Information

Operating Voltage: ................. 18 – 32 VDC 24 VDC nominal

Power Consumption: .............. 100mA in standby, 150mA in alarm

Relays:
   Alarm, Fault, Auxiliary: ....... 5A at 30 VDC or 250 VAC

Electrical Interface: ....... Detector includes 12 terminals with 5 wiring options (factory set)

Cable Entries: .............. 2x3/4 in. – 14NPT conduit

Available Outputs: .............. 0-20mA, HART, RS-485

Spectral Response:
   UV: .................................. 0.185 – 0.260 μm
   IR: .................................. 2.5 – 3.0 μm

Temperature Range:
   Operating: ................... –67 °F to +167 °F (–55 °C to +75 °C)
   Storage: ...................... –67 °F to +185 °F (–55 °C to +85 °C)

Dimensions: .................... 3.5 x 4.5 x 6.1 in. (90 x 114 x 156 mm)

Detection Range for 1 ft² (0.1 m²) Fire at Highest Sensitivity Setting:
   N-Heptane: ...................... 50 ft (15.2 m)
   Gasoline: ....................... 50 ft (15.2 m)
   Diesel Fuel: ..................... 37 ft (11.2 m)
   JP5: ............................... 37 ft (11.2 m)
   Kerosene: ....................... 37 ft (11.2 m)
   Ethanol 95%: .................... 25 ft (7.6 m)
   Methanol: ........................ 25 ft (7.6 m)
   IPA: ............................... 25 ft (7.6 m)
   Hydrogen: ........................ 16 ft (4.9 m)
   Methane*: ....................... 16 ft (4.9 m)
   LPG*: ............................. 16 ft (4.9 m)
   Polypropylene Pellets: .......... 13 ft (4.0 m)
   Office Paper: .................... 16 ft (4.9 m)

   *20 in. (508 mm) high, 8 in. (203 mm) width plume fire

Response Time:
   Typical: .......................... 5 seconds
   Adjustable: .................... Time Delay up to 30 seconds

Field of View: .................... 100° horizontal, 95° vertical

Listings and Approvals*

FM ........................................ 3029553
CSA ...................................... Approved
ATEX ................................... .07ATEX1250
DNV ...................................... Approved

*Listings and Approvals are under SPECTREX, INC.
TERMINAL CONNECTIONS

WIRING OPTIONS

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Detection and Control Components

IR3 40/40I “SharpEye” Flame Detector
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

Features
• Triple spectrum design
• Sensitivity selection
• Automatic and manual Built-In-Test (BIT)
• Durable and weather-resistant
• Heated window for operation in harsh weather conditions
• Multiple output options for maximum flexibility and compatibility
• Mean Time Between Failures (MTBF) minimum 150,000 hours
• Approved to Safety Integrity Level 2 (SIL2 – TUV)
• 5-Year Warranty
• Optional tilt mount
• Optional air shield for tough environmental conditions

Applications
The IR3 40/40I Flame Detector is designed for use in heavy industrial and commercial environments where the possibility of hydrocarbon-based fuel fires is high and conventional detection methods may be less effective or impractical. Ideal environments for the use of IR3 detection include on-and off-shore oil and gas installations, chemical plants, storage tank farms, aircraft hangars, power generation facilities, large warehouses, explosives and munitions factories, waste disposal facilities, and/or any environment requiring a FM/CSA, or IECEx/ATEX Hazardous Locations rating.

Description
The “SharpEye” 40/40I is a flame detector designed to detect flames in which carbon dioxide (CO₂) is produced in the combustion process. These include all hydrocarbon flames, as well as other types of flames and burning materials, such as wood or alcohol.

The detector’s principle of operation is based on patented IR3 technology. This technology identifies the unique spectral signature that hot CO₂ has in the infrared (IR), namely a peak of the intensity at wavelengths 4.2 to 4.7μ.

The original IR3 technique (such as implemented in the “SharpEye” 20/20I flame detector) utilizes three infrared sensors, each sensitive to its own wavelength range. The first sensor is sensitive to wavelengths within the emission peak of “hot” CO₂. The other two sensors are sensitive to wavelengths above and below this peak. In the event of fire, the signal measured in the first sensor is significantly higher than those measured in the other two sensors. In order to issue a fire alarm, the detector requires that this occur, as well as other conditions (for example, radiation flickering in frequencies typical of flames). If exposed to non-fire radiation sources, the specific conditions required do not occur, and the detector does not react.

The 40/40I detector also includes the addition of a fourth IR sensor, which is sensitive to a different band of radiation within the emission peak of hot CO₂. The signal of this sensor is compared to those of the other three to determine if a fire condition is present or not. This not only increases the accuracy of the detector but the addition of this fourth sensor also increases the sensitivity of the 40/40I to certain types of flames (for example, gas flames).

The detector enclosure is an ATEX certified EExd flame-proof enclosure with an integral, segregated, rear, EExe terminal compartment (avoiding exposure of the sensors and electronics to surrounding environment). It carries several hazardous locations ratings, including Class I, Div. 1, Groups B, C & D (FM and CSA); Class II/III, Div. 1, Groups E, F & G (FM and CSA); and a combined approval EExde IIB + H2 T5 (167 °F (75 °C)) or T4 (185 °F (85 °C)).

The “SharpEye” 40/40I detector is designed to operate as a stand-alone unit directly connected to an alarm system or an automatic fire extinguishing system. The detector can also be a part of a more complex system, where many detectors and other devices are integrated through a common control unit.

The 40/40I detector uses heated optics. The heater increases the temperature of the optical surface by 5 to 8 °F (3 to 5 °C) above the ambient temperature to improve performance in icing, condensation and snow conditions.
Description (Continued)
An optional Air Shield provides constant pressurized air on the lens of the detector. Use of the shield protects the viewing window from the accumulation of dirt and dust. This reduces the frequency of maintenance and cleaning cycles in tough environmental conditions. The air shield is installed on the front of the detector with two screws and an air quick connect fitting connected to the air pressure source.

The optional Tilt Mount enables the detector to be rotated up to 60° in all directions, providing accurate directional selection for optimum area coverage. The detector is placed on the holding plate of the tilt mount, pointed downward, and then secured to the holding plate. The detector is then pointed toward the protected area and is secured in that position by tightening the locking screws on the tilt mount.

TILT MOUNT

Technical Information
Operating Voltage: ........................................ 18 – 32 VDC
.......................................................... 24 VDC Nominal
Power Consumption: ................................... 100mA in standby, 150mA in alarm
Relays:
Alarm, Fault, Auxiliary: .................................. 5A at 30 VDC or 250 VAC
Electrical Interface: ........................................... Detector includes 12 terminals with 5 wiring options (factory set)
Cable Entries: ............................................. 2 in. x 3/4 in. – 14NPT conduit
Available Outputs: ........................................... 0-20mA, HART, RS-485
Spectral Response: .......................................... Three IR Bands
Temperature Range:
Operating: ........................................... –67 °F to +167 °F (–55 °C to +75 °C)
Storage: .................................................... –67 °F to +185 °F (–55 °C to +85 °C)
Dimensions: ............................................. 3.5 x 4.5 x 6.1 in. (90 x 114 x 156 mm)
Detection Range for 1 ft² (0.1 m²) Pan Fire at Highest Sensitivity Setting:
N-Heptane: .................................................. 215 ft (65.5 m)
Gasoline: .................................................... 215 ft (65.5 m)
Diesel Fuel: .................................................. 150 ft (45.7 m)
JP5: ........................................................... 150 ft (45.7 m)
Kerosene: .................................................... 135 ft (41.1 m)
Ethanol 95%: .............................................. 115 ft (35.1 m)
Methanol: .................................................... 135 ft (41.1 m)
IPA: .......................................................... 100 ft (30.5 m)
Methane*: .................................................. 100 ft (30.5 m)
LPG*: ......................................................... 100 ft (30.5 m)
Polypropylene Pellets: ................................... 16 ft (4.9 m)
Office Paper: ............................................... 33 ft (10.1 m)

> 20 in. (508 mm) high, 8 in. (203 mm) width plume fire

Response Time:
Typical: ...................................................... 5 seconds
Adjustable: .................................................. Time Delay up to 30 seconds
Field of View: ............................................ 100° horizontal, 95° vertical
Sensitivity Ranges: ....................................... 4 ranges for 1 ft² (0.1 m²) n-heptane pan fire from 50 ft (15.2 m) to 215 ft (65.5 m)

Listings and Approvals*
FM .................................................................. .3029553
CSA .......................................................... Approved
ATEX .......................................................... .07ATEX1250
DNV .......................................................... Approved

*Listings and Approvals are under SPECTREX, INC.
CONE OF VISION
Horizontal: 100°
Vertical: +50° (down), -45° (up)

TERMINAL CONNECTIONS

WIRING OPTIONS

<table>
<thead>
<tr>
<th>Wire</th>
<th>Terminal No.</th>
<th>Default</th>
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</thead>
<tbody>
<tr>
<td>+24 VDC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>0 VDC</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Manual BIT</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Fault Relay N.C.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Fault Relay N.C.</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Alarm Relay N.O.</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Alarm Relay C</td>
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<td></td>
</tr>
<tr>
<td>0-20mA In</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>0-20mA Out</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>RS-485+ (1)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>RS-485– (1)</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>RS-485– GND</td>
<td>12</td>
<td></td>
</tr>
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Ordering Information

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<thead>
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<th>Description</th>
<th>Shipping Weight</th>
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<tr>
<td>436833</td>
<td>IR3 40/40i Flame Detector</td>
<td>6 (2.7)</td>
</tr>
<tr>
<td>436835</td>
<td>Tilt Mount</td>
<td>2 (0.9)</td>
</tr>
<tr>
<td>436836</td>
<td>Air Shield</td>
<td>2 (0.9)</td>
</tr>
<tr>
<td>470223</td>
<td>Fire Simulator</td>
<td>8 (3.6)</td>
</tr>
</tbody>
</table>
Features

• Approvals include: UL, New York City (MEA), California State Fire Marshall (CSFM), Factory Mutual (FM), and Chicago (BFP) (Pending for RSSWP)
• ADA/NFPA/UFC/ANSI compliant
• Meets OSHA 29 Part 1910.165
• Low current draw with temperature compensation to reduce power consumption and wiring costs
• 24 VDC model with wide new UL ‘Regulated Voltage’ using filtered (DC) or unfiltered VRMS input voltage
• Strobes produce one flash per second over the regulated voltage range (RSSWP produces 30-62 flashes per minute)
• Wall Mount
• Synchronize with Wheelock SM
• ZERO Inrush above Peak
• Fast installation with IN/OUT screw terminals using #12 to #18 AWG wire
• Available as FIRE or AGENT units

Description

The strobe is suitable for primary signaling in public mode for life safety applications and complies with the Americans with Disabilities Act (ADA) and the demanding requirements of the UL 1971 Standard for the Hearing Impaired. The RSS-24MCW 15, 30, 75 or 110 multi-candela strobe meets the light intensity requirements for the space being protected.

The RSS strobe is wall mounted only to a 4 in. (102 mm) square electrical back box. Semi-flush mounting is available with the addition of an SFP mounting plate. The weatherproof RSSWP strobe is wall mounted only to a 5-3/16 in. (132 mm) square WPSBB-R weatherproof back box.

The unique lens/reflector design of the RSS strobe maintains a consistent light dispersement pattern at 15 or 75 candela (cd) light intensities while flashing at the ADA minimum of 1 flash per second. The 75 cd RSSWP model produces 30 to 62 flashes per minute over the regulated voltage range.

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

Technical Information

Input Terminals .................. 18 to 12 AWG
Size ....................... 4 3/4 in. x 4 3/4 in. x 2 3/4 in.
(102 mm x 102 mm x 76 mm)
Weight ..................... 0.9 lb (0.4 kg)
Color ...................... Red
Operating Temperature:

RSS Models .................. 32 °F to 120 °F (0 °C to 49 °C)
RSSWP Models ................ –31 °F to 150 °F (–35 °C to 66 °C)
Listings and Approvals*

UL
- RSS Models: S5391
- RSSWP Models: S3078

Factory Mutual (FM)
- Approved

California State Fire Marshal (CSFM)
- RSS Models: 7125-0785:141
- RSSWP Models: 7300-0785:154

MEA
- 151-92-E

*Listings and Approvals are under Wheelock Inc.

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
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<th>Description</th>
<th>Shipping Weight</th>
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<tbody>
<tr>
<td>429699</td>
<td>RSS-24MCW-FR</td>
<td>Strobe, Multi-Candela (FIRE)</td>
<td>2.0 (0.9)</td>
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<tr>
<td>437030</td>
<td>RSS-24MCW-FR</td>
<td>Strobe, Multi-Candela (ULC)</td>
<td>2.0 (0.9)</td>
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<tr>
<td>433352</td>
<td>RSS-24MCW-AR</td>
<td>Strobe, Multi-Candela (AGENT)</td>
<td>2.0 (0.9)</td>
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<tr>
<td>433353</td>
<td>RSSWP-2475-FR</td>
<td>Strobe, 75cd Weatherproof (FIRE)</td>
<td>2.0 (0.9)</td>
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<tr>
<td>433354</td>
<td>RSSWP-2475W-AR</td>
<td>Strobe, 75cd Weatherproof (AGENT)</td>
<td>2.0 (0.9)</td>
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<tr>
<td>433355</td>
<td>WPSBB-R</td>
<td>Back Box, Weatherproof</td>
<td>0.5 (0.2)</td>
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<tr>
<td>433358</td>
<td>SHBB-R</td>
<td>Back Box, Shallow</td>
<td>0.5 (0.2)</td>
</tr>
<tr>
<td>437031</td>
<td>SHBB-R</td>
<td>Back Box, Shallow (ULC)</td>
<td>0.5 (0.2)</td>
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<tr>
<td>429701</td>
<td>SFP</td>
<td>Semi-Flush Plate, Composite</td>
<td>0.5 (0.2)</td>
</tr>
<tr>
<td>439041</td>
<td>ISP2-R</td>
<td>Adapter</td>
<td>0.5 (0.2)</td>
</tr>
<tr>
<td>429699</td>
<td>SM-12/24-R</td>
<td>Sync Module</td>
<td>2.0 (0.9)</td>
</tr>
</tbody>
</table>

Average RMS Current*

<table>
<thead>
<tr>
<th>RSS/RSSP</th>
<th>RSS/RSSP – Wall Mount</th>
<th>24MCW</th>
<th>24MCWH</th>
</tr>
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<tbody>
<tr>
<td>Models</td>
<td>241575W</td>
<td>1575cd</td>
<td>185cd</td>
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<tr>
<td>24 vdc</td>
<td>0.060</td>
<td>0.041</td>
<td>0.109</td>
</tr>
<tr>
<td>UL max</td>
<td>0.090</td>
<td>0.090</td>
<td>0.195</td>
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Candela Ratings

<table>
<thead>
<tr>
<th>Series</th>
<th>UL 1971</th>
<th>UL 1638 @ 77 °F (25 °C)</th>
<th>UL 1638 @ –40 °F (–40 °C)</th>
<th>RSS, MTWP UL Max Current (Strobe Only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2475</td>
<td>30**</td>
<td>180</td>
<td>115</td>
<td>0.138</td>
</tr>
</tbody>
</table>

* RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33V for 24V units). For strobes, the UL max current is usually at the minimum listed voltage (16V for 24V units). For audibles, the max current is usually at the maximum listed voltage (33V for 24V units). For unfiltered FWR ratings, see installation instructions.
Description
The electronic sounder is UL listed for primary or secondary signaling in life safety systems. One of eight different warning tones can be selected during installation by arranging four programming switches.

The sounder mounts directly to a 4 in. (102 mm) square back box and can be semi-flush mounted using the optional SFP plate. The sounder is suitable for outdoor applications when mounted to the weatherproof back box, Model IOB.

Screw terminals with clamping plates provide secure attachment for field wiring of up to 12 AWG size.

Technical Information
Input Terminals: 18 to 12 AWG
Size: 5.125 in. x 5.125 in. x 2.125 in. (130 mm x 130 mm x 54 mm)
Weight: 0.9 lb (0.4 kg)
Color: Red
Operating Temperature: 32 °F to 120 °F (0 °C to 49 °C)
Mounting:
Surface: 4 in. x 4 in. (102 mm x 102 mm) back box (1.5 in. - 2.125 in. (38 mm - 54 mm) deep)
Semi-flush: 4 in. x 4 in. (102 mm x 102 mm) back box with SFP mounting plate (order separately)
Outdoor: 4 in. x 4 in. (102 mm x 102 mm) IOB weatherproof back box
Voltage Range: 12 and 24 VDC (9.6 VDC min.; 48 VDC max.) and full wave rectified unfiltered

dBA AND CURRENT RATINGS FOR MULTITONE SIGNALS WITHOUT STROBES

<table>
<thead>
<tr>
<th>Tone</th>
<th>Input Current AMPS @ 24 VDC</th>
<th>Input Current AMPS @ 12 VDC</th>
<th>Typical Anechoic1 dBA at 10 Feet</th>
<th>Rated Reverberant dBA2 at 10 Feet Per UL 464</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HI</td>
<td>STD</td>
<td>At Nominal Input Voltage</td>
<td>At Minimum Input Voltage</td>
</tr>
<tr>
<td></td>
<td>HI</td>
<td>STD</td>
<td>HI</td>
<td>STD</td>
</tr>
<tr>
<td>Horn</td>
<td>0.040</td>
<td>0.023</td>
<td>0.100</td>
<td>0.020</td>
</tr>
<tr>
<td>Bell</td>
<td>0.014</td>
<td>0.012</td>
<td>0.031</td>
<td>0.010</td>
</tr>
<tr>
<td>March Time Horn</td>
<td>0.040</td>
<td>0.023</td>
<td>0.100</td>
<td>0.020</td>
</tr>
<tr>
<td>Code-3 Horn</td>
<td>0.040</td>
<td>0.023</td>
<td>0.100</td>
<td>0.020</td>
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<tr>
<td>Code-3 Tone</td>
<td>0.028</td>
<td>0.017</td>
<td>0.060</td>
<td>0.015</td>
</tr>
<tr>
<td>Slow Whoop</td>
<td>0.048</td>
<td>0.026</td>
<td>0.100</td>
<td>0.025</td>
</tr>
<tr>
<td>Siren</td>
<td>0.036</td>
<td>0.023</td>
<td>0.082</td>
<td>0.020</td>
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<tr>
<td>HI/LO</td>
<td>0.020</td>
<td>0.014</td>
<td>0.044</td>
<td>0.012</td>
</tr>
</tbody>
</table>

1 Anechoic dBA is measured on axis in a non-reflective (free field) test room using fast meter response.
2 Reverberant dBA is a minimum UL rating based on sound power measurements in a reverberant test room.
Technical Information (Continued)

Listings and Approvals*
UL. .................................................. E5496
Factory Mutual (FM) ............................ 0X1A0.AY
California State Fire Marshal (CSFM) .... 7135-0785:118
MEA. ............................................... 151-92-E

*Listings and Approvals are under Wheelock Inc.

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Model</th>
<th>Description</th>
<th>Shipping Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>429697</td>
<td>MT-12/24-R</td>
<td>Horn, 24 VDC, Multiple Tone</td>
<td>2 (0.9)</td>
</tr>
<tr>
<td>429701</td>
<td>SFP</td>
<td>Semi-Flush Plate, Composite</td>
<td>0.5 (0.2)</td>
</tr>
<tr>
<td>429700</td>
<td>IOB</td>
<td>Surface Mount Back Box, Weatherproof</td>
<td>2 (0.9)</td>
</tr>
<tr>
<td>437035</td>
<td>IOB-R</td>
<td>Surface Mount Back Box, Weatherproof (ULC)</td>
<td>2 (0.9)</td>
</tr>
</tbody>
</table>
Features
- Approvals include: UL, New York City (MEA), California State Fire Marshal (CSFM), Factory Mutual (FM), and Chicago (BFP) (Pending for MTWP)
- ADA/NFPA/UFC/ANSI compliant
- Meets OSHA 29 Part 1910.165
- Strobes produce one flash per second over the regulated voltage range (MTWP produces 30-62 flashes per minute)
- Synchronize with Wheelock SM
- One-alarm appliance with eight selectable signals
- Two installer-selectable sound output levels cover range of 76-94 dBA reverberant
- Fast installation with IN/OUT screw terminals using #12 to #18 AWG wire
- Available as FIRE or AGENT units

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. The MT-24MCW 15, 30, 75, or 110 multi-candela strobe meets 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. This provides for superior sound penetration for various ambient and wall conditions with two field selectable sound output levels. The MT model mounts directly to a 4 in. (102 mm) square back box with an optional SFP semi-flush plate. The MTWP model mounts to a 5.25 in. (133 mm) square IOB weatherproof back box.

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 4.375 in.
(130 mm x 130 mm x 111 mm)
Weight .................. 0.9 lb (0.4 kg)
Color .................. Red
Operating Temperature:
MT Models .................. 32 °F to 120 °F (0 °C to 49 °C)
MTWP Model .................. –31 °F to 150 °F (–35 °C to 66 °C)
**Listings and Approvals**

- UL: E5946
- Factory Mutual: Approved
- MEA: 151-92-E

**Ordering Information**

<table>
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<tr>
<td>433356</td>
<td>MT-24MCW-FR</td>
<td>Strobe, Multi-Candela w/Sounder (FIRE)</td>
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<tr>
<td>433357</td>
<td>MT-24MCW-AR</td>
<td>Strobe, Multi-Candela w/Sounder (AGENT)</td>
<td>2 (0.9)</td>
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<tr>
<td>431526</td>
<td>MTWP-2475W-FR</td>
<td>Sounder/75cd*, Weatherproof w/Sounder (FIRE)</td>
<td>2 (0.9)</td>
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<tr>
<td>437034</td>
<td>MTWP-2475W-FR</td>
<td>Sounder/75cd*, Weatherproof w/Sounder (ULC)</td>
<td>2 (0.9)</td>
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<tr>
<td>429701</td>
<td>SFP</td>
<td>Semi-Flush Plate</td>
<td>0.5 (0.2)</td>
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<tr>
<td>429700</td>
<td>IOB</td>
<td>Surface Back Box</td>
<td>2 (0.9)</td>
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<tr>
<td>437035</td>
<td>IOB-R</td>
<td>Surface Back Box (ULC)</td>
<td>2 (0.9)</td>
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<tr>
<td>439041</td>
<td>ISP2-R</td>
<td>Adapter</td>
<td>0.5 (0.2)</td>
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</tbody>
</table>

*Rated 75cd at -31 °F (-35 °C). Rated 180 cd at 77 °F (25 °C).
Detection and Control Components

Explosion-Proof Electronic Sounder
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

Features
• Compact low silhouette design
• AC or DC operation
• Low current drain
• High dB output
• UL listed

Applications
The Explosion-Proof Electronic Sounder creates a distinctive and urgent signal for timing, scheduling, paging, general alarm and warning in a hazardous location. Typical applications include: mining, granaries, flour mills, tanker, refineries and laboratories.

Description
The economical sounder is a heavy-duty high decibel vibrating horn intended for use where a distinctive audible signal is required in a hazardous location. The sounder is highly efficient with low current drain and a wide operating voltage range (~20% to +15% of nominal voltage).

The explosion-proof sounder is suitable for use in the following areas: Class I, Groups B, C, and D; Class II, Groups E, F, and G; and Class III.

The sounder mounts to any solid surface using two bolts. Each unit is fitted with a sealing fitting for 3/4 in. (19 mm) conduit and wire leads for connection to a local power source.

EXPLOSION-PROOF ELECTRONIC SOUNDER

Technical Information
Volts DC: ........................................... 24, Polarized
Amps: ................................................... 0.16
VA: ..................................................... 3.5
DC Coil Res (Ohms): ................................ 24
dB at 10 ft (3 m): ..................................... 100
Operating Voltage Range of nominal voltage: . -20% – +15%
Wire Connections: 2 Red Leads (+)
2 Black Leads (–)
Conduit Fitting: ....................................... 3/4 in.
Dimensions:
High: ........................................ 7 5/8 in. (193 mm)
Wide: ........................................ 7 3/8 in. (187 mm)
Deep: ........................................ 4 3/16 in. (107 mm)

WIRING

TO AUTO PULSE CONTROL UNIT
TO NEXT SIGNAL OR END OF LINE DEVICE

Listings and Approvals*
UL ...................................................... E 46293

*Listings and Approvals are under Edwards GS

Ordering Information

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<td>10 (4.5)</td>
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</table>

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Form No. T-2007135-3
Detection and Control Components

SpectrAlert® Advance Selectable Output Chimes and Chime/Strobes
(IQ-318, IQ-636X-2, 542R, 542D)

General
SpectrAlert® Advance selectable-output chimes and chime/strobes are private-mode notification appliances used to alert trained personnel to investigate possible emergency situations and to take appropriate action. Security guard and nurse workstations are ideal locations for chime products.

SpectrAlert Advance chimes and chime/strobes are rich with features guaranteed to cut installation times and maximize profits. The SpectrAlert Advance series of notification appliances is designed to simplify your installations, with features such as: plug-in designs, instant feedback messages to ensure correct installation of individual devices, and seven field-selectable candela settings for chime/strobes.

More specifically, when installing Advance products, first attach a universal mounting plate to a 4 in. (10.2 cm) square, 4 in. (10.2 cm) octagonal, single-gang, or double-gang junction box.

Then, connect the notification appliance circuit wiring to the SEMS terminals on the mounting plate.

Finally, attach the chime or chime/strobe to the mounting plate by inserting the product tabs in the mounting plate grooves.

The device will rotate into position, locking the product pins into the mounting plate terminals. The device will temporarily hold in place with a catch until it is secured with a captive mounting screw.

Features
• Plug-in design.
• Shorting spring on mounting plate for pre-installation continuity check.
• Captive mounting screw.
• Torx screw for tamper resistance.
• Field-selectable candela settings: at 24 volts, 15, 15/75, 30, 75, 95, 110, or 115 candela by way of rear-mounted slide-switch and front-view window.
• Automatic selection of 12- or 24-volt operation at 15 and 15/75 candela.
• Selectable chime tones and volume by way of rotary switch.
• Minimal intrusion into the backbox.
• Rotary switch for tone selection.
• Two volume settings.
• Electrically compatible with existing SpectrAlert products.

Engineering Specifications
SpectrAlert Advance chimes and chime/strobes shall mount to a standard 4 in. x 4 in. x 1.5 in. (102 mm x 102 mm x 38 mm) backbox, 4 in. (102 mm) octagonal backbox, single-gang 2 in. x 4 in. x 1.875 in. (50 mm x 102 mm x 48 mm) backbox, or double-gang backbox. A universal mounting plate shall be used for mounting products. The notification appliance circuit wiring shall terminate at the universal mounting plate. Also, SpectrAlert Advance products, when used with the Sync•Circuit™ Module accessory, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts. When used with the Sync-Circuit Module, 12-volt rated notification appliance circuit outputs shall operate between 9 and 17.5 volts; 24-volt rated notification appliance circuit outputs shall operate between 17 and 33 volts. Indoor SpectrAlert Advance products shall operate between 32°F and 120°F from a regulated DC, or fullwave-rectified, unfiltered power supply. Chime/strobes shall have field-selectable candela settings of 15, 15/75, 30, 75, 95, 110, and 115.

CHIME/STROBE COMBINATION
The chime/strobe shall be a SpectrAlert Advance Model _______ listed to UL/ULC 1638 and UL/ULC 464. The chime/strobe shall comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe’s entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system. The chime shall have two audibility options and an option to switch between a temporal three-pattern and a non-temporal (continuous) pattern. These options are set by a multiple position switch.
**Engineering Specifications (Continued)**

**SYNCHRONIZATION MODULE**

The module shall be a Sync-Circuit MDL3R listed to UL/ULC 464 and shall be approved for fire protective service. The module shall synchronize SpectrAlert strobes at 1 Hz and chimes at Temporal 3. Also, while operating the strobes, the module shall silence the chimes on chime/strobe models over a single pair of wires. The module shall mount to a 4.688 in. x 4.688 in. x 2.125 in. (119 mm x 119 mm x 54 mm) backbox. The module shall also control two Style Y (Class B) circuits or one Style Z (Class A) circuit. The module shall synchronize multiple zones. Daisy chaining two or more synchronization modules together will synchronize all the zones they control. The module shall not operate on a coded power supply.

Module Specifications –
Dimensions: 5.25 in. L x 5.25 in. W (133 mm L x 133 mm W)
Mounting: 4.6875 in. x 4.6875 in. x 2.125 in. (119 mm x 119 mm x 54 mm) back box
Indoor Operating Temperature: 32 °F to 120 °F (0 °C to 49 °C)
Operating Voltage: 12 VDC and FWR unfiltered
Operating Voltage Range: 8.5 to 17.5 VDC
Maximum Load on Loop: 3 Amps/zone
U.S. Patent Nos.: 5,598,139 and 5,850,178

**MDL3R Current Draw**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>DC</th>
<th>FWR DC</th>
<th>FWR DC</th>
<th>FWR DC</th>
<th>FWR DC</th>
<th>FWR DC</th>
<th>FWR DC</th>
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<tbody>
<tr>
<td>12</td>
<td>10</td>
<td>12</td>
<td>50</td>
<td>60</td>
<td>100</td>
<td>120</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**HORNS AND CHIMES SILENCED OVER TWO-WIRE CIRCUIT**
Operating Specifications

• Standard operating temperature: 32 °F to 120 °F (0 °C to 49 °C).
• Humidity range: 10% to 93% non-condensing (indoor products).
• Strobe flash rate: 1 flash per second.
• Nominal voltage: regulated 12 VDC/FWR or regulated 24 VDC/FWR.
• Operating voltage range: 8 V to 17.5 V (12 V nominal); or 16 V to 33 V (24 V nominal). Note: CHS products will operate at 12 V nominal only for 15 cd and 15/75 cd.
• Input terminal wire gauge: 12 to 18 AWG.
• Chime/strobe dimensions (including lens): 5.6 in. H x 4.7 in. W x 2.5 in. D (142 mm H x 119 mm W x 64 mm D).
• Chime dimensions: 5.6 in. H x 4.7 in. W x 1.3 in. D (142 mm H x 119 mm W x 33 mm D).

Agency Listings and Approvals

The listings and approvals below apply to SpectrAlert Advance Selectable Output Chimes and Chime/Strobes. 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/ULC Listed .................................................. S4011
FM .......................................................... Approved
MEA Listed .................................................. 452-05-E
CSFM . . . . . . . . . 7125-1653:188 (CHSR); 7135-1653:189 (CHR)
USCG. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 161.002/A42/1

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>435754</td>
<td>CHR: Chime</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td>435755</td>
<td>CHSR: Chime/Strobe</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td>438077</td>
<td>BBS-2: Backbox Skirt, wall</td>
<td>0.5 (0.2)</td>
</tr>
<tr>
<td>438076</td>
<td>MDL3R: Sync·Circuit Module</td>
<td>0.5 (0.2)</td>
</tr>
</tbody>
</table>

Current Draw, UL Maximum (mA RMS)

<table>
<thead>
<tr>
<th>Input, Pattern, dB Out</th>
<th>8 – 17.5 Volts</th>
<th>16 – 33 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15 cd</td>
<td>15/75 cd</td>
</tr>
<tr>
<td>DC, 1-Second Chime, HIGH</td>
<td>131</td>
<td>142</td>
</tr>
<tr>
<td>DC, 1-Second Chime, LOW</td>
<td>131</td>
<td>142</td>
</tr>
<tr>
<td>DC, 1/4-Second Chime, HIGH</td>
<td>129</td>
<td>142</td>
</tr>
<tr>
<td>DC, 1/4-Second Chime, LOW</td>
<td>129</td>
<td>142</td>
</tr>
<tr>
<td>DC, Temporal Chime, HIGH</td>
<td>125</td>
<td>142</td>
</tr>
<tr>
<td>DC, Temporal Chime, LOW</td>
<td>129</td>
<td>141</td>
</tr>
<tr>
<td>DC, 5-Second Whoop, HIGH</td>
<td>133</td>
<td>145</td>
</tr>
<tr>
<td>DC, 5-Second Whoop, LOW</td>
<td>130</td>
<td>143</td>
</tr>
<tr>
<td>DC, One-Time Chime</td>
<td>127</td>
<td>141</td>
</tr>
<tr>
<td>FWR, 1-Second Chime, HIGH</td>
<td>128</td>
<td>150</td>
</tr>
<tr>
<td>FWR, 1-Second Chime, LOW</td>
<td>127</td>
<td>150</td>
</tr>
<tr>
<td>FWR, 1/4-Second Chime, HIGH</td>
<td>129</td>
<td>149</td>
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<tr>
<td>FWR, 1/4-Second Chime, LOW</td>
<td>128</td>
<td>149</td>
</tr>
<tr>
<td>FWR, Temporal Chime, HIGH</td>
<td>128</td>
<td>148</td>
</tr>
<tr>
<td>FWR, Temporal Chime, LOW</td>
<td>125</td>
<td>147</td>
</tr>
<tr>
<td>FWR, 5-Second Whoop, HIGH</td>
<td>136</td>
<td>152</td>
</tr>
<tr>
<td>FWR, 5-Second Whoop, LOW</td>
<td>132</td>
<td>150</td>
</tr>
<tr>
<td>FWR, One-Time Chime</td>
<td>127</td>
<td>147</td>
</tr>
</tbody>
</table>
Tone Selection
Chime tone selection is accomplished by using the rotary switch on the back of the product. The current draw and sound measurements for various chime tones are listed below.

### Chime Current Draw, UL Maximum (mA RMS)

<table>
<thead>
<tr>
<th>Sound Pattern</th>
<th>Setting</th>
<th>dB</th>
<th>8 – 17.5 Volts</th>
<th>16 – 33 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DC</td>
<td>FWR</td>
<td>DC</td>
</tr>
<tr>
<td>1-Second Chime</td>
<td>HIGH</td>
<td>34 mA</td>
<td>50 mA</td>
<td>58 mA</td>
</tr>
<tr>
<td>1-Second Chime</td>
<td>LOW</td>
<td>30 mA</td>
<td>51 mA</td>
<td>51 mA</td>
</tr>
<tr>
<td>1/4-Second Chime</td>
<td>HIGH</td>
<td>34 mA</td>
<td>51 mA</td>
<td>50 mA</td>
</tr>
<tr>
<td>1/4-Second Chime</td>
<td>LOW</td>
<td>31 mA</td>
<td>51 mA</td>
<td>50 mA</td>
</tr>
<tr>
<td>Temporal Chime</td>
<td>HIGH</td>
<td>30 mA</td>
<td>50 mA</td>
<td>48 mA</td>
</tr>
<tr>
<td>Temporal Chime</td>
<td>LOW</td>
<td>30 mA</td>
<td>47 mA</td>
<td>50 mA</td>
</tr>
<tr>
<td>5-Second Whoop</td>
<td>HIGH</td>
<td>32 mA</td>
<td>52 mA</td>
<td>34 mA</td>
</tr>
<tr>
<td>5-Second Whoop</td>
<td>LOW</td>
<td>30 mA</td>
<td>40 mA</td>
<td>34 mA</td>
</tr>
<tr>
<td>One Test Chime</td>
<td>HIGH</td>
<td>48 mA</td>
<td>49 mA</td>
<td>50 mA</td>
</tr>
</tbody>
</table>

### Chime Patterns

<table>
<thead>
<tr>
<th>Setting</th>
<th>Repetition Rate</th>
<th>dB Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-Second Chime</td>
<td>HIGH</td>
</tr>
<tr>
<td>2</td>
<td>1-Second Chime</td>
<td>LOW</td>
</tr>
<tr>
<td>3</td>
<td>1/4-Second Chime</td>
<td>HIGH</td>
</tr>
<tr>
<td>4</td>
<td>1/4-Second Chime</td>
<td>LOW</td>
</tr>
<tr>
<td>5</td>
<td>Temporal Chime</td>
<td>HIGH</td>
</tr>
<tr>
<td>6</td>
<td>Temporal Chime</td>
<td>LOW</td>
</tr>
<tr>
<td>7</td>
<td>5-Second Whoop</td>
<td>HIGH</td>
</tr>
<tr>
<td>8</td>
<td>5-Second Whoop</td>
<td>LOW</td>
</tr>
<tr>
<td>9</td>
<td>One Test Chime</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

### Sound Output (dBA), Chime and Chime/Strobe

<table>
<thead>
<tr>
<th>Switch Setting</th>
<th>Sound Pattern</th>
<th>dB</th>
<th>8 – 17.5 Volts</th>
<th>16 – 33 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DC</td>
<td>FWR</td>
<td>DC</td>
</tr>
<tr>
<td>1</td>
<td>1-Second Chime</td>
<td>HIGH</td>
<td>58 dBA</td>
<td>59 dBA</td>
</tr>
<tr>
<td>2</td>
<td>1-Second Chime</td>
<td>LOW</td>
<td>53 dBA</td>
<td>54 dBA</td>
</tr>
<tr>
<td>3</td>
<td>1/4-Second Chime</td>
<td>HIGH</td>
<td>63 dBA</td>
<td>64 dBA</td>
</tr>
<tr>
<td>4</td>
<td>1/4-Second Chime</td>
<td>LOW</td>
<td>58 dBA</td>
<td>59 dBA</td>
</tr>
<tr>
<td>5</td>
<td>Temporal Chime</td>
<td>HIGH</td>
<td>62 dBA</td>
<td>64 dBA</td>
</tr>
<tr>
<td>6</td>
<td>Temporal Chime</td>
<td>LOW</td>
<td>55 dBA</td>
<td>57 dBA</td>
</tr>
<tr>
<td>7</td>
<td>5-Second Whoop</td>
<td>HIGH</td>
<td>68 dBA</td>
<td>71 dBA</td>
</tr>
<tr>
<td>8</td>
<td>5-Second Whoop</td>
<td>LOW</td>
<td>62 dBA</td>
<td>64 dBA</td>
</tr>
<tr>
<td>9</td>
<td>One Test Chime</td>
<td>HIGH</td>
<td>57 dBA</td>
<td>55 dBA</td>
</tr>
</tbody>
</table>

### SpectrAlert Advance Chime/Strobe Dimensions

Sync-Circuit™ is a trademark and SpectrAlert® is a registered trademark of Honeywell International Inc.
Detection and Control Components

SpectrAlert® Advance Selectable Output Notification Appliances (IQ-318, IQ-636X-2, 542R, 542D)

General

SpectrAlert® Advance selectable-output horns, strobes and horn/strobes are rich with features guaranteed to cut installation times and maximize profits. The SpectrAlert Advance series of notification appliances is designed to simplify your installations, with features such as: plug-in designs, instant feedback messages to ensure correct installation of individual devices, and eleven field-selectable candela settings for wall and ceiling strobes and horn/strobes.

More specifically, when installing Advance products, first attach a universal mounting plate to a four-inch square, four-inch octagon, or double-gang junction box. The two-wire mounting plate attaches to a single-gang junction box.

Then, connect the notification appliance circuit wiring to the SEMS terminals on the mounting plate.

Finally, attach the horn, strobe, or horn/strobe to the mounting plate by inserting the product tabs in the mounting plate grooves. The device will rotate into position, locking the product pins into the mounting plate terminals. The device will temporarily hold in place with a catch until it is secured with a captured mounting screw.

Models available:
- Indoor wall-mount: horn, strobe, 2-wire horn/strobe, 4-wire horn/strobe.
- Indoor ceiling-mount: strobe, 2-wire horn/strobe, 4-wire horn/strobe.
- Outdoor wall-mount: horn, strobe, 2-wire horn/strobe, 4-wire horn/strobe.
- Outdoor ceiling-mount: strobe, 2-wire horn/strobe, 4-wire horn/strobe.

Features
- Plug-in design.
- Same mounting plate for wall- and ceiling-mount units.
- Shorting spring on mounting plate for continuity check before installation.
- Captive mounting screw.
- Tamper-resistance capability.
- Field-selectable candela settings on wall and ceiling units: at 24 volts, 15, 15/75, 30, 75, 95, 110, 115, 135, 150, 177, or 185 candela by way of a rear-mounted slide switch and front viewing window.
- Automatic selection of 12 or 24 volt operation at 15 and 15/75 candela.
- Horn tones and volume by way of a rotary switch.
- Outdoor wall and ceiling products.

- The SpectrAlert Advance series includes outdoor notification appliances. Outdoor strobes and horn/strobes (two-wire and four-wire) are available for wall or ceiling. Outdoor horns are available for wall only. All System Sensor outdoor products are rated between –40 °F and 151 °F (–40 °C and 66 °C) in wet or dry applications.

Engineering Specifications

SpectrAlert Advance horns, strobes, and horn/strobes shall mount to a standard 4.0 in. x 4.0 in. x 1.5 in. (102 mm x 102 mm x 38 mm) backbox, 4.0 in. (102 mm) octagonal backbox, or a double-gang backbox. Two-wire products shall also mount to a single-gang 2.0 in. x 4.0 in. x 1.875 in. (51 mm x 102 mm x 48 mm) backbox. A universal mounting plate shall be used for mounting ceiling and wall products.

The notification appliance circuit wiring shall terminate at the universal mounting plate. Also, SpectrAlert Advance products, when used with the Sync•Circuit™ Module accessory, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts. When used with the Sync•Circuit Module, 12-volt rated notification appliance circuit outputs shall operate between 9 and 17.5 volts; 24-volt rated notification appliance circuit outputs shall operate between 17 and 33 volts.

Indoor SpectrAlert Advance products shall operate between 32 °F and 120 °F (0 °C and 49 °C) from a regulated DC, or full-wave-rectified, unfiltered power supply. Strobes and horn/strobes shall have field-selectable candela settings including 15, 15/75, 30, 75, 95, 110, 115, 135, 150, 177, 185.
Engineering Specifications (Continued)

STROBE
The strobe shall be a SpectrAlert Advance Model _______ listed to UL 1971 and shall be approved for fire protective service. The strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1Hz over the strobe’s entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system.

HORN/STROBE COMBINATION
The horn/strobe shall be a SpectrAlert Advance Model _______ listed to UL 1971 and UL 464 and shall be approved for fire protective service. The horn/strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe’s entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system. The horn shall have three audibility options and an option to switch between a Temporal 3 pattern and a Non-Temporal (continuous) pattern. These options are set by a multiple position switch. On four-wire products, the strobe shall be powered independently of the sounder. The horn on horn/strobe models shall operate on a coded or non-coded power supply.

OUTDOOR PRODUCTS
SpectrAlert Advance outdoor horns, strobes and horn/strobes shall be listed for outdoor use by UL and shall operate between –40 °F and 151 °F (–40 °C and 66 °C). The products shall be listed for use with a System Sensor outdoor/weatherproof backbox with half-inch and three-fourths-inch conduit entries.

Strobe Current Draw, UL Maximum (mA RMS)

<table>
<thead>
<tr>
<th>Candela Range</th>
<th>8 – 17.5 Volts</th>
<th>16 – 33 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DC</td>
<td>FWR</td>
</tr>
<tr>
<td>Standard Candela</td>
<td>15</td>
<td>123</td>
</tr>
<tr>
<td>15/75</td>
<td>142</td>
<td>148</td>
</tr>
<tr>
<td>30</td>
<td>NA</td>
<td>N/A</td>
</tr>
<tr>
<td>75</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>95</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>110</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>115</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>High Candela Range</td>
<td>135</td>
<td>NA</td>
</tr>
<tr>
<td>150</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>177</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>185</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
Engineering Specifications (Continued)

SYNCHRONIZATION MODULE

The module shall be a Sync-Circuit MDL3R listed to UL 464 and shall be approved for fire protective service. The module shall synchronize SpectrAlert strobes at 1 Hz and horns at Temporal 3. Also, while operating the strobes, the module shall silence the horns on horn/strobe models over a single pair of wires. The module shall mount to a 4.688 in. x 4.688 in. x 2.125 in. (119 mm x 119 mm x 54 mm) backbox.

The module shall also control two Style Y (Class B) circuits or one Style Z (Class A) circuit. The module shall synchronize multiple zones. Daisy-chaining two or more synchronization modules together will synchronize all the zones they control. The module shall not operate on a coded power supply.

Module Specifications –
Dimensions: 5.25 in. L x 5.25 in. W (133 mm L x 133 mm W)
Mounting: 4.6875 in. x 4.6875 in. x 2.125 in. (119 mm x 119 mm x 54 mm) back box
Indoor Operating Temperature: 32 °F to 120 °F (0 °C to 49 °C)
Operating Voltage: 12 VDC and FWR unfiltered
Operating Voltage Range: 8.5 to 17.5 VDC
Maximum Load on Loop: 3 Amps/zone
U.S. Patent Nos.: 5,598,139 and 5,850,178

MDL3R Current Draw

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Average Current</th>
<th>Peak Current</th>
<th>In-rush Current</th>
<th>NAC Slave Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC FWR</td>
<td>mA</td>
<td>mA</td>
<td>mA</td>
<td>mA</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>12</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HORNS AND CHIMES SILENCED OVER TWO-WIRE CIRCUIT

Master-Slave Mode

Wiring must be contained with either the common enclosure or enclosures within 20 ft (6.1 m) of each other with wiring inside conduit.

Master-Slave Using NAC-Slave Input

Wiring must be contained with either the common enclosure or enclosures within 20 ft (6.1 m) of each other with wiring inside conduit.

NAC 1

FACP #1

NAC 2

NAC 3

FACP #2

Reference Diagrams:

DD8647

DD8648
Operating Specifications

• Standard operating temperature: 32 °F to 120 °F (0 °C to 49 °C).

• K Series operating temperature: –40 °F to 151 °F (–40 °C to 66 °C).

• Humidity range: 10% to 93% non-condensing (indoor products).

• Strobe flash rate: 1 flash per second.

• Nominal voltage: regulated 12 VDC/FWR or regulated 24 VDC/FWR. Note: Full Wave Rectified (FWR) voltage is a non-regulated, time-varying power source that is used on some power supply and panel outputs.

• Operating voltage range: 8 V to 17.5 V (12 V nominal); or 16 V to 33 V (24 V nominal). Note: P, S, PC, and SC products will operate at 12 V nominal only for 15 cd and 15/75 cd.

• Input terminal wire gauge: 12 to 18 AWG (3.31 to 0.821 mm²).

• Ceiling-mount dimensions (including lens): 6.8 in. DIA x 2.5 in. D (173 mm DIA x 64 mm D).

• Wall-mount dimensions (including lens): 5.6 in. H x 4.7 in. W x 2.5 in. D (142 mm H x 119 mm W x 64 mm D).

• Horn dimensions: 5.6 in. H x 4.7 in. W x 1.3 in. D (142 mm H x 119 mm W x 33 mm D).

### Horn Current Draw, UL Maximum (mA RMS)

<table>
<thead>
<tr>
<th>Sound Pattern</th>
<th>8 – 17.5 Volts</th>
<th>16 – 33 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DC FWR</td>
<td>DC FWR</td>
</tr>
<tr>
<td>Temporal High</td>
<td>57 55 69 75</td>
<td></td>
</tr>
<tr>
<td>Temporal Medium</td>
<td>44 49 58 69</td>
<td></td>
</tr>
<tr>
<td>Temporal Low</td>
<td>38 44 44 48</td>
<td></td>
</tr>
<tr>
<td>Non-temporal High</td>
<td>57 56 69 75</td>
<td></td>
</tr>
<tr>
<td>Non-temporal Medium</td>
<td>42 50 60 69</td>
<td></td>
</tr>
<tr>
<td>Non-temporal Low</td>
<td>41 44 50 50</td>
<td></td>
</tr>
<tr>
<td>Coded High</td>
<td>57 55 69 75</td>
<td></td>
</tr>
<tr>
<td>Coded Medium</td>
<td>44 51 56 69</td>
<td></td>
</tr>
<tr>
<td>Coded Low</td>
<td>40 46 52 50</td>
<td></td>
</tr>
</tbody>
</table>

### Input, Sound Pattern, dB Level

<table>
<thead>
<tr>
<th>Sound Pattern, dB Level</th>
<th>8 – 17.5 Volts</th>
<th>16 – 33 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15 cd</td>
<td>15/75 cd</td>
</tr>
<tr>
<td>DC Input, Temporal, High</td>
<td>137 147</td>
<td>79 90 107 176 194 212</td>
</tr>
<tr>
<td>DC Input, Temporal, Medium</td>
<td>132 144</td>
<td>69 80 97 157 182 201</td>
</tr>
<tr>
<td>DC Input, Temporal, Low</td>
<td>132 143</td>
<td>66 77 93 154 179 198</td>
</tr>
<tr>
<td>DC Input, Non-temporal, High</td>
<td>141 152</td>
<td>91 100 116 176 201 221</td>
</tr>
<tr>
<td>DC Input, Non-temporal, Medium</td>
<td>133 145</td>
<td>75 85 102 163</td>
</tr>
<tr>
<td>DC Input, Non-temporal, Low</td>
<td>131 144</td>
<td>68 79 96 156</td>
</tr>
<tr>
<td>FWR Input, Temporal, High</td>
<td>136 155</td>
<td>88 97 112</td>
</tr>
<tr>
<td>FWR Input, Temporal, Medium</td>
<td>129 152</td>
<td>78 88</td>
</tr>
<tr>
<td>FWR Input, Temporal, Low</td>
<td>129 151</td>
<td>76 86 101</td>
</tr>
<tr>
<td>FWR Input, Non-temporal, High</td>
<td>142 161</td>
<td>103</td>
</tr>
<tr>
<td>FWR Input, Non-temporal, Medium</td>
<td>134 155</td>
<td>85 95</td>
</tr>
<tr>
<td>FWR Input, Non-temporal, Low</td>
<td>132 154</td>
<td>80 90 105</td>
</tr>
</tbody>
</table>
Two-Wire Horn/Strobe, HIGH Candela Range (135-185 cd), UL Maximum Current Draw (mA RMS)

<table>
<thead>
<tr>
<th>Input, Sound Pattern, dB Level</th>
<th>16 – 33 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC, Temporal, High</td>
<td>245 259 290 297</td>
</tr>
<tr>
<td>DC, Temporal, Medium</td>
<td>235 253 288 297</td>
</tr>
<tr>
<td>DC, Temporal, Low</td>
<td>232 251 282 292</td>
</tr>
<tr>
<td>DC, Non-temporal, High</td>
<td>255 270 303 309</td>
</tr>
<tr>
<td>DC, Non-temporal, Medium</td>
<td>242 259 293 299</td>
</tr>
<tr>
<td>DC, Non-temporal, Low</td>
<td>238 254 291 295</td>
</tr>
<tr>
<td>FWR, Temporal, High</td>
<td>215 231 258 265</td>
</tr>
<tr>
<td>FWR, Temporal, Medium</td>
<td>209 224 250 258</td>
</tr>
<tr>
<td>FWR, Temporal, Low</td>
<td>207 221 248 256</td>
</tr>
<tr>
<td>FWR, Non-temporal, High</td>
<td>233 248 275 281</td>
</tr>
<tr>
<td>FWR, Non-temporal, Medium</td>
<td>219 232 262 267</td>
</tr>
<tr>
<td>FWR, Non-temporal, Low</td>
<td>214 229 256 262</td>
</tr>
</tbody>
</table>

Horn and Horn/Strobe Rotary Switch Setting

<table>
<thead>
<tr>
<th>Setting</th>
<th>Repetition Rate</th>
<th>dB Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Temporal horn</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Temporal horn</td>
<td>Medium</td>
</tr>
<tr>
<td>3</td>
<td>Temporal horn</td>
<td>Low</td>
</tr>
<tr>
<td>4</td>
<td>Normal horn</td>
<td>High</td>
</tr>
<tr>
<td>5</td>
<td>Normal horn</td>
<td>Medium</td>
</tr>
<tr>
<td>6</td>
<td>Normal horn</td>
<td>Low</td>
</tr>
<tr>
<td>7*</td>
<td>Externally coded</td>
<td>High</td>
</tr>
<tr>
<td>8*</td>
<td>Externally coded</td>
<td>Medium</td>
</tr>
<tr>
<td>9*</td>
<td>Externally coded</td>
<td>Low</td>
</tr>
</tbody>
</table>

Note: Settings 7, 8, and 9 are not available on 2-wire horn/strobe.

Horn and Horn/Strobe Output (dBa)

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>Sound Pattern</th>
<th>dB</th>
<th>8 – 17.5 Volts</th>
<th>16 – 33 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>DC</td>
<td>FWR</td>
</tr>
<tr>
<td>1</td>
<td>Temporal</td>
<td>78</td>
<td>84</td>
<td>88</td>
</tr>
<tr>
<td>2</td>
<td>Temporal</td>
<td>74</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>3</td>
<td>Temporal</td>
<td>71</td>
<td>76</td>
<td>76</td>
</tr>
<tr>
<td>4</td>
<td>Non-temporal</td>
<td>82</td>
<td>88</td>
<td>88</td>
</tr>
<tr>
<td>5</td>
<td>Non-temporal</td>
<td>78</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>6</td>
<td>Non-temporal</td>
<td>75</td>
<td>81</td>
<td>81</td>
</tr>
<tr>
<td>7*</td>
<td>Coded</td>
<td>82</td>
<td>88</td>
<td>88</td>
</tr>
<tr>
<td>8*</td>
<td>Coded</td>
<td>78</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>9*</td>
<td>Coded</td>
<td>75</td>
<td>81</td>
<td>81</td>
</tr>
</tbody>
</table>

Note: Settings 7, 8, and 9 are not available on 2-wire horn/strobe.
Agency Listings and Approvals

The listings and approvals below apply to SpectrAlert Advance Selectable Output Notification Devices. 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 Listed: S4011 (HR__, P2__, P4__, PC2__, PC4__ models); S5512 (models SCR, SCRH, SR, SRH); S3593 (SCRHK, SCRK, SRHK, SRK)

FM ......................................................... Approved

MEA .......................................................... 452-05-E

CSFM approved: 7125-1653:186 (SCR, SCRH, SR, SRH); 7300-1653:188 (P2__, P4__, PC2__, PC4__ modules); 7135-1653:189 (HR, HRK); 7125-1653:187 (SCRHK, SCRK, SRHK, SRK)

USCG ....................................................... 161.002/A42/1

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>435774</td>
<td>P2R 2-wire horn/strobe, standard cd</td>
</tr>
<tr>
<td>438153</td>
<td>P2RH 2-wire horn/strobe, high cd</td>
</tr>
<tr>
<td>435884</td>
<td>P2RK 2-wire horn/strobe, standard cd, outdoor</td>
</tr>
<tr>
<td>438144</td>
<td>P2RHK 2-wire horn/strobe, high cd, outdoor</td>
</tr>
<tr>
<td>435749</td>
<td>P4R 4-wire horn/strobe, standard cd</td>
</tr>
<tr>
<td>438155</td>
<td>P4RH 4-wire horn/strobe, high cd</td>
</tr>
<tr>
<td>435886</td>
<td>P4RK 4-wire horn/strobe, standard cd, outdoor</td>
</tr>
</tbody>
</table>

Ceiling Horn/Strobes

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>435748</td>
<td>PC2R 2-wire horn/strobe, standard cd</td>
</tr>
<tr>
<td>435885</td>
<td>PC2RK 2-wire horn/strobe, standard cd, outdoor</td>
</tr>
<tr>
<td>438148</td>
<td>PC2RHK 2-wire horn/strobe, high cd, outdoor</td>
</tr>
<tr>
<td>435750</td>
<td>PC4R 4-wire horn/strobe, standard cd</td>
</tr>
<tr>
<td>438156</td>
<td>PC4RH 4-wire horn/strobe, high cd</td>
</tr>
</tbody>
</table>

Ordering Information (Continued)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>435751</td>
<td>SR Strobe, standard cd</td>
</tr>
<tr>
<td>438157</td>
<td>SRH Strobe, high cd</td>
</tr>
<tr>
<td>438146</td>
<td>SRHK Strobe, standard cd, outdoor</td>
</tr>
<tr>
<td>438147</td>
<td>SRHK Strobe, high cd, outdoor</td>
</tr>
</tbody>
</table>

Wall Strobes

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>435752</td>
<td>SCR Strobe, standard cd</td>
</tr>
<tr>
<td>438158</td>
<td>SCRH Strobe, high cd</td>
</tr>
<tr>
<td>438150</td>
<td>SCRK Strobe, standard cd, outdoor</td>
</tr>
<tr>
<td>438151</td>
<td>SCRHK Strobe, high cd, outdoor</td>
</tr>
</tbody>
</table>

Ceiling Strobes

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>435753</td>
<td>HR Horn</td>
</tr>
<tr>
<td>438152</td>
<td>HRK Horn, outdoor</td>
</tr>
</tbody>
</table>

Horns

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>438068</td>
<td>LENS-B Wall-mount lens attachment, blue</td>
</tr>
<tr>
<td>438069</td>
<td>LENS-R Wall-mount lens attachment, red</td>
</tr>
<tr>
<td>438070</td>
<td>LENS-G Wall-mount lens attachment, green</td>
</tr>
<tr>
<td>438071</td>
<td>LENS-A Wall-mount lens attachment, amber</td>
</tr>
<tr>
<td>438072</td>
<td>LENS-BC Ceiling-mount lens attachment, blue</td>
</tr>
<tr>
<td>438073</td>
<td>LENS-RC Ceiling-mount lens attachment, red</td>
</tr>
<tr>
<td>438074</td>
<td>LENS-GC Ceiling-mount lens attachment, green</td>
</tr>
<tr>
<td>438075</td>
<td>LENS-AC Ceiling-mount lens attachment, amber</td>
</tr>
</tbody>
</table>

Lenses

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>438159</td>
<td>BBS-2 Backbox skirt, wall</td>
</tr>
<tr>
<td>438160</td>
<td>BBSC-2 Backbox skirt, ceiling</td>
</tr>
<tr>
<td>438161</td>
<td>SA-WBB Weatherproof backbox, wall</td>
</tr>
<tr>
<td>438162</td>
<td>SA-WBBC Weatherproof backbox, ceiling</td>
</tr>
<tr>
<td>438076</td>
<td>MDL3R Sync-Circuit Module</td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>438068</td>
<td>LENS-B Wall-mount lens attachment, blue</td>
</tr>
<tr>
<td>438069</td>
<td>LENS-R Wall-mount lens attachment, red</td>
</tr>
<tr>
<td>438070</td>
<td>LENS-G Wall-mount lens attachment, green</td>
</tr>
<tr>
<td>438071</td>
<td>LENS-A Wall-mount lens attachment, amber</td>
</tr>
<tr>
<td>438072</td>
<td>LENS-BC Ceiling-mount lens attachment, blue</td>
</tr>
<tr>
<td>438073</td>
<td>LENS-RC Ceiling-mount lens attachment, red</td>
</tr>
<tr>
<td>438074</td>
<td>LENS-GC Ceiling-mount lens attachment, green</td>
</tr>
<tr>
<td>438075</td>
<td>LENS-AC Ceiling-mount lens attachment, amber</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>438159</td>
<td>BBS-2 Backbox skirt, wall</td>
</tr>
<tr>
<td>438160</td>
<td>BBSC-2 Backbox skirt, ceiling</td>
</tr>
<tr>
<td>438161</td>
<td>SA-WBB Weatherproof backbox, wall</td>
</tr>
<tr>
<td>438162</td>
<td>SA-WBBC Weatherproof backbox, ceiling</td>
</tr>
<tr>
<td>438076</td>
<td>MDL3R Sync-Circuit Module</td>
</tr>
</tbody>
</table>

Note: “High cd” refers to strobes that include 135, 150, 177, and 185 candela settings. “Standard cd” refers to strobes that include 15, 15/75, 30, 75, 95, 110, and 115 candela settings.

Note: All outdoor models (“K” suffix) include weatherproof backbox.
Detection and Control Components

Alarm Bell – 6 or 10 Inch
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

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

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

The 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)
## Listings and Approvals

UL ................................................................. E71424  
ULC ............................................................... ML338  
Factory Mutual (FM) ................................. OV1A5.KY  
California State Fire Marshal (CSFM) .......... 7135-0595:110  
USCG ............................................................. 161.002/A42/1

## Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
<th>lb</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>417805</td>
<td>Alarm Bell, 24 VDC, 6 in. (152 mm)</td>
<td></td>
<td>7</td>
<td>3.2</td>
</tr>
<tr>
<td>417806</td>
<td>Alarm Bell, 24 VDC, 10 in. (254 mm)</td>
<td></td>
<td>9</td>
<td>4.1</td>
</tr>
<tr>
<td>24747</td>
<td>WBB, Surface Mount Back Box, Weatherproof</td>
<td></td>
<td>2</td>
<td>0.9</td>
</tr>
</tbody>
</table>
General
The SSM Series Alarm Bells are low-current, high-decibel notification appliances for use in fire and burglary systems, or other signaling applications. The alarm bells can be used with AUTOPULSE IQ-318 and IQ-636X-2 Control Panels, and with AUTOPULSE 542R and 542D Releasing and Deluge Panels.

The alarm bells come pre-wired to reduce installation time, and also incorporate a polarized electrical design for use with supervision circuitry.

With reliable performance, SSM Series alarm bells provide loud, resonant tones. They operate on 24 VDC and are motor driven.

SSM Series alarm bells offer simplified installation. For indoor use, the alarm bells mount to a standard 4 in. (102 mm) square electrical box. For outdoor applications, a WBB weatherproof back box is used.

Features
• Approved for indoor and outdoor (with WBB back box) use
• Low current draw
• High dB output
• Available in 6 in. (152 mm) and 10 in. (254 mm) sizes
• 24 VDC models, polarized for use with supervision circuitry
• Bells mount directly to standard 4 in. (102 mm) square electrical box

Specifications
Regulated Voltage: 24 VDC
Operating Voltage Range: 16 to 33 VDC
Maximum Current: DC-31.1mA/FWR-53.5mA
Operating Temperature Range: –31 °F to 150 °F
(–35 °C to 66 °C)
Sound Output (dBA): 82 (SSM24-6)
81 (SSM24-10)
Termination: Provided with two sets of leads for in/out wiring

Service Use: Fire Alarm, General Signaling, Burglar Alarm

Engineering and Architectural Specifications
Model shall be a SSM Series alarm bell. Bells shall have underdome strikers and operating mechanisms. Alarm bell gongs shall be no smaller than nominal 6 in. (152 mm) or 10 in. (254 mm) with an operating voltage of 24 VDC. Bells shall be suitable for surface or semi-flush mounting. Outdoor surface-mounted installations shall be weatherproof (using optional WBB weatherproof back box); otherwise, bells shall mount to a standard 4 in. (102 mm) square electrical box having a minimum projection of 2.5 in. (64 mm).

Bells shall be located as shown on the installation drawings or as determined by the Authority Having Jurisdiction (AHJ). Bells shall be Listed for indoor/outdoor use by Underwriters Laboratories and the California State Fire Marshall, and approved by Factory Mutual and MEA.

Agency Listings and Approvals
These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

UL Listed . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S4011
FM. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Approved
CSFM. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 7135-1653:0217
MEA. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 331-01-E

Ordering Information
SSM24-6: 6 in. (152 mm) bell, 24 VDC, polarized, 82 dB
SSM24-10: 10 in. (254 mm) bell, 24 VDC, polarized, 81 dB
WBB: Weatherproof back box for SSM Series

Part No. Description Weight (lb) (kg)
439030 SSM24-6 Alarm Bell 7 (3.2)
439031 SSM24-10 Alarm Bell 9 (4.1)
439032 WBB – Weatherproof Back Box 2 (0.9)
Detection and Control Components

Main/Reserve Switch
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

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 Main/Reserve Switch is required for main/reserve fire suppression systems. The switch position determines whether the release circuit signal activates the main system release or the reserve system release.

Description
The Main/Reserve Switch assembly consists of a key-operated 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.

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
<th>Shipping Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>76496</td>
<td>Main/Reserve Switch, Surface-Mount</td>
<td>1.0 (0.45)</td>
<td></td>
</tr>
<tr>
<td>76497</td>
<td>Main/Reserve Switch, Flush-Mount</td>
<td>1.0 (0.45)</td>
<td></td>
</tr>
<tr>
<td>436983</td>
<td>Extra Contact Block, N.C.</td>
<td>0.25 (0.11)</td>
<td></td>
</tr>
<tr>
<td>436982</td>
<td>Extra Contact Block, N.O.</td>
<td>0.25 (0.11)</td>
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</tr>
<tr>
<td>436088</td>
<td>Spare Key</td>
<td>0.25 (0.11)</td>
<td></td>
</tr>
</tbody>
</table>

TYPICAL WIRING DIAGRAM

* SEE CONTROL UNIT MANUAL FOR SPECIFIC WIRING REQUIREMENTS.

MOUNTING DIMENSIONS

<table>
<thead>
<tr>
<th>Surface-Mount</th>
<th>Flush-Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 7/8 IN. (73 mm)</td>
<td>2 5/8 IN. (67 mm)</td>
</tr>
<tr>
<td>4 5/8 IN. (117 mm)</td>
<td>3 IN. (76 mm)</td>
</tr>
</tbody>
</table>

* 3-11

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Form No. T-2007132-3
Detection and Control Components

Electric Manual Pull Station
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

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 control panels 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 this point, the handle locks into place and is easily visible from up to 50 ft (15 m). 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 (Part No. 428098) (sold separately). The terminal block provides clamping plates for easy connection to the SLC loop and N.O. switch contacts.
TECHNICAL INFORMATION

Conventional

Switch Ratings: 1 A @ 30 VDC
1 A @ 120 VAC

Switch Type: SPST or DPST

Terminal Size: Up to 14 AWG

Color: Red with raised white letters, white PUSH/PULL HANDLES with raised red letters

Weather Proof with Weather Proof Back Box . . . NEMA 3R

Explosion-proof

Switch Ratings: 1 A @ 30 VDC,
10 A @ 120 VAC

Switch Type: DPDT

Terminal Size: Up to 14 AWG

Humidity: 90% Relative at 100 °F (37.7 °C)

Explosion Hazard Classifications: Class I Groups B, C, D; Class II Groups E, F, G; Class III

Weatherproof Classifications: NEMA Type 4X

Other Classifications: UL Marine Listing

Conduit Fittings: 2

Conduit Fitting Size: 3/4 in. – 14 NPT

Color: Red with raised white letters, white PUSH/PULL handles with raised red letters

LISTINGS AND APPROVALS*

UL . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S5654
UL (Explosion-proof Model) . . . . . . . . . . . . . . . . . . . . . . . . E 192508
ULC . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Listed

Factory Mutual . . . . . . . . . . . . . . . . . . . . . . . . . . . Approved

California State Fire Marshal (CSFM) . . . . . 7150-1408:107

MEA . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 382-94-E

* Listings and Approvals are under Signal Communications Corporation

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
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<tbody>
<tr>
<td>428655</td>
<td>Manual Pull Station, SPST</td>
<td>1 (0.45)</td>
</tr>
<tr>
<td>428656</td>
<td>Manual Pull Station, DPST</td>
<td>1 (0.45)</td>
</tr>
<tr>
<td>428657</td>
<td>Explosion Proof Manual Pull Station</td>
<td>1 (0.45)</td>
</tr>
<tr>
<td>428658</td>
<td>Manual Pull Station, Addressable Ready</td>
<td>1 (0.45)</td>
</tr>
<tr>
<td>428659</td>
<td>Weatherproof Back Box</td>
<td>1 (0.45)</td>
</tr>
<tr>
<td>428660</td>
<td>Surface Back Box</td>
<td>1 (0.45)</td>
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<tr>
<td>428661</td>
<td>Break Rod</td>
<td>1 (0.45)</td>
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<tr>
<td>418336</td>
<td>Key</td>
<td>1 (0.45)</td>
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<tr>
<td>428654</td>
<td>Label Packet</td>
<td>1 (0.45)</td>
</tr>
</tbody>
</table>

WIRING – SPST PULL STATION

WIRING – DPST PULL STATION

WIRING – EXPLOSION PROOF PULL STATION

WIRING – ADDRESSABLE READY PULL STATION
AutoPulse

Detection and Control Components

PS Series Batteries
(IQ-318, IQ-636X-2, 542R, 542D, Z-10)

Features

- Provide secondary power for control units
- Gelled electrolyte
- Sealed and maintenance free
- Overcharge protected
- Extended shelf life
- Easy handling with leak-proof construction
- Ruggedly constructed, high-impact ABS plastic case
- Long service life
- Compact design

Applications

PS series batteries provide secondary power for the AUTOPULSE control systems. Use these batteries to provide backup power for control units. Select batteries based on current requirements for your system and the capacity of its charger. These batteries can be used over a temperature range of –76 °F to +140 °F (–60 °C to +60 °C).

Description

The sealed construction of the battery allows trouble-free, safe operation in any position. There is no need to add electrolyte, as gases generated during overcharge are recombined in a unique “Oxygen Cycle.” The battery is sealed, leak-proof, and maintenance free. The case is made of ABS, a high-impact plastic resin (acrylonitrile butadiene styrene copolymer) with high resistance to chemicals and flammability.

Shipping assemblies consist of two (2) 12 VDC batteries providing 24 VDC to the control system when connected in series.

Technical Information

The capacity of a battery is the total amount of electrical energy available from a fully charged cell. Its value depends on the discharge current, the temperature during discharge, the final cutoff voltage and the general history of the battery.

Capacity expressed in ampere-hours (AH), is the product of the current discharged and the length of discharge time. The rated capacity (C, where C = rated Capacity of the battery in AH) of the PS series batteries is measured by its performance over 20 hours of constant current discharge at a temperature of 68 °F (20 °C) to a cutoff voltage of 1.72 volts, per cell (10.32 V on a 12 V battery). For example: Model PS-1250, with a rated capacity of 5.0 AH, will deliver 250 milli-amps (1/20 of 4 AH, or 0.05C) for 20 hours before the voltage drops to 10.32 V (1.72 x 6 cells).
### Technical Information (Continued)

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Capacity @ 20 Hour Rate (AH)</th>
<th>20 Hour Discharge Rate (mA rate)</th>
<th>Length in. (mm)</th>
<th>Width in. (mm)</th>
<th>Height in. (mm)</th>
<th>Height over Terminal in. (mm)</th>
<th>Weight lb (kg)</th>
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</thead>
<tbody>
<tr>
<td>PS-1270</td>
<td>7.0</td>
<td>325</td>
<td>5.94 (151)</td>
<td>2.56 (65)</td>
<td>3.70 (94)</td>
<td>3.86 (98)</td>
<td>5.7 (2.6)</td>
</tr>
<tr>
<td>PS-12120</td>
<td>12</td>
<td>600</td>
<td>5.94 (151)</td>
<td>3.86 (98)</td>
<td>3.70 (94)</td>
<td>3.86 (98)</td>
<td>8.8 (4.0)</td>
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<tr>
<td>PS-12180</td>
<td>18</td>
<td>875</td>
<td>7.13 (181)</td>
<td>2.99 (76)</td>
<td>6.57 (167)</td>
<td>6.57 (167)</td>
<td>12.8 (5.8)</td>
</tr>
<tr>
<td>PS-12260</td>
<td>26</td>
<td>1300</td>
<td>6.89 (175)</td>
<td>6.54 (166)</td>
<td>4.92 (125)</td>
<td>4.92 (125)</td>
<td>18.7 (8.5)</td>
</tr>
<tr>
<td>PS-12550</td>
<td>55</td>
<td>3000</td>
<td>10.25 (260)</td>
<td>6.60 (168)</td>
<td>8.20 (208)</td>
<td>9.45 (240)</td>
<td>39.7 (18.0)</td>
</tr>
</tbody>
</table>

*Note:* Individual batteries have a nominal voltage of 12 volts.

### Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Model No.</th>
<th>Description</th>
<th>Shipping Weight lb (kg)</th>
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</thead>
<tbody>
<tr>
<td>417692</td>
<td>PS-1270</td>
<td>PS Battery Pack, 7.0 AH, 24 VDC</td>
<td>12 (5.4)</td>
</tr>
<tr>
<td>437022</td>
<td>PS-1270</td>
<td>PS Battery Pack, 7.0 AH, 24 VDC (ULC)</td>
<td>12 (5.4)</td>
</tr>
<tr>
<td>417693</td>
<td>PS-12120</td>
<td>PS Battery Pack, 12 AH, 24 VDC</td>
<td>18 (8.2)</td>
</tr>
<tr>
<td>439042</td>
<td>BAT-12120-BP</td>
<td>PS Battery Pack, 12 AH, 24 VDC (4-Pack) (ULC)</td>
<td>18 (8.2)</td>
</tr>
<tr>
<td>417694</td>
<td>PS-12180</td>
<td>PS Battery Pack, 18 AH, 24 VDC</td>
<td>26 (11.8)</td>
</tr>
<tr>
<td>437090</td>
<td>PS-12180</td>
<td>PS Battery Pack, 18 AH, 24 VDC (ULC)</td>
<td>26 (11.8)</td>
</tr>
<tr>
<td>417695</td>
<td>BAT-12260</td>
<td>BAT Battery Pack, 26 AH, 24 VDC</td>
<td>40 (18.1)</td>
</tr>
<tr>
<td>417997</td>
<td>PS-12550</td>
<td>PS Battery Pack, 55 AH, 24 VDC</td>
<td>84 (38.1)</td>
</tr>
</tbody>
</table>
Detection and Control Components

NBG-12LR Dual-Action Agent Release Station
(IQ-318, IQ-636X-2, 542R, 542D)

General
The NBG-12LR is an Agent Release Station designed for use with AUTOPULSE Fire Suppression Control Panels.

Features
- Non-coded, dual-action operation
- Made with durable polycarbonate
- Optional surface backbox
- Dual-action release only

Applications
The NBG-12LR is ideal for areas such as clean rooms and computer rooms where a chemical agent is used to extinguish a fire.

Wiring
* REFER TO CONTROL PANEL MANUAL FOR LISTED ELR

Dimensions, Backboxes

Listings and Approvals
UL ................................................. S692
FM .................................................. Approved
California State Fire Marshall (CSFM) ... 7150-0028:199

Ordering Information

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<thead>
<tr>
<th>Part No.</th>
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<tbody>
<tr>
<td>435471</td>
<td>NBG-12LR Dual-Action Agent Release Station</td>
<td>2 (0.91)</td>
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<tr>
<td>418990</td>
<td>SB-10 Surface BackBox for NBG-12LR</td>
<td>0.5 (0.23)</td>
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</tbody>
</table>
Applications

The Explosion-Proof 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 push button 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 push button is released, the release circuit is activated (unless the control unit has been reset to the non-alarm condition).

Description

The switch consists of a black push button operator, normally open and normally closed contacts, Despard Mounting Strap and screws. Switch operation is momentary contact – contacts transfer when operator is held in. Hub size is 3/4 inch. Enclosures and covers are made of cast, copper-free aluminum.

The Explosion-Proof Abort Switch is suitable for use in the following areas: Class I, Groups C and D; Class II, Groups E, F, and G; Class III; and NEMA 7 C D, 9 E F G.

Technical Information

Dimensions:
- High: 4 5/8 in. (117 mm)
- Wide: 3 in. (76 mm)
- Deep: 1 3/4 in. (45 mm)

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>65956</td>
<td>Explosion-Proof Abort Switch</td>
<td>5 (2.3)</td>
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</tbody>
</table>

* SEE CONTROL UNIT MANUAL FOR SPECIFIC WIRING REQUIREMENTS.
**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.

**Ordering Information**

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<th>(kg)</th>
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<tbody>
<tr>
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<td>Abort Switch, Surface-Mount</td>
<td>1.0</td>
<td>0.45</td>
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<tr>
<td>76495</td>
<td>Abort Switch, Flush-Mount</td>
<td>1.0</td>
<td>0.45</td>
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<tr>
<td>436983</td>
<td>Extra Contact Block, NC</td>
<td>0.25</td>
<td>0.11</td>
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<tr>
<td>436982</td>
<td>Extra Contact Block, NO</td>
<td>0.25</td>
<td>0.11</td>
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</tbody>
</table>

**Mounting Dimensions**

```
<table>
<thead>
<tr>
<th></th>
<th>Surface-Mount</th>
<th>Flush-Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 7/8 IN. (76 mm)</td>
<td>3 IN. (70 mm)</td>
</tr>
<tr>
<td></td>
<td>4 5/8 IN. (117 mm)</td>
<td>2 5/8 IN. (67 mm)</td>
</tr>
</tbody>
</table>
```
Detection and Control Components

Key Maintenance Switch
(IQ-318, IQ-636X-2, 542R, 542D)

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 Key Maintenance Switch is used to interrupt the release circuit signal to the fire suppression system. It is key-operated to allow authorized personnel to deactivate the release circuit during service or maintenance. An indicator lamp, located on the switch plate, will light when the switch is in the “lock-out” mode to serve as a reminder that the release circuit has been disconnected.

Description

The Key Maintenance Switch assembly consists of a key-operated switch, 24 VDC indicator lamp, normally-open contact block, normally-closed contact block, and stainless steel switch plate with silk-screened label. Surface-mount assemblies include a double-gang weather-proof box 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 when installed in the surface-mount box (with gasket) that is provided with the surface-mount assembly.

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
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<tbody>
<tr>
<td>76498</td>
<td>Maintenance Switch, Surface-Mount</td>
<td>2.0 (0.9)</td>
</tr>
<tr>
<td>76499</td>
<td>Maintenance Switch, Flush-Mount</td>
<td>2.0 (0.9)</td>
</tr>
<tr>
<td>436983</td>
<td>Extra Contact Block, N.C.</td>
<td>0.25 (0.11)</td>
</tr>
<tr>
<td>436982</td>
<td>Extra Contact Block, N.O.</td>
<td>0.25 (0.11)</td>
</tr>
<tr>
<td>436088</td>
<td>Spare Key</td>
<td>0.25 (0.11)</td>
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MOUNTING DIMENSIONS

<table>
<thead>
<tr>
<th>Surface-Mount</th>
<th>Flush-Mount</th>
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</thead>
<tbody>
<tr>
<td>4 11/16 IN. (119 mm)</td>
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<tr>
<td>4.5/8 IN. (117 mm)</td>
<td>Normal</td>
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<tr>
<td>Disconnect</td>
<td>FIRE SUPPRESSION SYSTEM DISCONNECT</td>
</tr>
</tbody>
</table>
Detection and Control Components

PS Series Battery Back Box
(IQ-318, IQ-636X-2, 542R, 542D)

Description
The optional BB-17 battery back box is used with the AUTOPULSE IQ-318, the AUTOPULSE IQ-636X-2, the AUTOPULSE 542R and the AUTOPULSE 542D control units. The back box can be used for the remote mounting of two 12-volt batteries of up to 18 AH capacity.
The BB-25 battery back box holds the 25AH battery pack.
For larger batteries, the BB-55 battery back box holds up to two 60 AH batteries (12 volts).

Listings and Approvals*
UL .............................................................. S635
ULC
BB-17 ....................................................... CS118, CS733
Factory Mutual (FM)
BB-17 .......................................................... 0V4A5.AY
California State Fire Marshal (CSFM)
BB-17 ....................................................... 7165-0028: 164
BB-55 ....................................................... 7165-0028: 181, 7170-0028: 182
MEA
BB-17 ....................................................... 104-93-E
BB-55 ....................................................... 17-96-E

Ordering Information

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<td>BB-17, Battery Back Box, Black</td>
<td>10 (4.5)</td>
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<tr>
<td>418578</td>
<td>BB-17, Battery Back Box, Red</td>
<td>10 (4.5)</td>
</tr>
<tr>
<td>428079</td>
<td>BB-25, Battery Back Box, Black</td>
<td>15 (6.8)</td>
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<tr>
<td>419410</td>
<td>BB-55, Battery Back Box, Red</td>
<td>30 (13.6)</td>
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Dimensions

<table>
<thead>
<tr>
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<th>A – Width</th>
<th>B – Height</th>
<th>C – Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB-17</td>
<td>14 1/2 in. (369 mm)</td>
<td>8 1/4 in. (210 mm)</td>
<td>4 3/4 in. (121 mm)</td>
</tr>
<tr>
<td>BB-25</td>
<td>24 in. (610 mm)</td>
<td>12 5/8 in. (321 mm)</td>
<td>5 1/4 in. (133 mm)</td>
</tr>
<tr>
<td>BB-55</td>
<td>24 1/8 in. (613 mm)</td>
<td>14 1/4 in. (362 mm)</td>
<td>7 13/16 in. (198 mm)</td>
</tr>
</tbody>
</table>

Note: When using battery back boxes, ensure the battery capacity does not exceed the rating of the control unit power supply. An auxiliary power supply may be required to charge larger batteries. Consult the control unit installation manual for maximum battery ratings.
General
The PRN-6 printer can be used with AUTOPULSE IQ-318 and IQ-636X-2 Control Panels, and with AUTOPULSE 542R and 542D Releasing Panels to provide a written record of system events and status changes.

Features
• Provides a hard copy printout of all system events and status changes.
• Time stamps printed on the record of each event and status change with the current time-of-day and date.
• Uses standard 9 in. x 11 in. (229 mm x 279 mm) tractor-feed fan-fold paper.
• Provides 80 columns of data at 10 characters per inch.
• Provides printed records of system configuration and addressable device parameters.
• Nine-pin print head.
• Very quiet (approximately 53 dBA).

Applications
Printed transaction records reduce the man-hours required to install and maintain a system. A printed record of all system events (alarms, troubles, etc.) and status changes can be especially valuable in the event of a disputed incident.

Construction and Operation
The printer is housed in its own separate enclosure and is suitable for placement on a desk top, counter, or table.

Installation
The PRN-6 should be placed in a secure area to prevent theft of the printer and/or printed records.
The PRN-6 must not be located further than 50 ft (15.2 m) (actual cable length) from the control panel.
Consult the control panel installation manual for the proper method and PINs used to complete the electrical connection to the control panel.

Note: If printer operation is required during failure of primary power, use of a separate UL-listed Uninterruptable Power Supply (UPS) system is recommended.

Printer Specifications
Printer Method: Serial printing with 9-pin matrix print head
Printing Speed: (copy draft) 310 cps at 10 cpi
Character Density: 10 cpi standard (12, 15, 17.1, and 20 cpi available via front panel)
Graphic Resolution: (VxH) 144 x 240 dpi
Ribbon Life (approx.): 4 million characters (DPQ)
Acoustic Noise Level: 53 dBA (approx.)
Dimensions: 19 in. (483 mm) W x 7.9 in. (201 mm) H x 9.7 in.
(246 mm) D
Weight: 17.6 lb (7.9 kg)
Power Supply: 120 VAC (only)
Power Consumption: 50 watts (operating)
Operating Environment Temperature: 50 °F to 104 °F (10 °C to 40 °C)
Operating Environment Humidity: 20% to 80% (non-condensing)

Agency Listings and Approvals*
These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.
UL Listed .................................................. S635
ULC Listed ................................................ S635
MEA .............................................................. 08-04-E
FM ............................................................. Approved
CSFM ......................................................... 7300-0028:197

*Listings and Approvals are under NOTIFIER.

Ordering Information
PRN-6: 9-pin dot-matrix printer, 120 VAC power.

<table>
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<tbody>
<tr>
<td>435469</td>
<td>PRN-6 Printer</td>
<td>18 (8.2)</td>
</tr>
</tbody>
</table>
Description

The FSL-751 VIEW® Laser Detector provides a revolutionary advance in early warning smoke detection technology. The unique design of this detector, combined with enhanced AWACS™ algorithms in the AUTOPULSE IQ-318 or IQ-636X-2 control panel, allows smoke detection sensitivity that is 10 to 50 times more sensitive than present photoelectric technology. Because of this high sensitivity, the FSL-751 can provide very early warning of slow smoldering fires. Its performance is comparable to present aspiration technology, at a substantially lower installed cost.

The FSL-751 uses an extremely bright laser diode, combined with special lens and mirror optics (U.S. patent pending), to achieve a signal-to-noise ratio that is much higher than traditional photoelectric sensors. In addition, the tightly focused light beam, combined with the AWACS algorithms (U.S. patent pending), allow the system to differentiate between dust and smoke particles. Because of this differentiation, the FSL-751 can be set to extremely high sensitivity, yet can reject false signals caused by larger airborne particles such as dust, lint, and small insects (U.S. patents pending). The FSL-751 is an intelligent (analog/addressable) detector. On FlashScan® systems, up to 159 addresses are available. The FSL-751 may be mixed in any combination with other intelligent sensors on the same loop and is quickly installed using the panel autoprogram feature. The FSL-751 provides dual bi-color LEDs, which blink green in normal operation and illuminate steady red in alarm.

FlashScan (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the panel CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of other designs.

Using the enhanced AWACS algorithms, the VIEW® system provides drift compensation (meeting UL requirements as a calibrated sensitivity meter), maintenance alert (3 levels), selection of 9 alarm levels and 9 pre-alarm levels, and report of drift compensation used and recent peak values. The system includes a self-learn sensitivity adjustment to set the pre-alarm level just above the peak levels sensed over long periods of time for each detector’s actual environment. The system includes multi-detector algorithms (U.S. patent pending) that permit one sensor to consider readings from adjacent sensors to provide faster detection of fires.

Features

• Very Intelligent Early Warning (VIEW) smoke detection.
• Advanced laser light source and patented optical design.
• Sleek low-profile housing (1.66 in. (42 mm) height).

Listings and Approvals*

UL Listed. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S1115
ULC Listed** . . . . . . . . . . . . . . . . . . . . . . . . . . . . S911
U.S. Coast Guard . . . . . . . . . . . . . . . . . . . . . . . . . . 161.002/A42/1 (IQ-636X)
Factory Mutual (FM) . . . . . . . . . . . . . . . . . . . . . . Approved
CSFM . . . . . . . . . . . . . . . . . . . . 7272-0028:218
MEA (NYC) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3-02-E

*Listings and Approvals are under Notifier.
**System Sensor
Specifications
Operating voltage range: 15 to 28 VDC
Maximum standby current: 230 μA @ 24 VDC (no communication)
Maximum average standby current: 255 μA @ 24 VDC (one communication every 5 seconds with LED blink enabled)
B224RB/B224BI: < 700 μA @ 24 VDC (includes detector)
Maximum alarm current: 6.5 mA @ 24 VDC (LED “ON”)
Operating humidity range: 10% to 93% Relative Humidity, non-condensing
Operating temperature range: 0 to 49 °C (32 to 120 °F)
Loop resistance: 40 ohms maximum
Dimensions:
  Height: 1.66 in. (42 mm) installed in B210LP base
  Diameter: 6.1 in. (155 mm) installed in B210LP base; 4.1 in. (104 mm) installed in B501 base
  Weight: 3.6 oz (102 g)

Bases Available:
- B210LP: 6 in. (155 mm) diameter
- B501: 4.1 in. (104 mm) diameter
- B200SR(A): Sounder Base

B224RB Relay Base:
  Screw terminals: Up to 14 AWG (2.00 mm²)
  Relay type: Form-C
  Rating: 2 A @ 30 VDC resistive; 0.3 A @ 110 VDC inductive; 1.0 A @ 30 VDC inductive
  Dimensions: 6.2 in. (157 mm) x 1.2 in. (30 mm)

B224BI Isolator Base:
  Dimensions: 6.2 in. (157 mm) x 1.2 in. (30 mm).
  Maximum: 25 devices between isolator bases

Recommended Coverage Per Detector
In order to support sophisticated smoke/dust discrimination algorithms (cooperating multi-detector), it is recommended that at least two FSL-751 detectors be installed in each room or enclosed area.

Installation
The FSL-751 plug-in detector uses a separate base to simplify installation, service, and maintenance.
Mount base on a box which is at least 1.5 in. (38.1 mm) deep.
Suitable mounting base boxes include:
  • 4 in. (102 mm) square box.
  • 3-1/2 in. (89 mm) or 4 in. (102 mm) octagonal box.
  • Single-gang box (except relay or isolator base).

Ordering Information

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<td>417675</td>
<td>M02-04-00 Test Magnet</td>
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Wiring Diagram (standard base)
FSL-751 Design

The FSL-751 incorporates an extremely bright laser diode and integral lens that focuses the light beam to a very small volume near the receiving photo sensor. The light then passes into a light trap and is absorbed. The photo sensor is activated by a scattering of smoke particles in this small-volume light beam.

In a typical photoelectric detector, the light beam is very wide and can reflect off the chamber walls into the photo sensor because dust accumulation changes the wall color from flat black to gray. With the FSL-751, the concentrated light beam does not touch the walls, therefore it is much less susceptible to dust accumulation.

Smokes scatter light in all directions and, in a typical photoelectric detector, only a small portion of that scattered light reaches the photo sensor itself. In the FSL-751, a special mirror reflects and concentrates most of the scattered light into the photo sensor. See laser detail drawings on this page.

Compared to smoke, airborne dust particles are very large and very sparse. Since a) they are in motion; b) the illuminated volume is very small; and c) the FSL-751 flashes the laser only every few seconds; then the occasional dust particle cannot remain in the light volume for more than one or two samples. This transient signal from dust is the key to the dust discrimination performed by VIEW.
Detection and Control Components

FST-851, FST-851R, and FST-851H Thermal Detectors (IQ-318/IQ-636X-2)

Features

• State-of-the-art thermistor technology for fast response
• Rate-of-rise model (FST-851R), 15 °F (8 °C) per minute
• Factory preset at 135 °F (58 °C) (FST-851, FST-851R)
• High-temperature model FST-851H 190 °F (88 °C)
• Analog-addressable communication
• Direct 01-159 entry of address
• Visible LEDs “blink” every time the unit is addressed
• 360° field viewing angle of the visual alarm indicators (two bicolor LEDs)
• LEDs blink green in Normal condition and turn on steady red in Alarm
• Integral communications and built-in device-type identification
• Compact, stylish design
• Remote test feature from the panel
• Built-in functional test switch activated by external magnet
• Walk test with address display uses a blinking pattern on the detector LED (FlashScan® systems only)
• Low standby current
• Listed UL 521
• Built-in tamper-resistant feature
• Designed for direct-surface or electrical-box mounting
• Sealed against back pressure
• Separate base allows interchange of photoelectric, ionization and thermal sensors
• SEMS screws for wiring of the separate base
• 94-5V plastic flammability rating
• Optional sounder, relay, and isolator bases
• FlashScan communication protocol

Applications

The FST-851, FST-851R, and FST-851H intelligent thermal detectors are used with the AUTOPULSE IQ-318 and IQ-636X-2 Fire Alarm Systems to measure thermal levels caused by a fire and report the analog level of the thermal measurement to the control panel. The use of analog information provides significant benefits to the end user, installer, and service personnel in ways that are not possible with a conventional type system. Since this detector is addressable, it helps firefighters quickly locate a fire in its early stages.

The detectors are intended for use in commercial, industrial, and institutional buildings. Areas with relatively stable temperatures (no rapid changes) can use the FST-851R with the rate-of-rise feature for a quicker response.

Description

Each FST detector uses one of 159 possible addresses on a control panel SLC loop. It responds to regular polls from the control panel and it reports its type and status, including the analog level of its heat-sensing elements. If it receives a test command from the panel (or a local magnet test), it stimulates its electronics and reports an alarm analog level. It blinks its LEDs when polled and turns the LEDs on when commanded by the panel (detector blink is optional). The FST detectors offer features and performance that represent the latest in thermal detector technology. The FST-851 and FST-851R can be used to replace the FDX-551, FDX-551R, FST-751, and FST-751R detectors in existing systems.

FlashScan (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the panel’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

The detectors are constructed of Bayblend® in an off-white color. The detector is designed to commercial standards and offers an attractive appearance.

The FST-851, FST-851R, and FST-851H plug-in intelligent thermal detectors use a separate base to simplify installation, service, and maintenance. Installation instructions are shipped with each detector. Mount base on box which is at least 1.5 in. (38 mm) deep.

Technical Information

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<th>Operating Temperature:</th>
<th>–4 °F to 100 °F (FST-851, FST-851R)</th>
<th>–20 °C to 38 °C (FST-851H)</th>
<th>–4 °F to 150 °F (–20 °C to 66 °C)</th>
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<td>Operating Humidity Range:</td>
<td>10 to 93% relative humidity, noncondensing</td>
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<td>Operating Voltage/Current Range:</td>
<td>15 – 28 V (Peak DC), 5 mA current for visible LEDs latched on</td>
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<td>Detector Standby Current:</td>
<td>300 μA @ 24 VDC (one communication every 5 seconds with LED blink enabled)</td>
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<td>For bases B224RB or B224BL:</td>
<td>&lt;700 μA @ 24 VDC (includes detector)</td>
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<td>Sensor:</td>
<td>electronic, dual thermistors</td>
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</table>
Technical Information (Continued)

Fixed Temperature Setpoint: 135 °F (57 °C)
High-temperature 190 °F (88 °C)

Rate-of-Rise Option: 15 °F (8 °C) per minute

Bases Available:
- B210LP: 6.1 in. (155 mm) diameter
- B501: 4.1 in. (104 mm) diameter
- B200SR(A): Sounder Base
- B224RB: 6.2 in. dia. x 1.2 in. high (157 mm x 30 mm)
  - Relay Type: Form-C
  - Rating: 2.0 A @ 30 VDC resistive
  - 0.3 A @ 110 VDC inductive
  - 1.0 A @ 30 VDC inductive
  - Screw terminals: Up to 14 AWG (2.00 mm²)
- B224BI: 6.2 in. dia. x 1.2 in. high (157 mm x 30 mm)
  - Maximum: 25 devices between isolator bases

FST-851, FST-851R, OR FST-851H DETECTOR
WITH B210LP, B224RB OR B224BI BASE

Ordering Information

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<td>FST-851RA Rate-of-Rise Intelligent Thermal Detector (ULC)</td>
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<td>432292</td>
<td>FST-851H High Temperature Intelligent Thermal Detector – 190 °F (88 °C)</td>
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<td>B200SR Sounder Base</td>
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<td>B200SR Sounder Base (ULC)</td>
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<td>B224RB Intelligent Relay Base</td>
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<td>B224BI Intelligent Isolator Base</td>
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<tr>
<td>417675</td>
<td>M02-04-00 Test Magnet</td>
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Mounting Guidelines

- Mount bases (all types) on a minimum 1.5 in. (38 mm) deep box. Select from the following:
- 3 1/2 in. (89 mm) or 4 in. (102 mm) octagonal single gang box (except relay or isolator base)

Listings and Approvals*

- UL: S747
- ULC: CS630
- CSFM: 7270-0028:196
- Factory Mutual (FM): Approved
- MEA (NYC): 383-02-E
- USCG: 161.002/A42/1

* Listings and Approvals are under NOTIFIER.

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Form No. T-2007111-3
**Detection and Control Components**

**FSI-851 Intelligent Ionization Smoke Detector (IQ-318/IQ-636X-2)**

**Features**
- Sleek low profile design
- Analog-addressable communication
- Stable communication techniques with noise immunity
- Low standby current
- Rotary 01 to 159 address switches
- Dual LED design provides 360° viewing angle
- Visible bicolor LEDs blink green every time the detector is addressed, and illuminate steady red on alarm
- Walk test with address display (an address of 91 will blink the detector LED: 9-(pause)-1) – FlashScan® systems only
- Built-in functional test switch activated by external magnet
- Optional relay, isolator, or sounder bases
- Listed to UL 268
- FlashScan® communication protocol

**Applications**
The FSI-851 is an analog, addressable, low-profile smoke detector designed for the AUTOPULSE IQ-318 and IQ-636X-2 Fire Alarm Control Units.

The addressability of the FSI-851 enables the control unit to provide firefighters with a pinpoint description of where the fire is located. The control unit is capable of not only knowing the detector’s location but also exactly how much smoke is in the chamber of the detector. The detector may be set for different sensitivity settings appropriate to the environment of its location.

Analog devices continually send obscuration values to the control unit. These values may be gathered so as to allow the control unit to determine if a detector has accumulated an excessive amount of dirt or dust. A “maintenance” required indication allows the installer to clean the smoke detector before an unwanted false alarm occurs.

**Description**
The FSI-851 Intelligent Ionization Sensor incorporates a unique single-source chamber design to respond quickly and dependably to a broad range of fires. The FSI-851 can be used to replace the CPX-751 or FSI-751, in existing systems.

FlashScan (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the panel’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

**Technical Information**
- Operating Temperature: 32 °F to 120 °F (0 °C to 49 °C)
- UL Listed Velocity Range: 0 – 1200 fpm (0 – 365.76 m/min)
- Relative Humidity: 10% to 93% noncondensing
- Voltage Range: 15 – 32 volts DC peak
- Standby current: 200 μA @ 24 VDC (w/o communication); 300 μA @ 24 VDC (one communication every 5 seconds with LED enabled)
- LED current (max.): 6.5 mA @ 24 VDC (ON)
- Height: 4.1 in. (104 mm)
- Diameter: 6.1 in. (155 mm) diameter
- Bases Available:
  - B210LP: 6.1 in. (155 mm) diameter
  - B501: 4.1 in. (104 mm) diameter
  - B200SR(A): Sounder Base
  - B224RB: 6.2 in. dia. x 1.2 in. high (157 mm x 30 mm)
  - B224BI: 6.2 in. dia. x 1.2 in. high (157 mm x 30 mm)
  - Relay type: Form-C
  - Rating: 2.0 A @ 30 VDC resistive
  - 0.3 A @ 110 VDC inductive
  - 1.0 A @ 30 VDC inductive
  - Screw terminals: Up to 14 AWG (2.00 mm²)

**FSI-851 with B210LP Base**
Mounting Guidelines

The FSI-851 plug-in detectors use a separate base to simplify installation, service, and maintenance.

- Mount base on a box which is at least 1.5 in. (38 mm) deep. Suitable mounting base boxes include:
  - B224RB or B224BI: 3 1/2 in. (89 mm) square box
  - Remaining bases: 4 in. (102 mm) square box
    or 4 in. (102 mm) octagonal box
    Single-gang box (except relay or isolator bases)

Listings and Approvals*

UL ................. S1115
ULC .................. CS308
Factory Mutual (FM) ....... Approved
California State Fire Marshal (CSFM) .... 7271-0028:201
MEA (NYC) .............. 321-02-E
USCG .................... 161.002/A42/1

* Listings and Approvals are under NOTIFIER

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<tr>
<td>417675</td>
<td>M02-04-00 Test Magnet</td>
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* ADD 1/4 IN. (6 mm) TO HEIGHT FOR B224RB AND B224BI BASES.

WIRING

FlashScan is a registered trademark of Honeywell International.
Detection and Control Components

FAPT-851 Acclimate Plus™
Multi-Sensor Low-Profile Intelligent Detector
(IQ-318/IQ-636X-2)

Features

• Automatically adjusts sensitivity levels without the need for operator intervention or programming. Sensitivity increases with heat.
• Microprocessor-based, combination photo and thermal technology.
• Compatible with FlashScan® systems
• Sleek, low-profile design.
• Rotary, decimal addressing 1 – 159 on FlashScan systems.
• Addresses can be viewed and changed without the need for electronic programmers.
• Dual bi-color LED design provides 360° viewing angle.
• LEDs lock RED when in Alarm. In FlashScan, LEDs flash GREEN in Standby for normal condition.
• Several base options, including relay, isolator, and sounder.
• Built-in functional test switch activated by external magnet.
• Listed to UL 268.
• Capable of heat-only alarm mode, enabled by a special command from the panel. Smoke alarms are ignored.
• Low-temperature signal at 45 °F (7 °C) +/- 10 °F (–12 °C).

Applications

The FAPT-851 Acclimate Plus™ detector is an intelligent, addressable, multi-sensing, low-profile detector designed for use on the AUTOPULSE IQ-318 or IQ-636X-2 control panel. The Acclimate Plus detector uses a combination of photo-electric and thermal sensing technologies that are designed to increase immunity to false alarms. Unlike traditional intelligent detectors, the Acclimate Plus detector has a microprocessor in the detector head that processes alarm data. As a result, the Acclimate Plus detector adjusts its sensitivity automatically, without needing operator intervention.

Areas where the Acclimate Plus detector is especially useful include office complexes, schools, college campuses, manufacturing and industrial facilities, and anywhere else the use of a particular area may change. One day a conference room, tomorrow a kitchen, the next day a copy machine room – the Acclimate Plus detector automatically adjusts its sensitivity to the environment.

Technical Information

Voltage Range: .................. 15 to 32 volts DC peak
Standby Current: ............... 360 μA @ 24 VDC
LED Current: .................... 6.5 mA @ 24 VDC (“ON”)
Loop Resistance: ............... 40 ohms maximum
Diameter: ....................... 4.0 in. (102 mm)
Height: .......................... 1.69 in. (43 mm)
Weight: .......................... 5.2 oz (147 g)
Temperature: ................... 32 °F to 100 °F (0 °C to 38 °C)
Relative Humidity: .......... 10% – 93% non-condensing
Thermal Sensor: ............... 135 °F (57 °C) (fixed)
UL Listed Velocity Range . . 0-4000 ft/min (0-1219 m/min)
Installation

The FAPT-851 plug-in detector uses a separate base to simplify installation, service, and maintenance. A special tool allows maintenance personnel to plug-in and remove detectors without using a ladder. Mount base on a box at least
- 1.5 in. (38 mm) deep. Suitable mounting base boxes include:
  - 3.5 in. (89 mm) or 4.0 in. (102 mm) octagonal box
  - Single-gang box (except relay or isolator base)
  - With B224RB or B224BI base, use a 3.5 in. (89 mm) octagonal box, or a 4.0 in. (102 mm) octagonal or square box

Notes: 1) Because of the inherent supervision provided by the SLC loop, end-of-line resistors are not required. Wiring “T-taps” or branches are permitted for Style 4 (Class B) wiring. 2) When using relay or sounder bases, consult data sheet F-9587 (ISO-X) for device limitations between isolator modules and isolator bases.

Application Note: The FAPT-851 detector has the unique ability to adjust sensitivity according to the environment, based on heat and smoke levels. Avoid installing these detectors in locations that are susceptible to rapid and high temperature changes. An example of an incorrect application would be near or in line with the output of a self-contained heater.

Address Dial on Back of Detector

Bases:
  - B210LP: ................. 6.1 in. (155 mm) diameter
  - B501:.................... 4.1 in. (104 mm) diameter
  - B200SR(A): ............. Sounder Base
  - B224RB: ............... 6.2 in. dia. x 1.2 in. high (157 x 30 mm)
    Relay type: .................. Form-C
    Rating: .................. 2.0 A @ 30 VDC resistive
    0.3 A @ 110 VDC inductive
    1.0 A @ 30 VDC inductive
    Screw terminals: ........ Up to 14 AWG (2.00 mm²)
  - B224BI Isolator: ........ 6.2 in. x 1.2 in. (157 x 30 mm)
    Maximum: ........ 25 devices between isolator bases

Wiring Diagram (Standard Base)

Listings and Approvals*

UL .................................................. S1115
ULC .................................................. S911**
Factory Mutual (FM) ..................... Approved
California State Fire Marshal (CSFM) .... 7272-0028:206
MEA (NYC) ....................................... 225-02-E
Maryland State Fire Marshal ............ Permit #2122
UL Listed for In-Duct Applications

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<tr>
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<td>B200SR Sounder Base</td>
<td>1 (0.45)</td>
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<td>B200SRA Sounder Base (ULC)</td>
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<td>B224RB Intelligent Relay Base</td>
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<td>B224BI Intelligent Isolator Base</td>
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<tr>
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<td>M02-04-00 Test Magnet</td>
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TEST MAGNET POSITIONING
Features
- Sleek low profile design
- Analog-addressable communication
- Stable communication technique with noise immunity
- Low standby current
- Rotary 01 to 159 address switches
- Dual LED design provides 360° viewing angle
- Visible bicolor LEDs blink green every time the detector is addressed; illuminate steady red on alarm
- Walk test with address display (an address of 91 will blink the detector LED: 9-(pause)-1) (FlashScan® systems only)
- Built-in functional test switch activated by external magnet
- Optional relay, isolator, or sounder bases
- Listed to UL 268
- FlashScan® communication protocol

Applications
The FSP-851 is an analog, addressable, low-profile smoke detector designed for the AUTOPULSE IQ-318 and IQ-636X-2 Fire Alarm Control Units.

The addressability of the FSP-851 detector enables the control unit to provide firefighters with a pinpoint description of where the fire is located. The control unit is capable of not only knowing the detector's location but also exactly how much smoke is in the chamber of the detector. The detector may be set for different sensitivity settings appropriate to the environment of its location.

Analog devices continually send obscuration values to the AUTOPULSE control unit. These values may be gathered so as to allow the control unit to determine if a detector has accumulated an excessive amount of dirt or dust. A “maintenance” required indication allows the installer to clean the smoke detector before an unwanted false alarm occurs.

Description
The FSP-851 Intelligent Photoelectric Sensor's unique optical sensing chamber is designed with superior signal to noise ratio. The optical chamber is engineered to sense the presence of smoke produced by a wide range of combustion sources. The FSP-851 can be used to replace the SDX-751 or FSP-751 in existing systems.

FlashScan (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the panel’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

Technical Information
Operating Temperature: 32 °F to 120 °F (0 °C to 49 °C)
UL Listed Velocity Range: 0 – 4000 fpm (0 – 20.32 m/sec)
Relative Humidity: 10% to 93% noncondensing
Voltage Range: 15 – 32 volts DC peak
Standby Current: 250 μA @ 24 VDC (w/o communication);
360 μA @ 24 VDC (one communication every 5 seconds with LED enabled)
LED Current (max.): 6.5 mA @ 24 VDC (ON)
Diameter: 4.1 in. (104 mm)
Height: 1.69 in. (43 mm)

Bases Available:
- B210LP: 6.1 in. (155 mm) diameter
- B501: 4.1 in. (104 mm) diameter
- B200SR(A): 1.69 in. (43 mm)
- B224RB: 6.2 in. dia. x 1.2 in. high (157 mm x 30 mm)
- B224BI: 6.2 in. dia. x 1.2 in. high (157 mm x 30 mm)

Maximum: 25 devices between isolator bases
Mounting Guidelines

The FSP-851 plug-in detectors use a separate base to simplify installation, service, and maintenance.

Mount base on a box which is at least 1.5 in. (38 mm) deep. Suitable mounting base boxes include:

- B224RB or B224BI
- Remaining bases
  - 3 1/2 in. (89 mm) square box
  - 4 in. (102 mm) square box
  - 3 1/2 in. (89 mm) or 4 in. (102 mm) octagonal box
  - Single-gang box (except relay or isolator bases)

Test Magnet Positioning

Wiring

FlashScan is a registered trademark of Honeywell International.

Ordering Information

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* Listings and Approvals are under NOTIFIER.
Detection and Control Components

FSP-851T Intelligent Thermal/Photoelectric Smoke Detector (IQ-318/IQ-636X-2)

Features

• Sleek low profile design
• Analog-addressable communication
• Stable communication technique with noise immunity
• Low standby current
• Rotary 01 to 159 address switches
• Dual LED design provides 360° viewing angle
• Visible bicolor LEDs blink green every time the detector is addressed; illuminate steady red on alarm
• Walk test with address display (an address of 91 will blink the detector LED: 9-(pause)-1) (FlashScan® systems only)
• Built-in functional test switch activated by external magnet
• Optional relay, isolator, or sounder bases
• Listed to UL 268
• FlashScan communication protocol

Applications

The FSP-851T is an analog, addressable, low-profile smoke/heat detector designed for the AUTOPULSE IQ-318 and IQ-636X-2 Fire Alarm Control Unit.

The FSP-851T photoelectric includes a built-in thermal detection device. If either condition (smoke or heat) is detected, the device will alarm.

The addressability of the FSP-851T detector enables the control unit to provide firefighters with a pinpoint description of where the fire is located. The control unit is capable of not only knowing the detector’s location but also exactly how much smoke is in the chamber of the detector. The detector may be set for different sensitivity settings appropriate to the environment of its location.

Analog devices continually send obscuration values to the AUTOPULSE control unit. These values may be gathered so as to allow the control unit to determine if a detector has accumulated an excessive amount of dirt or dust. A “maintenance” required indication allows the installer to clean the smoke detector before an unwanted false alarm occurs.

Description

The FSP-851T Intelligent Photoelectric Sensor’s unique optical sensing chamber is designed with superior signal to noise ratio. The optical chamber is engineered to sense the presence of smoke produced by a wide range of combustion sources. The FSP-851T can be used to replace the FSP-751T, FDX-751T or SDX-551TH in existing systems.

FlashScan (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the panel’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

Technical Information

Operating Temperature: . . . 32 °F to 100 °F (0 °C to 38 °C)
UL Listed Velocity Range: . 0 – 4000 fpm (0 – 20.32 m/sec)
Relative Humidity: . . . . . . 10% to 93% noncondensing
Voltage Range: . . . . . . . . 15 – 32 volts DC peak
Standby Current: . 250 μA @ 24 VDC (w/o communication);
360 μA @ 24 VDC (one communication every 5 seconds with LED enabled)
LED Current (max.): . . . . . 6.5 mA @ 24 VDC (ON)
Diameter: . . . . . . . . . . . . 4.1 in. (104 mm)
Height: . . . . . . . . . . . . . 1.66 in. (42 mm)

Bases Available:

- B210LP: . . . . . . . . . . 6.1 in. (155 mm) diameter
- B501: . . . . . . . . . . . 4.1 in. (104 mm) diameter
- B200SR(A): . . . . . . . . . . . . Sounder Base
- B224RB: . . 6.2 in. dia. x 1.2 in. high (157 mm x 30 mm)
  - Relay type: . . . . . . . . . Form-C
  - Rating: . . . . . . . . . 2.0 A @ 30 VDC resistive
    0.3 A @ 110 VDC inductive
    1.0 A @ 30 VDC inductive
- Screw terminals: . . . . . . Up to 14 AWG (2.00 mm²)
- B224BI: . . . 6.2 in. dia. x 1.2 in. high (157 mm x 30 mm)
  Maximum: . . . . . 25 devices between isolator bases
Mounting Guidelines

The FSP-851 plug-in detectors use a separate base to simplify installation, service, and maintenance.

- Mount base on a box which is at least 1.5 in. (38 mm) deep. Suitable mounting base boxes include:
  - B224RB or B224BI 3 1/2 in. (89 mm) square box
  - Remaining bases 4 in. (102 mm) square box
  - 3 1/2 in. (89 mm) or 4 in. (102 mm) octagonal box
  - Single-gang box (except relay or isolator bases)

Listings and Approvals*

- UL . . . . . . . . . . . . . . . . . . . . . . . . . . . S1115
- ULC . . . . . . . . . . . . . . . . . . . . . . . . . . S1115
- Factory Mutual (FM) . . . . . . . . . . . . . Approved
- California State Fire Marshal (CSFM) . . . 7272-0028:206
- MEA (NYC) . . . . . . . . . . . . . . . . . . . 225-02-E
- Maryland State Fire Marshal . . . . . . . Permit #2122
- UL Listed for In-Duct Applications
- USCG . . . . . . . . . . . . . . . . . . . . 161.002/A42/1

* Listings and Approvals are under NOTIFIER.

Ordering Information

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<tr>
<td>417675</td>
<td>M02-04-00 Test Magnet</td>
<td>0.5 (0.2)</td>
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FlashScan is a registered trademark of Honeywell International.
Detection and Control Components

InnovairFlex Intelligent Non-Relay Photoelectric Duct Smoke Detector (IQ-318/IQ-636X-2)

General
The InnovairFlex DNR intelligent non-relay photoelectric duct smoke detector and DNRW watertight non-relay photoelectric duct smoke detector feature a pivoting housing that fits both square and rectangular footprints capable of mounting to a round or rectangular duct.

DNRW duct smoke detector, with its NEMA-4 rating, is listed as a watertight, UV resistant enclosure providing protection against falling dirt, rain, windblown dust, splashing and hose-directed water, allowing operators to use the detector in the most extreme environments.

These units sense smoke in the most challenging conditions, operating in airflow speeds of 100 to 4,000 ft (30.5 to 1219.2 m) per minute, temperatures of -4 °F to 158 °F (-30 °C to 70 °C), and a humidity range of 0 to 95 percent (non-condensing.)

An improved cover design isolates the sensor head, which allows for ease of maintenance. A cover tamper feature indicates a trouble signal for a removed or improperly installed sensor cover. The InnovairFlex housing provides a 3/4-inch conduit knockout and ample space to facilitate easy wiring and mounting of a relay module.

The InnovairFlex duct smoke detector can be customized to meet local codes and specifications without additional wiring. The new InnovairFlex product line is compatible with all previous Innovair models, including remote test accessories.

Features
• Photoelectric, integrated low-flow technology
• Air velocity rating from 100 ft/min to 4,000 ft/min (0.5 m/s to 20.32 m/s)
• Versatile mounting options: square or rectangular configuration
• Broad ranges for operating temperature (-4 °F to 158 °F (-30 °C to 70 °C)) and humidity (0% to 95% non-condensing)
• Patented sampling tube installs from front or back of the detector with no tools required
• Cover tamper signal
• Increased wiring space with a newly added 3/4 in. conduit knockout
• Available space within housing to accommodate mounting of a relay module
• Easily accessible code wheels on sensor head (sold separately)
• Clear cover for convenient visual inspection
• Remote testing capability

Specifications
• Size: (Rectangle) 14.38 in. (365 mm) Length; 5 in. (127 mm) Width, 2.5 in. (64 mm) Depth
• Size: (Square) 7.75 in. (197 mm) Length; 9 in. (229 mm) Width; 2.5 in. (64 mm) Depth
• Weight: 1.6 lb (0.73 kg)
• Operating Temperature Range: -4 °F to 158 °F (-20 °C to 70 °C)
• Storage Temperature Range: -22 °F to 158 °F (-30 °C to 70 °C)
• Operating Humidity Range: 0% to 95% relative humidity (non-condensing)
• Air Duct Velocity: 100 to 4,000 ft/min (0.5 to 20.32 m/s)

Accessories
The AUTOPULSE Addressable line provides system flexibility with a variety of accessories, including two remote test stations and different means of visible and audible system annunciation. As with our duct smoke detectors, all duct smoke detectors accessories are UL listed.

DNRWs with a date code of 0013 or higher do not require external 24VDC for remote test applications when used with a remote-test-capable detector.
Agency Listings and Approvals*

Consult product manual for lists of compatible UL-Listed devices. 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 Listed ........................................ S911
ULC Listed ........................................ S911
CFSM Listed ................................. 3242-1653:209

* Listings and Approvals are under Notifier.

Ordering Information

Note: “A” or “CDN” suffix indicates ULC listed model.

DNR(A): Intelligent non-relay photoelectric low flow smoke detector housing. Requires photoelectric smoke detector (sold separately).


FSP-851R: Remote test capable addressable low-profile photoelectric smoke detector.

DCOIL: Remote test coil. Required for older DNRW duct detector housing.

DST1(A): Metal sampling tube duct width up to 1 ft (0.3 m)
DST1.5(A): Metal sampling tube duct widths of 1 ft to 2 ft (0.3 to 0.6 m)
DST3(A): Metal sampling tube duct widths of 2 ft to 4 ft (0.6 to 1.2 m)
DST5(A): Metal sampling tube duct widths of 4 ft to 8 ft (1.2 to 2.4 m)
DST10(A): Metal sampling tube duct widths of 8 ft to 12 ft (2.4 to 3.7 m)

M02-04-00: Test magnet
P48-21-00: End cap for metal sampling tubes
RA100Z(A): Remote annunciator alarm LED
RTS151(A): Remote test station

Important Notes

• DNRW duct detector housings with a date code of 0013 or higher do not require a DCOIL or auxiliary 24 VDC for remote test applications when used with a remote test capable detector.

• DNRW duct detector housings with a date code of 0012 or earlier require a DCOIL and auxiliary 24 VDC power for remote test applications.

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General
The XP6-MA six-zone interface module provides an interface between the intelligent alarm system and a two-wire conventional detection zone. A common SLC input is used for all modules, and the initiating device circuits share a common external supervisory supply and ground. Otherwise, each module operates independently from the others.

The first module is addressed from 01 to 154 while the remaining modules are automatically assigned to the next five higher addresses. Provisions are included for disabling a maximum of two unused modules. All two-wire detectors being monitored must be two-wire-compatibility-listed with the modules. The XP6-MA transmits the status of a zone of two-wire detectors to the fire alarm control panel. Status conditions are reported as normal, open, or alarm. The interface module supervises the zone of detectors and the connection of the external power supply.

Each XP6-MA module has panel-controlled bicolor LED indicators. The panel can cause the LEDs to blink, latch on, or latch off.

Features
• Six addressable Class B or three addressable Class A initiating device circuits.
• Removable 12 AWG (3.1 mm²) to 18 AWG (0.78 mm²) plugin terminal blocks.
• Status indicators for each point.
• Up to two unused addresses may be disabled.
• Rotary address switches.
• Class A or Class B operation.
• FlashScan® or CLIP operation.
• Mount one or two modules in a BB-XP cabinet (optional).
• Mount up to six modules on a CHS-6 chassis in a CAB-4 Series or BB-25 cabinet (optional).
• Mounting hardware included.

Specifications
Standby current: 2.0 mA (SLC current draw with all addresses used; if some addresses are disabled, the standby current decreases).
Alarm current: 40 mA (assumes all six LEDs solid ON).
Temperature range: 32 °F to 120 °F (0 °C to 49 °C).
Humidity: 10% to 85% noncondensing.
• Dimensions: 6.8 in. (173 mm) high x 5.8 in. (147 mm) wide x 1.25 in. (32 mm) deep.
Shipping weight: 1.1 lb (0.5 kg) including packaging.
Mounting options: CHS-6 chassis, BB-25 cabinet, or CAB-4 Series cabinet.
Wire gauge: 12 AWG (3.1 mm²) to 18 AWG (0.78 mm²).

XP6-MA is shipped in Class B position: Remove shunt for Class A operation.
Maximum SLC wiring resistance: 40 or 50 ohms, panel dependent.
Maximum IDC wiring resistance: 25 ohms.
External supply voltage: DC voltage: 18 – 28 volts powerlimited. Ripple voltage: 0.1 Vrms maximum. External supply current: 90 mA maximum per address in alarm. In Class B operation, 540 mA maximum for all six addresses in alarm. In Class A operation, 270 mA maximum for all three addresses in alarm.
Compatible detectors: See the Device Compatibility document.

Agency Listings and Approvals
These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.
UL Listed .................................................. .S635
ULC Listed ................................. .S635 (XP6-MAA)
MEA Listed ................................. .386-02-E
FM .................................................. Approved
CSFM .................................................. .7300-0028:219
City of Chicago
City of Denver
Ordering Information

XP6-MA: Six-zone conventional-detector interface module.

XP6-MAA: Same as above with ULC Listing.

BB-XP: Optional cabinet for one or two modules.
- Dimensions, DOOR: 9.23 in. (234 mm) wide (9.5 in. (241 mm) including hinges), x 12.22 in. (310 mm) high, x 0.67 in. (17 mm) deep; BACKBOX: 9.0 in. (229 mm) wide (9.25 in. (235 mm) including hinges), x 12.0 in. (305 mm) high x 2.75 in. (70 mm); CHASSIS (installed): 7.15 in. (182 mm) wide overall x 7.31 in. (186 mm) high interior overall x 2.16 in. (55 mm) deep overall.

BB-25: Optional cabinet for up to six modules mounted on CHS-6 chassis (below). Dimensions, DOOR: 24.0 in. (610 mm) wide x 12.63 in. (321 mm) high, x 1.25 in. (32 mm) deep, hinged at bottom; BACKBOX: 24.0 in. (610 mm) wide x 12.55 in. (319 mm) high x 5.22 in. (133 mm) deep.

CHS-6: Chassis, mounts up to six modules in a CAB-4 Series cabinet, or BB-25 cabinet.

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<td>CHS-6 Chassis – Mounts up to six modules</td>
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Features

- Six addressable Class B or three addressable Class A outputs that function as notification appliance circuits
- Removable 12 AWG (3.25 mm²) to 18 AWG (0.9 mm²) plug-in terminal blocks
- Status indicators for each point
- Panel-Controlled Green LED Indicators
- Unused addresses may be disabled
- Rotary address switches
- Class A or Class B operation
- FlashScan® or CLIP operation
- Mount one or two modules in a BB-XP cabinet (optional)
- Mount up to six modules on a CHS-6 chassis in a CAB-3 Series or BB-25 cabinet (optional)
- Mounting hardware included

Description

Note: The XP6-C is not suitable for releasing applications.

The XP6-C six-circuit supervised control module provides the addressable AUTOPULSE IQ-318 and IQ-636X-2 control units with supervised monitoring of wiring to load devices that require an external power supply to operate, such as horns, strobes, or bells. Upon command from the control panel, the XP6-C will disconnect the supervision and connect the external power supply across the load device.

The first module is addressed from 01 to 154 while the remaining modules are automatically assigned to the next five higher addresses. Provisions are included for disabling a maximum of three unused addresses. Each XP6-C module has terminals for connection to an external supply circuit for powering devices on its notification appliance circuit. One or multiple power supplies may be used.

Each XP6-C module features a short circuit protection monitor to protect the external power supply against short-circuit conditions on the NAC. When an alarm condition occurs, the relay which connects the external supply to the NAC will not be allowed to close if a short-circuit condition currently exists on the NAC. Additionally, an algorithm is incorporated to find shorts when the module is active. The XP6-C module will close all circuits that are not shorted to find the NAC with the problem. Each XP6-C module has panel-controlled green LED indicators.

FlashScan (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the unit’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

Technical Information

- Standby Current: 2.25 mA (SLC current draw with all addresses used; if some addresses are disabled, the standby current decreases.)
- Alarm Current: 35 mA (assumes all six relays have been switched once and all six LEDs solid ON)
- Temperature Range: 32 °F to 120 °F (0 °C to 49 °C) for UL applications; 14 °F to 131 °F (−10 °C to 55 °C) for EN54 applications
- Humidity Range: 10% to 85% noncondensing for UL applications; 10% to 93% noncondensing for EN54 applications
- Dimensions: Height: 6.8 in. (172.7 mm) Width: 5.8 in. (147.3 mm) Depth: 1.25 in. (31.75 mm)
- Wire Gauge: 12 AWG (3.25 mm²) to 18 AWG (0.9 mm²), grounded
- Maximum SLC Wiring Resistance: 40 or 50 ohms, panel dependent
- Maximum NAC Wiring Resistance: 40 ohms
- Relay Contact Ratings: 30 VDC; 110 VAC
- Current Ratings:
  - 3.0 A @ 30 VDC maximum, resistive, non-coded
  - 2.0 A @ 30 VDC maximum, resistive, coded
  - 1.0 A @ 30 VDC maximum, inductive (L/R=2 ms), coded
  - 0.5 A @ 30 VDC maximum, inductive (L/R=5 ms), coded
Installation

The XP6-C six-circuit supervised control module is shipped in Class B position. Remove shunt for Class A operation. Up to six XP6-C modules can be mounted on a CHS-6 chassis, which mounts in a BB-25, CAB 3 or 4 series cabinet, or suitably grounded metallic cabinet. One or two modules can be mounted in BB-XP cabinet. Mounting hardware and installation instructions are provided with each module.

Wiring

Each XP6-C module comes with removable 12 AWG (3.25 mm²) to 18 AWG (0.9 mm²) plug-in terminal blocks.

Example of Class B, Style Y NAC configuration with a single supply dedicated to a single NAC.

Note: EOL relay coil connections must be made using EOL relay connector assemblies on T10 – T16 in event that all NACs on the PCB have dedicated supplies.

Example of Class B, Style Y NAC configuration with a single supply shared by two NACs.
Example of Class A, Style Z NAC configuration with a single supply dedicated to a single NAC.

Example of multiple boards sharing the same external power supply.
Supply is shared by NACs +0 and +1 (on PCB #1) as well as +3, +4, and +5 (on PCB #2). Refer to previous typical NAC wiring diagrams. Make certain that the lip on the long power supply jumper engages the retaining tab on T10 or T16 as shown in detail view A-A.
Listings and Approvals*
UL . . . . . . . . . . . . . . . . . . . . . . . . . . . . S635
ULC . . . . . . . . . . . . . . . . . . . . . S635/CS118 (XP6-CA)
Factory Mutual (FM) . . . . . . . . . . . . . . . . . Approved
California State Fire Marshal (CSFM) . . . . . 7300-0028:219
MEA (NYC) . . . . . . . . . . . . . . . . . . . . . . 43-02-E
Maryland State Fire Marshal . . . . . . . . . . Permit #2106
USCG . . . . . . . . . . . . . . . . . . . . . . 161.002/A42/1

*Listings and Approvals are under NOTIFIER.

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CHS-6 CHASSIS

19 IN. WIDE X 7 5/16 IN. HIGH X 2 3/16 IN. DEEP
(483 mm wide x 186 mm high x 56 mm deep)

Dimensions

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<th>B – Height</th>
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FlashScan is a registered trademark of Honeywell International.
FMM-1 Addressable Monitor Module  
(IQ-318/IQ-636X-2)

**Features**
- Built-in type identification automatically identifies this device as a monitor module to the AUTOPULSE control unit.
- Powered directly by two-wire SLC loop, no additional power required.
- High noise (EMF/RFI) immunity.
- SEMS screws with clamping plates for ease of wiring.
- Direct-dial entry of address (01-159).
- LED flashes green during normal operation (this is a programmable option), and latches on steady RED to indicate alarm.
- FlashScan communication protocol.

**Applications**
Use the FMM-1 module to monitor a zone of four-wire smoke detectors, manual fire alarm pull stations, waterflow devices, or other normally-open dry-contact alarm activation devices. May also be used to monitor normally-open supervisory devices with special supervisory indication at the control unit. Monitored circuit may be wired as an NFPA Style B (Class B) or Style D (Class D) Initiating Device Circuit. A 47K ohm End-of-Line Resistor (provided) terminates the Style B circuit. No resistor is required for supervision of the Style D circuit. Maximum IDC loop length is 2,500 ft/762 m (20 ohms maximum).

**Description**
The FMM-1 monitor module (typically mounts to a 4 in. square box) is a standard-sized module used with the AUTOPULSE IQ-318 and IQ-636X-2 control unit that supervises either a Class A (Style D) or Class B (Style B) circuit of dry-contact input devices. It is intended for use in intelligent two-wire systems, where the individual address of each module is selected using the built-in rotary switches. It provides either a two-wire or four-wire fault-tolerant Initiating Device Circuit (IDC) for normally-open-contact fire alarm and supervisory devices. The module has a unit-controlled LED indicator. The FMM-1 can be used to replace MMX-1 modules, Part No. 417476, in existing systems.

Each FMM-1 uses one of 159 available module addresses on an SLC loop. It responds to regular polls from the control unit and reports its type and the status (open/normal/short) of its IDC. A flashing LED indicates that the module is in communication with the control unit. The LED latches steady on alarm (subject to current limitations on the loop).

FlashScan (patent pending) is a new communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the unit’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

**Technical Information**
- Nominal Operating Voltage: 15 to 32 VDC.
- Maximum Current Draw: 5.1 mA (LED on).
- Average Operating Current: 350 μA (LED flashing).
- EOL Resistance: 47K ohms.
- Temperature Range: 32 °F to 120 °F (0 °C to 49 °C).
- Humidity Range: 10% to 93% non-condensing.
- Dimensions: High: 4.5 in. (114 mm), Wide: 4 in. (102 mm), Deep: 1.25 in. (32 mm).

**Installation**
The FMM-1 module mounts directly to a standard 4 in. square, 2.124 in. (54 mm) deep, electrical box. Mounting hardware and installation instructions are provided with each module. All wiring must conform to applicable local codes, ordinances, and regulations. These modules are intended for power-limited wiring only.

**Wiring**
- Connect modules to listed compatible AUTOPULSE control units only.
- All wiring shown is supervised and power limited.
- Install contact closure devices per manufacturers’ installation instructions.
- Any number of UL-listed contact closure devices may be used.
- DO NOT MIX fire alarm initiating, supervisory, or security devices on the same module.
FMM-1 MODULE

Listings and Approvals*
UL .................................................. S635
ULC .................................................. CS669
Factory Mutual (FM) ......................... Approved
California State Fire Marshal (CSFM) ...... 7300-0028:202
MEA .................................................. 457-99-E
Maryland State Fire Marshal ............... Permit # 2020
USCG .............................................. 161.002/A42/1

* Listings and Approvals are under NOTIFIER

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TYPICAL TWO-WIRE INITIATING DEVICE CIRCUIT CONFIGURATION, NFPA STYLE B

ANY NUMBER OF UL LISTED CONTACT CLOSURE DEVICES MAY BE USED. DO NOT MIX FIRE ALARM INITIATING, SUPERVISORY, OR SECURITY DEVICES ON THE SAME MODULE.

47K EOL RESISTOR ELR-47K

INITIATING DEVICE CIRCUIT (IDC), NFPA STYLE B, POWER LIMITED: 400 μA MAX. @ 11 VDC MAX.
INSTALL CONTACT CLOSURE DEVICES PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

TYPICAL FOUR-WIRE FAULT-TOLERANT INITIATING CIRCUIT CONFIGURATION, NFPA STYLE D.

ANY NUMBER OF UL LISTED CONTACT CLOSURE DEVICES MAY BE USED. DO NOT MIX FIRE ALARM INITIATING, SUPERVISORY, OR SECURITY DEVICES ON THE SAME MODULE.

EOL RESISTOR IS INTERNAL AT TERMINALS 8 & 9
INSTALL CONTACT CLOSURE DEVICES PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
Detection and Control Components

FZM-1 Interface Module (IQ-318/IQ-636X-2)

Features

• Supports compatible two-wire smoke detectors
• Supervises IDC wiring and connection of external power source
• High noise (EMF/RFI) immunity
• SEMS screws with clamping plates for ease of wiring
• Direct-dial entry of address (01-159)
• LED flashes during normal operation (this is a programmable option)
• LED latches steady to indicate alarm on command from control unit
• FlashScan™ communication protocol

Applications

The FZM-1 Interface Module is intended for use in intelligent, addressable systems, where the individual address of each module is selected using built-in rotary switches. This module allows intelligent units to interface and monitor two-wire conventional smoke detectors. It transmits the status (normal, open, or alarm) of one full zone of conventional detectors back to the AUTOPULSE IQ-318 or IQ-636X-2 control units. All two-wire detectors being monitored must be UL compatible with the module. The FZM-1 has a panel-controlled LED indicator and can be used to replace MMX-2 modules, Part No. 417477, in existing systems.

Use the FZM-1 to monitor a zone of two-wire smoke detectors. The monitored circuit may be wired as an NFPA Style B (Class B) or Style D (Class A) Initiating Device Circuit. The 3.9 K ohm End-of-Line Resistor (provided) terminates the end of the Style B or D (Class B or A) circuit (maximum IDC loop resistance is 25 ohms). Install ELR across terminals 8 and 9 for Style D application.

Description

The FZM-1 Interface module is a standard-sized module used to monitor and supervise compatible two-wire, 24 volt, smoke detectors on a Class A (Style D) or Class B (Style B) circuit.

Each FZM-1 uses one of 159 available module addresses on an SLC loop. It responds to regular polls from the control unit and reports its type and the status (open/normal/short) of its Initiating Device Circuit (IDC). A flashing LED indicates that the module is in communication with the control unit. The LED latches steady on alarm (subject to current limitations on the loop).

FlashScan (patent pending) is a new communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the unit’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

Technical Information

Nominal Operating Voltage: 15 to 32 VDC
Maximum Current Draw: 5.1 mA (LED on)
Average Operating Current: 270 μA (LED flashing)
EOL Resistance: 3.9 K ohms
External Supply Voltage (between T3 and T4)
DC Voltage: 18 to 28 volts power limited
Ripple Voltage: 0.1 VRMS maximum
Current: 90 mA per module maximum
Temperature Range: 32 °F to 120 °F
Humidity Range: 10% to 93% non-condensing
Dimensions:
High: 4.5 in. (114 mm)
Wide: 4 in. (102 mm)
Deep: 1.25 in. (32 mm)

Installation

The FZM-1 module mounts directly to a standard 4 in. (102 mm) square, 2.125 in. (54 mm) deep, electrical box. Mounting hardware and installation instructions are provided with each module. All wiring must conform to applicable local codes, ordinances, and regulations. These modules are intended for power-limited wiring only.

MOUNTING THE FZM-1 TO A 4 INCH SQUARE 2 1/8 INCH DEEP JUNCTION BOX
**Wiring**

- Connect modules to listed compatible AUTOPULSE control units only.
- Terminal wiring must be power limited.
- **DO NOT MIX** fire alarm initiating, supervisory, or security devices on the same module.
- **DO NOT LOOP** wire under terminals. Break wire run to provide supervision of connections.
- Detectors must be UL listed compatible with module.
- Install detectors per manufacturers’ installation instructions.
- Power to the interface module must be externally switched to reset the detectors.

**Listings and Approvals**

- UL .......................................................... S635
- ULC .......................................................... CS669
- Factory Mutual (FM) .................................. Approved
- California State Fire Marshal (CSFM) .............. 7300-0028:202
- MEA .......................................................... 457-99-E
- Maryland State Fire Marshal ......................... Permit # 2020
- USCG .......................................................... 161.002/A42/1

* Listings and Approvals are under NOTIFIER

**Ordering Information**

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**FlashScan** is a trademark of NOTIFIER.
Detection and Control Components

FCM-1 Control Module (IQ-318/IQ-636X-2)

Features
• Built-in type identification automatically identifies these devices to the control unit
• Internal circuitry and relay powered directly by two-wire SLC loop; requires power for notification
• Integral LED blinks green each time a communication is received from the control unit and turns on in steady red when activated
• LED blink may be deselected globally (affects all devices)
• High noise immunity (EMF/RFI)
• Wide viewing angle of LED
• SEMS screws with clamping plates for wiring ease
• Direct-dial entry of address (01-159)
• Audible/visual applications may be wired for Class B or A (Style Y or Z)
• Face plate is made of off-white Noryl®
• Configured for a single Class B (Style Y) or Class A (Style Z) Notification Appliance Circuit
• FlashScan® communication protocol

Applications
The FCM-1 Addressable Control Module provides the AUTOPULSE IQ-318, or IQ-636X-2 control unit a circuit for Notification Appliances (horns, strobes, speakers, etc.). Addressability allows the FCM-1 to be activated, either manually or through panel programming, on a select (zone or area of coverage) basis.

FlashScan (U.S. Patent 5,539,389) is a new communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the panel CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of other designs.

Description
Each FCM-1 Control Module uses one of 159 possible module addresses on a SLC loop. It responds to regular polls from the control unit and reports its type and status, including the open/normal/short status of its Notification Appliance Circuit (NAC). The LED blinks with each poll received. On command, it activates its internal relay. The FCM-1 supervises Class B (Style Y) or Class A (Style Z) notification or control circuits. The FCM-1 can be used to replace the CMX-2 module, Part No. 417479, in existing systems.

Upon code command from the unit, the FCM-1 will disconnect the supervision and connect the external power supply in the proper polarity across the load device. The disconnection of the supervision provides a positive indication to the panel that the control relay actually turned ON. The external power supply is always relay isolated from the communication loop so that a trouble condition on the external power supply will never interfere with the rest of the system.

Rotary switches set a unique address for each module. The address may be set before or after mounting. The built-in TYPE CODE (not settable) will identify the module to the control panel, so as to differentiate between a module and a sensor address.

The FCM-1 is used to switch 24 VDC audible/visual or releasing appliance power.

Technical Information
Normal Operating Voltage: 15 to 32 VDC
Maximum Current Draw: 5.1 mA (LED on)
Average Operating Current: 390 μA (LED flashing)
Maximum NAC Current Rating:
- Class B wiring system: 3A
- Class A wiring system: 2A
External Supply Voltage: max 80 volts (RMS or DC) between T3 and T4:
Drain on External: 2 μA max. (using internal EOL relay)
Supply:
EOL Resistance: 47 K ohms
Temperature Range: 32 °F to 120 °F (0 °C to 49 °C)
Humidity Range: 10% to 93% non-condensing

Note: The CB500 barrier is required by UL for separating power-limited and non-power limited wiring in the same junction box.
**Listings and Approvals**

UL .......................... S635
ULC .......................... CS669
Factory Mutual (FM) ........... Approved
California State Fire Marshal (CSFM) ....... 7300-0028:202
MEA (NYC) .......................... 457-99-E
Maryland State Fire Marshal .......... Permit # 2020
USCG .......................... 161.002/A42/1

* Listings and Approvals are under NOTIFIER.

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**TYPICAL CONNECTION OF A 24 VDC NOTIFICATION DEVICE TO THE FCM-1 MODULE**

24 VDC POWER SUPPLY
ISOLATED, REGULATED, POWER LIMITED PER NFPA 70, LISTED FOR FIRE PROTECTION WITH BATTERY BACKUP.

24 VDC CIRCUIT. DO NOT LOOP WIRE ON TERMINALS 10 & 11. BREAK WIRE RUN TO PROVIDE SUPERVISION OF CONNECTIONS.

CONNECT MODULES TO LISTED COMPATIBLE CONTROL PANELS ONLY.

ALL WIRING SHOWN IS SUPERVISED AND POWER LIMITED.
Detection and Control Components

FCM-1-REL(A) Releasing Control Module (IQ-318/IQ-636X-2)

Features
- Redundant protocol for added protection
- Configurable for Class A or Class B operation
- External supply voltage monitoring
- Can power one 24V or two 12V solenoids
- SEMS screws for easing wiring
- Panel controlled status LED
- Analog communications
- Rotary address switches
- Low standby current
- Mounts in standard 4 in. (10.16 cm) junction box
- FlashScan® operation

Description
The FCM-1-REL(A) Releasing Control Module is specifically designed for fire suppression releasing applications in FlashScan systems. Power to the release agent solenoid(s) runs through the module for full-time monitoring and supervision.

The FCM-1-REL(A) Releasing Control Module uses a redundant protocol; the module must be armed with a pair of signals in order to activate. It will then enter a 3-second window awaiting a pair of confirmation signals. If no confirmation is received, the module will automatically reset. It also supervises the wiring to the connected load and reports the status to the panel as NORMAL, OPEN, or SHORT CIRCUIT. The module has two pairs of output termination points available for fault-tolerant wiring and a panel-controlled LED indicator. The module may be connected to either one 24VDC solenoid or up to two 12VDC solenoids that are listed with the IQ-318 and IQ-636X-2 panels. To ensure proper operation, this module shall be connected to a compatible AUTOPULSE system control panel only (list available upon request). In addition, please refer to AUTOPULSE Device Compatibility Document, Part No. 50054, for the list of compatible solenoids.

Note: FCM-1-REL(A) is required for all new FlashScan-mode releasing applications with IQ-318 (version 12.0 or higher) and IQ-636X-2 (version 12.0 or higher) panels. Use FCM-1 for releasing applications on IQ-636X, IQ-301, and IQ-396X panels.

Technical Information

GENERAL
- Operating Voltage: 15 to 32 VDC
- Communication Line Loop Impedance: 40 Ohm max.
- Temperature Range: 14°F to 140°F (–10° to 60°C)
- Relative Humidity: 10% to 95% noncondensing
- Shipping Weight: 5.5 oz (156 g)

Dimensions:
- High: 4.7 in. (119 mm)
- Wide: 4.3 in. (109 mm)
- Deep: 1.4 in. (36 mm)

SLC
- Average Operating Current: 700 μA max @ 24 VDC (one communication every 5 sec. with LED enabled)
- Maximum Activation Current: 9.0 mA (LED on)

EXTERNAL SUPPLY
- Normal Operating Voltage: 24 VDC Nominal
- Maximum Line Loss: 2.3 VDC (total allowable loss from power supply to module and from module to solenoid)
- Minimum Operating Voltage to Activate Solenoid: 18 VDC (at solenoid)
- Standby Current: 6.4 mA
- Activation Current: 10 mA

SOLENOID
- Supervisory Loop Voltage: 3.3 V
- Supervisory Loop Current (Normal): 30 mA
- Maximum Activation Current: 2 A

Listings and Approvals*
- These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listings may be in process. Consult factory for latest listing status.
- UL Listed: S635
- ULC Listed: (FCM-1-RELA) Approved
- CSFM: 7300-0028:249

*Listings and Approvals are under NOTIFIER.
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24 VDC POWER SUPPLY ISOLATED, REGULATED, POWER LIMITED PER NFPA 70, UL 864 LISTED FOR RELEASING DEVICE WITH BATTERY BACKUP.

FlashScan is a trademark of Honeywell International.
Features

- Built-in type identification automatically identifies these devices to the control unit
- Internal circuitry and relay powered directly by two-wire SLC loop
- Integral LED blinks green each time a communication is received from the control unit and turns on in steady red when activated
- LED blink may be deselected globally (affects all devices)
- High noise immunity (EMF/RFI)
- Wide viewing angle of LED
- SEMS screws with clamping plates for wiring ease
- Face plate is made of off-white Noryl®
- Controls include two rotary switches for direct-dial entry of address (01-159)
- Two Form-C dry contacts that switch together
- FlashScan® communication protocol

Applications

The FRM-1 Addressable Relay Module provides the AUTOPIULSE IQ-318 or IQ-636X-2 with dry-contact outputs for activating a variety of auxiliary devices, such as fans, dampers, control equipment, etc. Addressability allows the dry contact to be activated, either manually or through panel programming, on a select basis.

FlashScan (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the unit CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of other designs.

Description

Each FRM-1 module uses one of 159 possible module addresses on a SLC loop. It responds to regular polls from the control unit and reports its type and status, including the open/normal/short status of its Notification Appliance Circuit (NAC). The LED blinks with each poll received. On command, it activates its internal relay. The FRM-1 can be used to replace the CMX-2 module (Part No. 417479) in existing systems.

Rotary switches set a unique address for each module. The address may be set before or after mounting. The built-in TYPE CODE (not settable) will identify the module to the control unit, so as to differentiate between a module and a sensor address.

The FRM-1 may be programmed to operate dry contacts for door holders, Air Handling Unit shutdown, etc., and to re-set four-wire smoke detector power.

Technical Information

Normal Operating Voltage: .................. 15 to 32 VDC
Maximum Current Draw:..................... 6.5 mA (LED on)
Average Operating Current:............. 300 μA (LED flashing)
EOL Resistance:.......................... not used
Temperature Range:............. 32 °F to 120 °F (0 °C to 49 °C)
Humidity Range:......................... 10% to 93% non-condensing

RELAY CONTACT RATINGS

<table>
<thead>
<tr>
<th>Load Description</th>
<th>Application</th>
<th>Maximum Voltage</th>
<th>Current Rating</th>
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<td>Non-Coded</td>
<td>30 VDC</td>
<td>3.0 A</td>
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<tr>
<td>Resistive</td>
<td>Coded</td>
<td>30 VDC</td>
<td>2.0 A</td>
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<tr>
<td>Resistive</td>
<td>Non-Coded</td>
<td>110 VDC</td>
<td>0.9 A</td>
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<tr>
<td>Resistive</td>
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<tr>
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<td>2.0 A</td>
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WARNING

All relay switch contacts are shipped in the standby (open) state, but may have transferred to the activated (closed) state during shipping. The presence of high voltage may cause serious injury or death. To ensure that the switch contacts are in their correct state, modules must be made to communicate with the panel before connecting circuits controlled by the module.

MOUNTING THE FRM-1 TO A 4 INCH SQUARE, 2 1/8 INCH DEEP JUNCTION BOX
Listings and Approvals*
- UL: S635
- ULC: CS669
- Factory Mutual (FM): Approved
- California State Fire Marshal (CSFM): 7300-0028:202
- MEA (NYC): 457-99-E
- Maryland State Fire Marshal: Permit # 2020
- USCG: 161.002/A42/1

* Listings and Approvals are under NOTIFIER.

Ordering Information

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<td>437067</td>
<td>FRM-1A Intelligent Relay Module</td>
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<tr>
<td>436202</td>
<td>CB500 Barrier</td>
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WIRING DIAGRAM

RELAY CONTROL MODULE USED TO DISCONNECT A POWER SUPPLY

FlashScan is a trademark of Honeywell International. Noryl is a registered trademark of GE Plastics, a subsidiary of General Electric Company.
Detection and Control Components

ISO-X Fault Isolator Module (IQ-318/IQ-636X-2)

Features

- Powered by Signaling Line Circuit (SLC) loop directly, no external power required
- Meets NFPA 72 Style 7 requirements
- Mount in standard 4 inch (102 mm) square junction box, minimum 2 1/8 inch (54 mm) deep
- Integral LED blinks to indicate normal condition; illuminates steady when short circuit condition is detected
- High noise (EMI/RFI) immunity
- Wide viewing angle of LED
- SEMS screws with clamping plates for ease of wiring
- Opens SLC loop automatically on detection of short, preventing the short from causing failure of the entire loop
- Automatically resets on correction of short

Applications

The Fault Isolator Modules should be spaced between groups of sensors in a loop to protect the rest of the loop. It is used to isolate short circuit problems within a section of a loop so that other sections can continue to operate normally.

Description

The ISO-X Fault Isolator Module is used with the AUTOPULSE IQ-318 and IQ-636X-2 control system to isolate short circuits on the SLC loop, so that unshorted sections of the loop can continue to operate normally. In Style 4 loops, the ISO-X is generally used at each T-tap branch to limit the effect of short circuits on a branch to the devices on that branch.

The module automatically opens a circuit when the line voltage drops below 4 volts. Fault Isolator Modules should be spaced between groups of sensors in a loop to protect the rest of the loop. If a short should occur between any two isolators, then both isolators immediately switch to an open circuit state and isolate the group of sensors between them. The remaining units on the loop continue to operate normally.

The ISO-X Fault Isolator Module automatically restores the shorted portion of the communications loop to normal condition when the short circuit condition is removed.

It mounts on a standard 4 in. (102 mm) mounting junction box which is at least 2 1/8 in. (54 mm) deep. Installation instructions are provided with each module and terminal screws are provided for “in and out” wiring.

The Fault Isolator Module (ISO-X) is used to protect critical elements of the communications loop from faults on other branches or sections of the loop. The ISO-X continuously monitors the circuit connected to terminals 3 (−) and 4 (+). Upon power-up, an integral relay is latched on.

The ISO-X periodically pulses the coil of this relay. A short circuit on the loop resets the relay. The ISO-X sees this short and disconnects the faulted branch by opening the positive side of the loop (terminal 4). This effectively isolates the faulted branch from the remainder of the loop. The LED indicator is on continuously during a short circuit condition. Once the fault is removed, the ISO-X automatically reapplies power to the communications loop branch.

Note: During a fault condition, the AUTOPULSE IQ-318 and IQ-636X-2 control system will register a trouble condition for each zone mapped to the isolated loop branch.

The face plate is made of LEXAN® with off-white color. It includes a yellow LED indicator that pulses when normal and turns on solid when a short is detected.

Technical Information

Operating Voltage: 15 – 28 VDC (peak)
Current Range: 5 mA for LED latched in alarm
Standby Current: 400 μA maximum, plus supervision current
Temperature Range: +32 °F to +120 °F (0 °C to +49 °C)
Relative Humidity: 10% to 95%
Weight: 5 oz (150 g)

Mounting the ISO-X Isolator Module to a 4 Inch Square, 2 1/8 Inch Deep, Junction Box
**Listings and Approvals***

UL .................................................. S635
ULC ........................................ CS118, CS733 (ISO-XA)
Factory Mutual (FM) ...................... Approved
California State Fire Marshal (CSFM) .... 7165-0028:243;
7170-0028:244
USCG .............................................. 161.002/A42/1
MEA .................................................. 128-07-E

* Listings and Approvals are under NOTIFIER

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<tr>
<td>437069</td>
<td>ISO-XA Fault Isolator Module (ULC)</td>
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LEXAN is a registered trademark of General Electric Corporation.
Detection and Control Components

ACS Series Annunciator Modules
(IQ-318/IQ-636X-2)

Features

- Speaker control mode for use with the AUTOPULSE IQ-318 and IQ-636X-2 panels; enables the ACS to control operation of groups of multi-channels mapped to groups of multi-speakers
- Compatible with existing annunciators
- Color-programmable LEDs
- On-board end-of-line resistors can be enabled/disabled by setting a switch
- Alarm/Circuit On and Trouble LED per point option or more dense Alarm-only option
- Touch-pad control switch option for remote control of system relays; or silence, reset, and evacuate
- LEDs may be programmed to display status of indicating circuits or control relays as well as system status conditions
- System Trouble LED indicator
- On-Line/Power LED indicator
- Alarm and trouble resound with flash of new conditions
- Local sounder for both alarm and trouble conditions with silence/acknowledge button (program options)
- May be powered by 24 VDC from the panel or by remote power supplies
- Microprocessor-controlled electronics, fully supervised
- Slip-in custom labels, lettered with standard typewriter or LabelEase program
- Plug-in terminal blocks for ease of installation and service.

Applications

The ACS Series Annunciators provide a modular line of products for annunciation and control of the AUTOPULSE IQ-318 and IQ-636X-2 control panels, the NCA-2, and legacy addressable panels. The ACS line provides arrays of LEDs to indicate point status and, in some versions, switches to control the state of output circuits. These ACS units use a serial interface and maybe located at distances of up to 6,000 ft (1,828.8 m) from the panel.

Construction

The ACS modules are provided in two basic controller modules, each with its expander module. The ACM-24AT provides 24 annunciation and control points per module, each with a red, green, or yellow Alarm/Circuit On LED, a yellow Trouble LED, and a touch-key switch. The ACM-48A provides 48 annunciation points per module, each with a red, green, or yellow Alarm/Circuit On LED (for annunciating control relays, the LED indicates ON/OFF).

On the ACM-24AT, each LED point is individually color-programmable. On ACM-48A, each column of 24 LED points can be color-configured using a DIP switch.

Temperature and humidity ranges: This system meets NFPA requirements for operation at 32 °F to 120 °F (0 °C to 49 °C), and at a relative humidity (non-condensing) of 85% at 86 °F (30 °C) per NFPA, and 93% ± 2% at 90 °F ± 1 °F (32 °C ± 2 °C) per UL. 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 all peripherals be installed in an environment with a nominal room temperature of 60 °F to 80 °F (15 °C to 27 °C).
Installation

The ACS Series annunciator and control subsystems use modular hardware assemblies which allow the custom configuration of the annunciator panel to fit the individual job requirements.

Standard back boxes and mounting hardware schemes, including special remote cabinets, allow the annunciators to be constructed and configured with other system components.

When used with the AUTOPULSE IQ-318, IQ-636X-2, or legacy panels, the ACS modules can be used for manual selection of speaker and telephone circuits. In this application, they are typically mounted in the main control near the microphone and telephone handset.

For remote annunciation applications, the modules are typically mounted in special ABF or ABS boxes. Control switch key locks (AKS-1B) are available.

Communication between the ACS Series annunciators and the host Fire Alarm Control Panel is made through an EIA-485 multi-drop loop, eliminating the need for costly wiring schemes. Four wires are required, two for the EIA-485 communications (twisted pair), and two for 24 VDC regulated power.

Retrofit of ACS Series annunciators into existing systems is easily accomplished. Software may require upgrading, and some legacy panels may require an interface board.

All field-wiring terminations use removable, compression-type terminal blocks for ease of installation, wiring, and circuit testing.

Operation

The ACS Series annunciator and control system provides the AUTOPULSE system with up to 32 remote serially connected annunciators, each with a capacity of 96 points, for a total capacity of 3072 points (subject to the capability of the FACP). The NFS2-3030 and NCA-2 are capable of using the full 96 points.

Local or remote power supplies and serial communications allow the ACS to be located virtually anywhere on the protected premises.

On AUTOPULSE IQ-318, IQ-636X-2 and the legacy panels, system alarm and/or trouble conditions may be annunciated on a per-point basis, or in a grouped or zone configuration.

Control of system operational controls, such as Signal Silence, System Reset, and local annunciation controls (such as Local Acknowledge and Lamp Test) may be accomplished through the module’s rubber keypad.

Agency Listings and Approvals*

- The listings and approvals below apply to the ACM/AEM-24AT and the ACM/AEM-48A. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.
  - UL . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S635
  - ULC . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S635
  - FDNY . . . . . . . . . . . . . COA #6067 (NFS2-640), COA #6065 (NFS2-3030)
  - CSFM . . . . . . . . . . . . . 7120-0028:0156, 7165-0028:0243, 7165-0028:0224
  - FM . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Approved

Ordering Information

- ACM-24AT: The Annunciator Control Module-24AT contains 24 color-programmable (red/green/yellow) Active and 24 yellow Trouble LEDs, 24 momentary touch-pad switches, a System Trouble LED, an On-Line/Power switch, and a local piezo sounder with an audible indication of alarm and trouble conditions. Includes instructions. The ACM-24AT is 8.375 in. (213 mm) high x 4.375 in. (111 mm) wide.

- AEM-24AT: The Annunciator Expander Module-24AT expands the ACM-24AT by 24 system points. The AEM-24AT is identical in size and in frontal appearance to the ACM-24AT. Up to three of these expander modules can be supported by an ACM-24AT, for a maximum of 96 system points. The AEM-24AT is 8.375 in. (213 mm) high x 4.375 in. (111 mm) wide.

- ACM-48A: The Annunciator Control Module-48A contains 48 color-programmable (red/green/yellow) Active LEDs, a System Trouble LED, an On-Line/Power LED, and a local piezo sounder with a Silence/Acknowledge switch for audible indication of alarm and trouble conditions. Includes instructions. The ACM-48A is 8.375 in. (213 mm) high x 4.375 in. (111 mm) wide.

- AEM-48A: The Annunciator Expander Module-48A expands the ACM-48A by 48 system points. The AEM-48A is identical in frontal appearance to the ACM-48A. One expander module can be supported by an ACM-48A, providing a maximum of 96 points (subject to the capability of the FACP). The AEM-48A is 8.375 in. (213 mm) high x 4.375 in. (111 mm) wide.

ABS-1TB: The ABS-1TB is an attractive black surface-mount back box for mounting one ACS Series Annunciator. Unlike the ABS-1B, the ABS-1TB has an increased depth that allows mounting of the AKS-1B Annunciator Key Switch. The ABS-1TB is 9.938 in. (252 mm) high x 4.625 in. (117 mm) wide x 2.5 in. (64 mm) deep.

Note: An earlier gray model ABS-1TB will not accommodate the ACM/AEM-24AT or ACM/AEM-48A. The slightly deeper ABS-1TB will accommodate both the ACM/AEM-24AT or ACM/AEM-48A models.
Ordering Information (Continued)

- **ABF-1B**: The Annunciator Flush Box-1B (black) provides for the remote mounting of a single annunciator module in a flush-mount enclosure. Knockouts are provided for use with 1/2 in. (13 mm) conduit. The ABF-1B includes a painted black metal trim plate (11 in. (279 mm) high x 6.25 in. (159 mm) wide), mounting hardware, and an adhesive-backed annunciator label for the dress plate. The ABF-1B is 9.938 in. (252 mm) high x 4.625 in. (117 mm) wide x 2.5 in. (64 mm) deep.

- **ADP-4B**: The Annunciator Dress Panel-4B (black) provides for the cabinet mounting of one to four modules. The ADP-4B hinge-mounts to the CAB-4 Series cabinet. Modules mount directly to threaded studs on the dress panel.

- **DP-DISP2**: Dress Panel accommodates up to two annunciator modules (no expanders).

- **BMP-1**: Annunciator Blank Module is a flat black dress plate that covers unused module positions in the annunciator back box or in the ADP-4B. The BMP-1 is 8.375 in. (213 mm) high x 4.375 in. (111 mm) wide. Studs for a variety of module mounting options are available.

- **AKS-1B**: The Annunciator Key Switch-1B (black) provides access security for the control switches on the ACM/AEM-24AT. The key switch kit includes a key and hardware for mounting to the ABF-1B. Also included is an adhesive-backed annunciator label for use with the key switch/dress plate assembly.

- **Note**: The AKS-1B can only be employed with the ABS-1TB.

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<td>DP-DISP2, Dress Panel</td>
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Detection and Control Components

ACM-8R Relay Module (IQ-318/IQ-636X-2)

Features

• Provides eight Form-C relays with 5-amp contacts
• The relays can be employed to track any group of 8 software zones in the AUTOPULSE IQ-301 control system or track a variety of devices and panel points, in a group fashion, on the IQ-318 or IQ-636X-2
• Removable terminal blocks for ease of installation and service
• DIP switch selectable memory mapping of relays
• Compatible with AUTOPULSE IQ-318 and IQ-636X-2 control units

Applications

The ACM-8R is a module in the ACS class of annunciators and will mount to an ABS-8RB annunciator surface-mount back box with blank faceplate. It provides the AUTOPULSE IQ-318 or IQ-636X-2 control system with a mappable relay control module. The relays on this module can be selected for mapping anywhere in the AUTOPULSE IQ-318 or IQ-636X-2 (by groups of eight) control system memory map.

Description

Communication between the control unit and the ACM-8R is accomplished over a two-wire EIA-485 serial interface. This communication, to include the wiring, is supervised by the AUTOPULSE control system. Power for the annunciators is provided via a separate power loop from the control unit which is inherently supervised (loss of power also results in a communication failure at the control unit). Up to 32 annunciators may be installed on an EIA-485 circuit.

ABS-8RB BACK BOX: 9 15/16 IN. x 4 5/8 IN. x 2 1/2 IN. DEEP (252 mm x 117 mm x 64 mm DEEP)
Technical Information

Voltage: ........................................... 24 VDC
Standby Current: ................................ 30 mA
Maximum Current (all relays activated): .............. 158 mA

Data Communications
Port: ............................................. EIA-485 operating at 20 K baud

Relay Contact Rating
  Resistive: ................................. 5 amps @ 125 VAC or 30 VDC
  Inductive: ................................. 2 amps @ 125 VAC

Note: Form-C gold-plated, silver alloy relay contacts are for medium duty switching and are not intended for motor control or pilot duty.

Listings and Approvals*

UL .................................................. S635
ULC ............................................... CS635 Vol. 1
MEA (NYC) ...................................... 128-07-E Vol. 5**
Factory Mutual (FM) ............................ Approved
California State Fire Marshal (CSFM) ......... 7120-0028: 156

Ordering Information

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<td>436996</td>
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*Listings and Approvals are under NOTIFIER.
**Listing under Tyco Fire Protection Products.
Features

- Ten addressable Class B or five addressable Class A initiating device circuits
- Removable 12 AWG (3.25 mm²) to 18 AWG (0.9 mm²) plug-in terminal blocks
- Status indicators for each point
- Panel-Controlled Green LED Indicators
- Unused addresses may be disabled
- Rotary address switches
- Class A or Class B operation
- FlashScan® or CLIP operation
- Mount one or two modules in a BB-XP cabinet (optional)
- Mount up to six modules on a CHS-6 chassis in a CAB-3 Series or BB-25 cabinet (optional)
- Mounting hardware included

Description

The XP10-M ten-input monitor module provides an interface between the addressable AUTOPULSE IQ-318 and IQ-636X-2 control units and normally open contact devices, such as pull stations, heat detectors, or flow switches.

The first address on the XP10-M is set from 01 to 150 and the remaining modules are automatically assigned to the next nine higher addresses. Provisions are included for disabling a maximum of two unused addresses.

The supervised state (normal, open, or short) of the monitored device is sent back to the panel. A common SLC input is used for all modules, and the initiating device loops share a common supervisory supply and ground – otherwise each monitor operates independently from the others. Each XP10-M module has panel-controlled green LED indicators.

FlashScan (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the unit’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

Technical Information

- **Standby Current**: 3.5 mA (SLC current draw with all addresses used; if some addresses are disabled, the standby current decreases.)
- **Alarm Current**: 55 mA (assumes all ten LEDs solid ON)
- **Temperature Range**: 32 °F to 120 °F (0 °C to 49 °C) for UL applications; 14 °F to 131 °F (–10 °C to 55 °C) for EN54 applications
- **Humidity Range**: 10% to 85% noncondensing for UL applications; 10% to 93% noncondensing for EN54 applications
- **Dimensions**: Height: 6.8 in. (172.7 mm) Width: 5.8 in. (147.3 mm) Depth: 1.25 in. (31.75 mm)
- **Wire Gauge**: 12 AWG (3.25 mm²) to 18 AWG (0.9 mm²)
- **Maximum SLC Wiring Resistance**: 40 or 50 ohms, panel dependent
- **Maximum IDC Wiring Resistance**: 40 ohms
- **Maximum IDC Voltage**: 12 VDC
- **Maximum IDC Current**: 1 mA
Installation
Power-limited circuits must employ type FPL, FPLR, or FPLP cable as required by Article 760 of the NEC. The XP10-M is shipped in Class B position. Remove shunt for Class A operation. Up to six XP10-M modules can be mounted on a CHS-6 chassis, which mounts in a BB-25, CAB 3 or 4, or suitably grounded metallic cabinet. One or two modules can be mounted in a BB-XP cabinet. Mounting hardware and installation instructions are provided with each module.

Wiring
Each XP10-M module comes with removable 12 AWG (3.25 mm²) to 18 AWG (0.9 mm²) plug-in terminal blocks.

Typical Initiating Device Circuit Configuration – Class B, Style B.
Note: Any number of UL-Listed contact closure devices may be used. DO NOT MIX fire alarm initiating and supervisory devices on the same initiating device circuit. Install contact closure devices per manufacturer’s installation instructions.

Typical Fault-Tolerant Initiating Device Circuit Configuration – Class A, Style D.
Note: Any number of UL-Listed contact closure devices may be used. DO NOT MIX fire alarm initiating and supervisory devices on the same initiating device circuit. Install contact closure devices per manufacturer’s installation instructions.

Listings and Approvals*
UL ........................................... S635
Factory Mutual (FM) ................................ Approved
California State Fire Marshal (CSFM) ........ 7300-0028:219
MEA (NYC) .................................... 43-02-E
Maryland State Fire Marshal ...................... Permit #2106
USCG ........................................... 161.002/A42/1

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<td>428080</td>
<td>CHS-6 Chassis</td>
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CHS-6 CHASSIS
19 IN. WIDE X 7 5/16 IN. HIGH X 2 3/16 IN. DEEP (483 mm wide x 186 mm high x 56 mm deep)

FlashScan is a registered trademark of Honeywell International.
Features
- Six addressable Form-C relay contacts
- Removable 12 AWG (3.25 mm²) to 18 AWG (0.9 mm²) plug-in terminal blocks
- Status indicators for each point
- Panel-Controlled Green LED Indicators
- Unused addresses may be disabled
- Rotary address switches
- FlashScan® or CLIP operation
- Mount one or two modules in a BB-XP cabinet (optional)
- Mount up to six modules on a CHS-6 chassis in a CAB-3 Series or BB-25 cabinet (optional)
- Mounting hardware included

Description
The XP6-R six-relay control module provides the addressable AUTOPULSE IQ-318 and IQ-636X-2 control units with six Form-C relays. The first module is addressed from 01 to 154 while the remaining modules are automatically assigned to the next five higher addresses. Provisions are included for disabling a maximum of three unused modules. A single isolated set of dry relay contacts is provided for each module address, which is capable of being wired for either a normally-open or normally-closed operation. The module allows the control panel to switch these contacts on command. No supervision is provided for the controlled circuit. Each XP6-R module has panel-controlled green LED indicators.

FlashScan® (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the unit’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

Technical Information
Standby Current: 1.45 mA (SLC current draw with all addresses used; if some addresses are disabled, the standby current decreases.)

Alarm Current: 32 mA (assumes all six relays have been switched once and all six LEDs solid ON)

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

Humidity Range: 10% to 85% noncondensing

Dimensions: Height: 6.8 in. (172.7 mm)
Width: 5.8 in. (147.3 mm)
Depth: 1.0 in. (25.4 mm)

Wire Gauge: 12 AWG (3.25 mm²) to 18 AWG (0.9 mm²)

Maximum SLC Wiring Resistance: 40 or 50 ohms, panel dependent

Relay Current: 30 mA/relay pulse (15.6 ms pulse duration), pulse under panel control

Relay Contact Ratings: 30 VDC; 125 VAC

Current Ratings:
- 3.0 A @ 30 VDC maximum, resistive, non-coded
- 2.0 A @ 30 VDC maximum, resistive, coded
- 1.0 A @ 30 VDC maximum, inductive (L/R=2 ms), coded
- 0.5 A @ 30 VDC maximum, inductive (L/R=5 ms), coded
- 0.9 A @ 110 VDC maximum, resistive, non-coded
- 0.9 A @ 125 VAC maximum, resistive, non-coded
- 0.7 A @ 70.7 VAC maximum, inductive (PF=0.35), non-coded
- 0.5 A @ 125 VAC maximum, inductive (PF=0.35), non-coded
Installation
Up to six XP6-R modules can be mounted on a CHS-6 chassis, which mounts in a BB-25, CAB-A3, CAB 3 or 4 series cabinet. One or two modules can be mounted in BB-XP cabinet. Mounting hardware and installation instructions are provided with each module.

Wiring
Each XP6-R module comes with removable 12 AWG (3.25 mm²) to 18 AWG (0.9 mm²) plug-in terminal blocks.

Listings and Approvals*
UL . . . . . . . . . . . . . . . . . . . . . . . . . . . S635
ULC . . . . . . . . . . . . . . . . . . . . . . . . . . . CS118 (XP6-RA)
Factory Mutual (FM) . . . . . . . . . . . . . . . Approved
California State Fire Marshal (CSFM) . . . 7300-0028:219
MEA (NYC). . . . . . . . . . . . . . . . . . . . . 368-01-E
Maryland State Fire Marshal. . . . . . . . Permit #2099
USCG. . . . . . . . . . . . . . . . . . . . . 161.002/A42/1

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<td>BB-XP Cabinet</td>
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*Listings and Approvals are under NOTIFIER.

FlashScan is a registered trademark of Honeywell International.
Features

- Built-in type identification automatically identifies this device as a monitor module to the AUTOPULSE control unit.
- Powered directly by two-wire SLC loop, no additional power required.
- High noise (EMF/RFI) immunity.
- SEMS screws with clamping plates for ease of wiring.
- Direct-dial entry of address (01-159).
- LED flashes green during normal operation (this is a programmable option), and latches on steady RED to indicate alarm.
- FlashScan® communication protocol.
- Compatible with IQ-318 and IQ-636X-2.

Applications

Use the FDM-1 module to monitor two zones of four-wire smoke detectors, manual fire alarm pull stations, waterflow devices, or other normally-open dry-contact alarm activation devices. May also be used to monitor normally-open supervisory devices with special supervisory indication at the control unit. Monitored circuit may be wired as an NFPA Style B only. A 47K ohm End-of-Line Resistor (provided) terminates the Style B circuit. The FDM-1 does not support Style D (Class A) initiating device circuits. Maximum IDC loop resistance is 1500 ohms.

Description

The FDM-1 is a standard-sized dual monitor module used to monitor and supervise two independent two-wire initiating device circuits (IDCs) at two separate, consecutive addresses in intelligent, two-wire systems.

Each FDM-1 uses two consecutive addresses of the 159 available module addresses on an SLC loop. It responds to regular polls from the control unit and reports its type and the status (open/normal/short) of its IDC. A green flashing LED indicates that the module is in communication with the control unit. The LED latches on steady red to indicate alarm (subject to current limitations on the loop).

FlashScan (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the unit’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

The FDM-1 automatically assigns itself to two addressable points, starting with the original address. For example, if the FDM-1 is set to address “56,” then it will automatically assign itself to addresses “56” and “57.” Note: “ones” addresses on the FDM-1 are 0, 2, 4, 6, or 8 only. Terminals 6 and 7 use the first address, and terminals 8 and 9 use the second address.

NOTICE

Avoid duplicating addresses on the system.

Technical Information

Nominal Operating Voltage: ...................... 15 to 32 VDC
Maximum Current Draw: ...................... 5.7 mA (LED on)
Maximum IDC Resistance: ...................... 1500 ohms
Average Operating Current: ............. 750 μA (LED flashing)
EOL Resistance: ...................... 47K ohms
Temperature Range: .................. 32 °F to 120 °F ( 0 °C to 49 °C)
Humidity Range: .......................... 10% to 93% non-condensing

Dimensions:
Height: .............................. 4.5 in. (114 mm)
Width: ............................... 4 in. (102 mm)
Depth: ............................... 2.125 in. (54 mm)

Installation

The FDM-1 module mounts directly to a standard 4 in. square, 2.124 in. (54 mm) deep, electrical box. Mounting hardware and installation instructions are provided with each module. All wiring must conform to applicable local codes, ordinances, and regulations. These modules are intended for power-limited wiring only.
**Wiring**

- Connect modules to listed compatible AUTOPULSE control units only.
- All wiring shown is supervised and power limited.
- Install contact closure devices per manufacturers’ installation instructions.
- Any number of UL-listed contact closure devices may be used.
- **DO NOT MIX** fire alarm initiating, supervisory, or security devices on the same circuit.

**Listings and Approvals**

<table>
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<th>UL</th>
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* Listings and Approvals are under NOTIFIER.

**Ordering Information**

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**TYPICAL DUAL TWO-WIRE STYLE B INITIATING DEVICE CIRCUIT CONFIGURATION**

- All wiring shown is supervised and power limited.
- Connect modules to listed compatible control panels only.
- Connect 47K ohm EOL resistors to the terminals at both ends of the initiating device circuits.
- Shielded/twisted-pair is recommended to the next device.
- Communication line – 32 VDC maximum. Shielded/twisted-pair is recommended.
- All wiring shown is supervised and power limited.
- Connect modules to listed compatible control panels only.
Detection and Control Components

FMM-101 Monitor Module (IQ-318/IQ-636X-2)

Features

• Built-in type identification automatically identifies this device as a monitor module to the AUTOPULSE control unit
• Powered directly by two-wire FACP, no additional power required
• High noise (EMF/RFI) immunity
• Tinned, stripped leads for ease of wiring
• Direct-dial entry of address (01-159)
• FlashScan™ communication protocol

Applications

Use the FMM-101 module to monitor a single device or a zone of four-wire smoke detectors, manual fire alarm pull stations, flow devices, or other normally-open dry-contact devices. May also be used to monitor normally-open supervisory devices with special supervisory indication at the AUTOPULSE IQ-318 or IQ-636X-2 control unit. Monitored circuit/device is wired as an NFPA Style B (Class B) Initiating Device Circuit. A 47K ohm End-of-Line Resistor (provided) terminates the circuit.

The FMM-101 monitor module can be installed in a single-gang junction directly behind the monitored unit. Its small size and lightweight allow it to be installed without rigid mounting. The FMM-101 is intended for use in intelligent, two-wire systems where the individual address of each module is selected using rotary switches. It provides a two-wire initiating device circuit for normally-open-contact fire alarm and security devices.

Description

The FMM-101 is a miniature monitor module used to supervise a Class B (Style B) circuit. Its compact design allows the FMM-101 to often be mounted in a single-gang box behind the device it is monitoring. The FMM-101 can be used to replace MMX-101 module (Part No. 417478) in existing systems.

Each FMM-101 uses one of 159 available module addresses on an SLC loop. It responds to regular polls from the control panel and reports its type and the status (open/normal/short) of its Initiating Device Circuit (IDC).

FlashScan (patent pending) is a new communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the unit’s CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

Technical Information

Nominal Operating Voltage: .................. 15 to 32 VDC
Average Operating Current: .............. 350 μA (maximum)
EOL Resistance: ........................... 47K ohms
Temperature Range: ............. 32 °F to 120 °F (0 °C to 49 °C)
Humidity Range: ..................... 10% to 93% non-condensing
Wiring Length: ....................... 6 in. (152 mm) minimum
Dimensions:
  High: .................................. 1.3 in. (33 mm)
  Wide: .................................. 2.75 in. (70 mm)
  Deep: .................................. 0.5 in. (13 mm)

Installation

The FMM-101 module should be wired and mounted without rigid connections inside a standard electrical box. All wiring must conform to applicable local codes, ordinances, and regulations.

Listings and Approvals*

UL ........................................ S635
ULC ........................................ CS699
Factory Mutual (FM) ......................... Approved
California State Fire Marshal (CSFM) ..... 7300-0028-202
MEA ......................................... 128-07-E
Maryland State Fire Marshal ................. Permit #2020
USCG ........................................ 161.002/A42/1

* Listings and Approvals are under NOTIFIER

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FlashScan is a trademark of NOTIFIER.
Features

- ALARM and TROUBLE Lamp/LED per point (IQ-318 and IQ-636X-2) or per software zone, or more dense ALARM-only option (field selectable)
- System trouble Lamp/LED signal
- On-line/power LED indicator
- Alarm and trouble resound with flash of new conditions
- Local sounder for both alarm and trouble conditions with silence/acknowledge switch connection
- Serial EIA-485 interface for reduced installation cost
- May be powered by 24 VDC from the unit or by remote power supplies
- Efficient switched power converter reduces power consumption
- Fully supervised microprocessor-controlled electronics
- Plug-in terminal blocks for ease of installation and service
- Trouble monitor option for remote power supplies

Applications

The LDM series lamp driver modules, when combined with a custom graphic display, provide annunciation and control for the AUTOPULSE IQ-318 or IQ-636X-2 control system. These modules use a serial communications interface and may be located up to 6,000 ft (1829 m) from the unit.

The LDM-32/LDM-E32 with a custom graphic array may be used to indicate point or software zone status. In addition, the LDM-R32 module which connects to any LDM-32 or LDM-E32 converts transistor outputs to 32 Form-A dry contacts for electrical isolation when interfacing the system to other equipment.

Description

Two basic models are available: the LDM-32 control module and the LDM-E32 expander module. Each may be selected to provide 32 alarm indications or 16 alarm and 16 trouble. Both modules mount on four standoffs inside the custom annunciator graphic box. Alternately, the modules may be installed in a CHS-4L chassis. The CHS-4L chassis may be mounted to the graphic annunciator cabinet to provide installation of up to four LDM-32 or LDM-E32 modules.

The LDM-32 includes a system trouble lamp driver and lamp test/local acknowledge switch input. Integral piezo sounder sounds for each new alarm or trouble and is silenced with the Local Acknowledge switch, or permanently disabled with a dip-switch selection. Flash of new alarms or trouble is selectable through dip switches. Switch inputs may be used for panel Silence or Reset. Instructions are included.

One LDM-E32 is allowed per LDM-32 in alarm-only mode. Three LDM-E32 modules are allowed per LDM-32 in alarm/trouble mode. The LDM-E32 includes expander ribbon cable.

The LDM-R32 provides 32 Form-A dry contacts (1 amp @ 30 VDC) output terminal screw connections. It is mounted on an LDM-32 or an LDM-E32. A separate common is provided for each group of 8 relays. Ribbon cables to connect to the LDM-32/LDM-E32 are included.

The LDM-CBL24 and LDM-CBL48 ribbon cable sets can be ordered to provide either a 24 in. (610 mm) or 48 in. (1219 mm) connection between LDM-32/LDM-E32 and LEDs or lamps on a custom graphic unit. They each include all cables necessary for one LDM-32 or LDM-E32. Cables have a connector on one end only (split, strip, and connect other end to graphic annunciator).

Communications between the LDM series annunciators and the host AUTOPULSE control system are made through a two-wire EIA-485 multi-drop loop, and a two-wire regulated 24 VDC power loop. Up to 32 LDM systems may be connected to a single control unit, providing redundant annunciators if required. All field wiring terminations use removable, compression-type terminal blocks for ease of installation, wiring, and circuit testing.

The LDM series modules, when used with a custom graphic annunciator, provide the AUTOPULSE IQ-318 control system with up to 32 unique or redundant annunciators indicating the status of the 99 software zones. When used with the IQ-636X-2, the LDM series modules provide the system with up to 32 unique or redundant annunciators, each with a capacity of 64 points for a total capacity of 2048 points. Local or remote power supplies and serial communications allow the custom annunciators to be located virtually anywhere on the protected premises. Management of system operational controls, such as signal silence and system reset, may be accomplished through special key or push switches.

LDM-32 CONTROL MODULE
Description (Continued)

LDM-E32 EXPANDER MODULE

LDM-R32 RELAY EXPANDER MODULE

CHS-4L CHASSIS

Technical Information

Size: 4.4 in. x 7.1 in. (112 mm x 181 mm)

LDM-32 and LDM-E32
Output Driver: Bipolar Darlington Open Collector
NPN transistor

Maximum Current/Output: 100 mA (external current limit)
Voltage Rating on Output Driver: 30 VDC (either 24 VDC or 5 VDC)
LED: High efficiency 2 mA
LED Resistor (5 VDC): 680 Ω, 1/4 W (each LED)
LED Resistor (24 VDC): 10K Ω, 1/4 W (each LED)
Switch Rating: 5 VDC @ 0.5 mA

Standby Current
LDM-32: 40 mA
LDM-E32: 2 mA

Alarm Current
LDM-32: 56 mA
LDM-E32: 18 mA
LDM-R32: 288 mA

Relay Contacts – LDM-R32: 1 amp @ 30 VDC resistive, gold clad silver alloy

Listings and Approvals*
UL: S635
ULC: CS100
MEA (NYC): 17-96-E, 317-01-E
Factory Mutual (FM): Approved
California State Fire Marshal (CSFM): 7120-0028: 156

* Listings and Approvals are under NOTIFIER.

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General
The FCPS-24S6 (6-amp) and FCPS-24S8 (8-amp) are compact, cost-effective remote power supplies with battery charger. The FCPS-24S6/-24S8 may be connected to any 12- or 24-volt Fire Alarm Control Panel (FACP) or may be used as a stand-alone supply. Primary applications include Notification Appliance (bell) Circuit (NAC) expansion (to support ADA requirements and NAC synchronization) or auxiliary power to support 24-volt system accessories. The FCPS-24S6/-24S8 provides regulated and filtered 24 VDC power to four notification appliance circuits configured as either four Class B (Style Y) or Class A (Style Z, with ZNAC-4 option module). Alternately, the four outputs may be configured as all non-resettable, all resettable, or two non-resettable and two resettable. The FCPS-24S6/-24S8 also contains a battery charger capable of charging up to 18 AH batteries.

Features
- UL-Listed NAC synchronization using System Sensor, Wheelock, or Gentex “Commander2” appliances.
- Cascadable for up to ten power supplies (four for Gentex) with strobe timing maintained.
- Operates as a “sync follower” or as a “sync generator” (default). See Note on page 2.
- Contains two fully-isolated input/control circuits – triggered from FACP NAC (NAC expander mode) or jumpered permanently “ON” (stand-alone mode).
- Four Class B (Style Y) or four Class A (Style Z, with ZNAC-4 module) NACs.
- 6-amp (FCPS-24S6) or 8-amp (FCPS-24S8) full load output, with 3 amps maximum/circuit, in NAC expander mode (UL 864).
- 4-amp (FCPS-24S6) or 6-amp (FCPS-24S8) continuous output in stand-alone mode (UL 1481).
- Compatible with coded inputs; signals passed through.
- Optional power-supervision relay (EOLR-1).
- In stand-alone mode, output power circuits may be configured as: resettable (reset line from FACP required), non-resettable, or a mix of two and two.
- Fully regulated and filtered power output – optimal for powering four-wire smoke detectors, annunciators, and other system peripherals requiring regulated/filtered power.
- Power-limiting technology meets UL power-limiting requirements.
- Form-C normally-closed trouble relay.
- Fully supervised power supply, battery, and NACs.
- Selectable earth fault detection.
- AC trouble report selectable for immediate or 8-hour delay.
- Works with virtually any UL 864 fire alarm control which utilizes an industry-standard reverse-polarity notification circuit (including unfiltered and unregulated bell power).
- Requires input trigger voltage of 9.0 – 32 VDC.
- Self-contained in compact, locking cabinet – 15 in. (381 mm) high x 14.5 in. (368 mm) wide x 2.75 in. (70 mm) deep.
- Includes integral battery charger capable of charging up to 18 AH batteries. Cabinet capable of housing 7.0 AH batteries.
- Battery charger may be disabled via DIP switch for applications requiring larger batteries.
- Fixed, clamp-type terminal blocks accommodate up to 12 AWG (3.1 mm²) wire.

Standards and Codes
The FCPS-24S6/-24S8 complies with the following standards:

Specifications
Primary (AC) power:
- FCPS-24S6/-24S8: 120 VAC, 60 Hz, 3.2 A maximum.
- Wire size: minimum #14 AWG (2.0 mm²) with 600 V insulation.
Control input circuit:
- Trigger input voltage: 9 to 32 VDC.
- Trigger current: 2.0 mA (16 – 32 V). Per input: 1.0 mA (9–16 V).
Trouble contact rating: 5 amps at 24 VDC.
Auxiliary power output: specific application power 500 mA maximum.

Output circuits:
- +24 VDC filtered, regulated.
- 3.0 amps maximum for any one circuit.
- Total continuous current for all outputs (stand-alone mode): for FCPS-24S6: 4.0 amps maximum; for FCPS-24S8: 6.0 amps maximum.
- Total short-term current for all outputs (NAC expander mode): for FCPS-24S6: 6.0 amps maximum; for FCPS-24S8: 8.0 amps maximum.

Secondary power (battery) charging circuit:
- Supports lead-acid batteries only.
- Float-charge voltage: 27.6 VDC.
- Maximum charge current: 1.5 amps
- Maximum battery capacity: 18 AH.

Applications
Example 1: Expand notification appliance power an additional 6.0 amps (FCPS-24S6) or 8.0 amps (FCPS-24S8). Use up to four Class B (Style Y) outputs or four Class A (Style Z) outputs (using ZNAC-4). For example, the FACP notification appliance circuits will activate the FCPS when reverse-polarity activation occurs. Trouble conditions on the FCPS are sensed by the FACP through the notification appliance circuit.

Example 2: Use the FCPS to expand auxiliary regulated 24-volt system power up to 4.0 amps (FCPS-24S6) or up to 6.0 amps (FCPS-24S8). Both resettable and non-resettable power options are available. Resettable outputs are created by connecting the resettable output from the FACP to one or both of the FCPS inputs.

Example 3: Use addressable control modules to activate the FCPS instead of activating it through the FACP notification appliance circuits. This typically allows for mounting the FCPS at greater distances from the FACP while expanding system architecture in various applications.

For example, an addressable control module is used to activate the FCPS, and an addressable monitor module is used to sense FCPS trouble conditions. Local auxiliary power output from the FCPS provides power to the addressable control module.

Sync Follower/Generator Note
In some installations, it is necessary to synchronize the flash timing of all strobes in the system for ADA compliance. Strobes accomplish this by monitoring very short timing pulses on the NAC power which are created by the FACP. When installed at the end of a NAC wire run, the FCPS-24S6/-24S8 can track (i.e., “follow”) the strobe synchronization timing pulses on the existing NAC wire run. This maintains the overall system flash timing of the additional strobes attached to the FCPS.

When the FCPS-24S6/-24S8 is configured (via DIP switch settings) as a “sync follower,” the FCPS’s NAC outputs track the strobe synchronization pulses present at the FCPS’s sync input terminal. The pulses originate from an upstream FACP or other power supply.

When the FCPS-24S6/-24S8 is configured (via DIP switch settings) as a “sync generator,” the FCPS’s sync input terminals are not used. Rather, the FCPS is the originator of the strobe synchronization pulses on the FCPS’s NAC outputs. In “sync generator” mode, the sync type (System Sensor, Wheelock, or Gentex) is selectable via DIP switch settings.

Product Line Information
FCPS-24S6: 6.0 amp, 120 VAC remote charger power supply. Includes main printed circuit board, transformers, enclosure (15 in. (381 mm) high x 14.5 in. (368 mm) wide x 2.75 in. (70 mm) deep), and installation instructions (Part No. 433594).

FCPS-24S8: 8.0 amp, 120 VAC remote charger power supply. Includes main printed circuit board, transformers, enclosure (15 in. (381 mm) high x 14.5 in. (368 mm) wide x 2.75 in. (70 mm) deep), and installation instructions (Part No. 433595).

EOLR-1: 12/24 VDC end-of-line relay for monitoring four-wire smoke detector power.
Agency Listings and Approvals*

UL Listed . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S635
U.S. Coast Guard . . . . . . . . . . . . . . . . . . . . . . 161.002/A42/1
California State Fire Marshal . . . . . . . . . . . . . 7315-0028:225
Factory Mutual (FM) . . . . . . . . . . . . . . . . . . . . . . . . . Approved
MEA (NYC) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 299-02-E

*Listings and Approvals are under NOTIFIER.

BOARD LAYOUT

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General
The ACPS-610 is an auxiliary power supply with a battery charging option and a host of special features. Selectable charging options allow the ACPS-610 to provide 6 amps of power to four outputs while charging batteries from 12 to 200 AH, or 10 amps of power when the unit is configured for use with an external battery charger. Four individually addressable outputs can be independently configured for auxiliary power or Notification Appliance Circuits (NAC). NAC outputs support notification appliance synchronization for devices manufactured by System Sensor®, Wheelock, and Gentex. An option to disable battery charging allows the system designer to use the four built-in circuits to distribute 10 amps of power for general purposes, excluding NAC applications.

The ACPS-610 is compatible with the AUTOPULSE IQ-318/IQ-636X-2 fire suppression control panels using CLIP and FlashScan® protocol.

Features
• Listed to UL Standard 864, 9th Edition.
• Provides 6.0 A of NAC power or 10 A of general purpose power.
• Four Class B (Style Y) or four Class A (Style Z) outputs, individually addressable by the FACP.
• When built-in outputs are configured for NAC operation, each circuit supports strobe synchronization with the following manufacturers’ audio/visual devices: System Sensor® (SpectrAlert® and SpectrAlert Advance Series) or Wheelock or Gentex.
• Each circuit can be software-selected for use as: a Notification Appliance Circuit, general purpose 24 VDC power, four-wire detector power, or door holder.
• Steady, March Time (120 PPM), Two Stage, Temporal, or UZC Zone-Coded and Non-Coded devices – software-selectable by circuit.
• Universal Zone Coder (UZC-256) option supports for programmable coded outputs. Up to 256 different codes.
• Charges 12 to 200 AH batteries with full supervision. The charger on the ACPS may be disabled via software. When disabled, a separate, external charger is required, for example, a CHG-120.
• May be used to provide battery backup for multiple ACPS supplies.
• AC loss detection, brownout detection, and AC loss delay reporting.
• Power-limited outputs.
• Isolated Signaling Line Circuit (SLC) interface.
• Selectable ground fault detection.
• Canadian two stage operation.

Installation Standards
The ACPS-610 complies with the following standards:
• NFPA 70 and NFPA 72 National Fire Alarm Code

In addition, the installer should be familiar with the following standards:
• NEC Article 760 Fire Protective Signaling Systems
• Applicable Local and State Building Codes
• Requirements of the Local Authority Having Jurisdiction

Specifications
• Primary (AC) power:
  – ACPS-610: 120 VAC, 50/60 Hz input, 5.0 A maximum
• Output voltage: 24 VDC electrically regulated and power/limited (under primary AC mains). Under secondary power, 20.4 to 26.4 VDC.
• Output circuits – TB3, TB4, TB5, TB6 on Main Board: 1.5 A maximum for any NAC output circuit. 2.5 A maximum for any Power output with battery charger disabled.
• Secondary power (battery) charging circuit – TB3 on KAPS-24 Board: lead-acid battery charger which will charge 12 to 200 AH batteries. Maximum charger current – 5.0 A.
• Wiring: utilizes wire sizes 12 to 18 AWG (3.1 to 0.78 mm²)
• SLC specifications: Average SLC current is 1.287 mA. SLC data is transmitted between 24.0 VDC, 5 VDC, and 0 VDC at approximately 3.33 Kbaud.
• Battery fuse (F2): 15A, Slo-Blow.
ACPS Programming

The ACPS-610 is programmable via the simple-to-use PK-PPS programming utility, which requires a Windows® PC with a USB port and cable. A copy of the PK-PPS programming utility is included with each ACPS-610. Programming may be performed during an on-line session with the ACPS-10, or previously saved programs may be downloaded to individual ACPS-610 units. The ACPS-610 requires the use of a minimum of 5 SLC address points, and will use up to 14 SLC address points to fulfill requirements for Canadian supervision and two stage operation.

Example of programming for the ACPS-610 using 6 addresses

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<td>Output 2: b + 1</td>
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<td>Output 3: b + 2</td>
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<td>Output 4: b + 3</td>
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<tr>
<td>Output 5: NA</td>
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<td>Output 6: NAC Synchronized</td>
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Example for ACPS-610 using Canadian reporting with Two Stage

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<td>Input Type: Internal (IIZ)</td>
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<tr>
<td>Sync Type: No Sync</td>
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<tr>
<td>Output 1: Monitor General: b</td>
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<tr>
<td>Output 2: b + 1</td>
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<tr>
<td>Output 3: b + 2</td>
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<tr>
<td>Output 5: NA</td>
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<tr>
<td>Output 6: NAC Synchronized</td>
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Listings and Approvals

UL/ULC . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S635

Ordering Information

ACPS-610: Addressable charger power supply, with selectable built-in synchronizion, and four built-in control modules. Includes installation instructions and PK-PPS programming utility CD. Requires Windows PDC with USB port and USB cable.

BB-25: The BB-25 can house one ACPS-610 and two 12 volt, 26 AH batteries.

CAB-3/4 Series: The ACPS-610 can mount in any of the CAB-3/4 Series cabinets. This can be in the bottom of the cabinet or a tier via a CHS-PS and CHS-BH.

CHS-6: When the power supply cannot be mounted in the CAB-3/4 Series lowest row, the ACPS-610 will require the left two of the three chassis spaces.

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Form No. T-2008096-3
Detection and Control Components

APS2-6R(E) 6.0 Amp Auxiliary Power Supply
(IQ-318/IQ-636X-2)

General
The APS2-6R(E) is a state-of-the-art, 150 watt, switching auxiliary power supply providing 24 VDC of filtered DC power. The APS2-6R(E) provides three 24 VDC output circuits, rated for 6.0 Amps in alarm and 4.0 Amps continuous. It is used for the operation of peripheral audible/visual devices (alarm signaling appliances) for the AUTOPULSE IQ-318 or the IQ-636X-2 control panels.

Note: The APS2-6R(E) can also be used with Legacy panels. Please refer to the APS2-6R(E) manual for more information.

Features
• UL 864 Ninth Edition compliant
• Lightweight, compact design
• 120 or 220/240 VAC (@ 50/60 Hz) versions
• Output circuits with overload protection
• Built-in “brown-out” circuitry
• Diagnostic trouble LED
• Plug-in connector for in-cabinet applications and screw terminals for remote device applications
• Trouble supervision bus
• Shares battery and charger circuit with control panel
• Power-limited design, per UL requirements
• AC Fail supervision and reporting with field-selectable delay per UL 864
• Heavy-duty clamp-type terminals accept up to 12 AWG (3.1 mm²) wire
• Battery voltage supervision
• Low battery disconnect
• Mounts in a standard CAB-4 Series cabinet

Standards and Codes
This power supply complies with the following standards:
• NFPA 72 National Fire Alarm Code
• UL 864 Standard for Control Units and Accessories for Fire Alarm Systems
In addition, the installer should be familiar with the following standards:
• NEC Article 300 Wiring Methods
• Applicable Local and State Building Codes
• Requirements of the Local Authority Having Jurisdiction
• The Canadian Electrical Code, Part 1

Construction and Operation
When used with the CAB-4 Series (CAB-A4, -B4, -C4, or -D4), the APS2-6R(E) mounts to a CHS-4 or CHS-4L mounting chassis. If more than one APS2-6R(E) is necessary to meet the power requirements, connect additional APS2-6R(E) power supplies together as described in the Installation Instruction Manual for the APS2-6R(E).

Underwriters Laboratories requires that all Signaling Appliances be approved for use with the selected control system due to voltage operating range criteria. Use only those appliances listed for use with the associated control system. Refer to Device Compatibility Document, Part No. 50054.

Specifications
Electrical Specifications
• AC primary input power (TB1): APS2-6R: 120 VAC, 50/60 Hz, 2.9 A., APS2-6RE : 220-240 VAC, 50/60 Hz, 1.5 A.
• DC secondary input power (TB3): TB3-1 (+), TB3-2 (–).
• 24 VDC output power (TB2): Total 6.0 A (4.0 A continuous). Circuit 1 (TB2-1, TB2-2): 3.0 A @ 24 VDC power-limited. Circuit 2 (TB2-3, TB2-4): 3.0 A @ 24 VDC power-limited.
• 24 VDC output power (J9): 6.0 A (4.0 A continuous), Non-Power Limited.
• Relay Contacts (TB4): AC Fail supervision over the SLC.
• Fuse: (F2 battery supervision): 32 VAC, 10.0 A, Fast-Acting Automotive Minifuse.
• Trouble supervision bus: J3 output: Form-A contact (open collector). J4 input: Form-A contact (open collector).

Note: J3 and J4 can be interchanged.
• Loss of AC indication: Immediate indication (default); 1-2 hour delay (cut JP2); 2-3 hour delay (cut JP2 and JP3).
Specifications (Continued)

Mechanical Specifications

- The APS2-6R(E) measures approximately 8.63 in. (219 mm) x 6.63 in. (168 mm) x 2.38 in. (60 mm) and weighs approximately 2 lb (0.91 kg).

Cabinet for Mounting

CAB-4 Series: Use CHS-4 and CHS-4L chassis for the AUTOPULSE IQ-636X-2 control panel.

Listings and Approvals*

UL Listed .............. S635
FM ..................... Approved

*Listings and Approvals are under NOTIFIER.

Ordering Information

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Detection and Control Components

UDACT – Universal Digital Alarm Communicator Transmitter (IQ-318/IQ-636X-2)

Features
• Dual phone lines
• Dual telephone line voltage detect
• Surface Mount Technology
• Compact in size 6 3/4 x 4 1/4 inch (172 x 108 mm)
• Built-in programmer
• Built-in 4 character red 7-segment LED display
• Manual Test Report function
• Manual Transmission Clear function
• Mounts in a separate enclosure (ABS-8RB)
• Communicates vital system status
• Annunciation of UDACT Troubles including: loss of phone lines, communication failure with either Central Station, total communication failure
• Troubleshoot Mode converts keypad to DTMF touchpad
• Individual LEDs for: Power, EIA-485 Loss, Manual Test, Kissoff, Comm Fail, Primary Line Seize, Secondary Line Seize, and Modern Communications
• Open Collector relay driver for Total Communications Failure or UDACT trouble
• Real-time clock
• Extensive transient protection
• Simple EIA-485 Interface to host unit

Description
The Universal Digital Alarm Communicator Transmitter (UDACT) is designed for use on the AUTOPULSE IQ-318 and AUTOPULSE IQ-636X-2 control units. It is also designed for use on the Intelligent Network Annunciator (INA), software release 2.8 or higher. When used in conjunction with the INA, the UDACT can report the status of all control units on NOTI•FIRE•NET™. The UDACT transmits system status to UL listed Central Station Receivers via the public switched telephone network.

The UDACT is compact in size and may be mounted externally in a separate cabinet. EIA-485 annunciator communications bus and regulated 24 volt connections are required.

The UDACT is capable of transmitting the status of software zones (Alarm and Trouble), System Trouble, Panel Off-Normal, Supervisory, Bell Trouble, Low Battery, and AC Fail. When used with the AUTOPULSE IQ-318 and IQ-636X-2 the UDACT is capable of reporting 567 points. Reporting may be in the form of software zones (99 plus 16 special), panel circuits 1-4, panel output modules 1-64, and 192 points per SLC loop (the first 96 detector and 96 module addresses).

The Universal Digital Alarm Communicator Transmitter (UDACT) provides the means to create a powerful, low cost, local area network solution for any application involving multiple facilities spread over a small geographic area, such as hospitals, college campuses, shopping malls, prisons, airports, grouped government facilities, power plants, large commercial facilities, and much more.
The UDACT when used in the Contact ID format transmits detailed system status via the standard public switched telephone network to a digital receiver. The telephone network becomes the “network gateway” from the FACP to the digital receiver and to an optional UniNet monitor.

Contact ID is a transmission format enabling transmission of alarm and trouble conditions on a bi-point basis. Three groups of information are transmitted to the central station: a four-digit account code, a group number (00-99), and the device or zone number (000-999). Each of these three information groups is programmable. Because of the virtually unlimited number of combinations, the number of systems, points and/or zones transmitted is boundless.

### Technical Information

- **Standby current:** 40 mA
- **Current while communicating:** 75 mA
- **Maximum current while communicating and with open collector output activated:** 100 mA
- **Voltage:** Regulated 24 volts
- **Range:** 21.2 to 28.2 volts

Required software:
- IQ-301 EPROM = 73609 (or higher)
- IQ-396X EPROM = #AFP4R 2.0 (or higher)
- IQ-318 = All
- IQ-636X = All
- IQ-636X-2 = All

### Compatibility Chart

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<th>Ademco 685 (1)</th>
<th>Silent Knight 9000</th>
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<th>FBI CP220FB</th>
<th>Osborne Hoffman Models 1 &amp; 2</th>
<th>Radionics 8000/5800 (5)</th>
<th>Sencoa 3000R (7)</th>
<th>Surguard MLR-2 (9)</th>
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1. With 685-8 Line Card with Rev 4.4d software
2. With 9002 Line Card Rev 9035 software or 9032 Line Card with 9326A software
3. Rev 4.0 software.
4. FBI CP220FB Rec-11 Lin Card with Rev 2.6 software and a memory card with Rev 3.8 software
5. Model 6500 with Rev 600 software
6. Model 6000 with Rev 204 software
7. With Rev B control card at Rev 1.4 software and Rev C line card at Rev 1.5 software
8. Model 2 only
9. Version 1.62 software

### Listings and Approvals

- **UL** .......................................................... S635
- **ULC** .......................................................... CS100 Vol. VII
- **Factory Mutual (FM)** ................................. Approved
- **California State Fire Marshal (CSFM)** ....... 7300-0028:174
- **MEA** .......................................................... 328-94-E
- **Industry Canada** ................................. 2132 6030 A
- **FCC** .......................................................... IWGUSA-20723-AL-E

* Listings and Approvals are under NOTIFIER

### Ordering Information

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Detection and Control Components

**CHG-120 Battery Charger and Meters**
(IQ-318/IQ-636X-2)

**Features**
- Charges sealed lead-acid batteries
- Automatic float-type battery charger
- Rated for batteries of 25 to 120 ampere-hours
- Obtains full float voltage within 48 hours
- For use on any 24-volt FACP which can handle the specified batteries and can disable the local charger
- AC Fail delay (central station applications) per latest NFPA requirements
- Form-C Trouble contact
- Dual outputs, for easy load distribution
- Diagnostic LEDs:
  - Primary AC On
  - Charger Trouble
  - Ground Fault
  - Hi Charge
  - Lo Charge
  - Battery Voltage Level (3 LEDs)
  - Low Battery
- Optional BB-55 battery cabinet
- Field-selectable input voltage, 120 VAC or 230 VAC
- Charges:
  - 25 AH batteries within 9 hours
  - 55/60 AH batteries within 20 hours
  - 120 AH batteries within 38 hours

**Applications**
Use the CHG-120 battery charger with the AUTOPULSE IQ-318 or IQ-636X-2 control units when batteries required for standby are rated equal to or greater than 25 ampere-hours. Up to two batteries may be charged when either the 25AH or 60AH are installed.

**Description**
The CHG-120 battery charger is a state-of-the-art battery charging system designed for use with the AUTOPULSE IQ-318 or IQ-636X-2. It is designed to charge lead-acid batteries between 25 and 120 ampere-hours (AH).

The CHG-120 consists of a PC board and mounting chassis. Charging current is provided automatically when the battery voltage falls below the charger’s output voltage.
Technical Information

Primary AC power in (TB1): 115 VAC, 60 Hz, 2 A
230 VAC, 50 Hz, 1 A

Form-C relay (TB3): 5 A at 30 VDC

Float charge voltage: 27.6 VDC

Maximum charging current: 4.5 A

Fuses F1-F3: 15 A

Battery sizes: 25 AH to 120 AH

Charging time (for 2 fully discharged batteries)
25 AH . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 9 Hours
55 AH/60 AH . . . . . . . . . . . . . . . . . . . . . . . . . . 20 Hours
120 AH . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 38 Hours

High: 4 5/8 in. (118 mm)
Wide: 3 in. (76 mm)
Deep: 1 3/4 in. (44 mm)

Mounting Options

The CHG-120 has a variety of mounting options. It can be mounted in either a CAB-3 or CAB-4 or remotely in the BB-55 Battery Back Box. Install the CHG-120 within 20 ft (6.01 m) of the main AUTOPULSE control unit.

Mounting in CAB-3 or CAB-4 Series Backbox:
The CHG-120 can be mounted in the main power supply position, on the lower left of the CAB-3 or CAB-4 cabinet.

Using self-tapping screws, the CHG-120 can be mounted in the lower right position (normally, where the batteries are mounted) of the CAB-3 or CAB-4.

Remote mounting in the BB-55:
The CHG-120 mounts in the left position of the cabinet.

Note: Only one 60AH, 12V battery or two 25AH, 12 V batteries will mount with the charger board in the BB-55.

BB-55 Battery Box Battery Configurations:
Without CHG-120 mounted internally:
Up to two 25AH, 12V batteries
Up to two 60AH, 12V batteries

With CHG-120 mounted internally:
Up to two 25AH, 12V batteries
Up to one 60AH, 12V battery

Listings and Approvals*

UL . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S674
ULC . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . CS118/CS733 VOL. IX
Factory Mutual (FM) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Approved
California State Fire Marshal (CSFM) . . . . . . . . . . . . . . . . . . . . . . . . . 7315-0028:189
MEA (NYC) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 195-97-E

*Listings and Approvals are under NOTIFIER.

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Detection and Control Components

Annunciator Back Boxes (IQ-318/IQ-636X-2)

Description
The Annunciator back boxes are used for mounting the LCD-80, AEM, ACS, or AFM annunciator modules.

**ABS-1B** – The Annunciator Surface Box-1 provides for the remote mounting of a single ACM or AFM annunciator in a surface-mount enclosure. Knockouts are provided for use with 1/2 in. conduit. The annunciator mounts directly to the ABS-1B without a dress plate.

**ABS-2B** – The Annunciator Surface Box-2 provides for the surface mounting of one ACM-16AT/AEM-16AT combination or one ACM-32A/AEM-32A combination. Knockouts are provided for use with 1/2 in. conduit. The annunciators mount directly to the ABS-2B without a dress plate.

**ABF-1B** – The Annunciator Flush Box-1 provides for the remote mounting of a LCD-80 or a single ACM or AFM annunciator in a flush-mount enclosure. Knockouts are provided for use with 1/2 in. conduit. The ABF-1B includes a painted gray metal trim plate, mounting hardware, and an adhesive-backed Annunciator Label for the dress plate.

**ABS-1B AND ABS-2B SURFACE BACK BOXES**

**ABS-1B:** 8 1/2 IN. (H) x 4 1/2 IN. (W) x 1 3/8 IN. (D)
(216 mm (H) x 114 mm (W) x 35 mm (D))

**ABS-2B:** 8 1/2 IN. (H) x 8 15/16 IN. (W) x 1 3/8 IN. (D)
(216 mm (H) x 227 mm (W) x 35 mm (D))

**ABS-1TB** – The ABS-1TB is an attractive surface mount back box for mounting a LCD-80 or one ACM or AFM annunciator.

**ABS-1TB SURFACE BACK BOX**
Technical Information
Box Type Annunciator Compatibility

<table>
<thead>
<tr>
<th>Box Type</th>
<th>Annunciator Compatibility</th>
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<tbody>
<tr>
<td>ABS-1B</td>
<td>ACM-16AT, ACM-32A, AFM-16AT, AFM-32A</td>
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<tr>
<td>ABS-2B</td>
<td>ACM-16AT/AEM-16AT, ACM-32A/AEM-32A</td>
</tr>
<tr>
<td>ABF-1B*</td>
<td>LCD-80, ACM-16AT, ACM-32A, AFM-16AT, AFM-32A</td>
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<tr>
<td>ABS-1TB</td>
<td>LCD-80, AFM-16AT, AFM-32A, ACM Type with AKS-1B (key switch)</td>
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*Includes painted black metal trim plate

Approvals
UL .......................................................... S635

Ordering Information

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<td>417660</td>
<td>AKS-1B, Annunciator Key Switch</td>
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</table>
General
The FDU-80G is a compact, 80 character, backlit LCD Fire Annunciator for use with the AUTOPULSE IQ-318 and IQ-636X-2 Fire Alarm Control Panels (FACPs). The FDU-80G mimics the display of the control panel and displays complete system point status information. Up to 32 FDU-80Gs may be connected onto the EIA-485 Terminal Mode port of each control panel. The FDU-80G requires no programming, which saves times during system commissioning.

The FDU-80G can be used on the same data loop as the LCD-80/LCD-80TM annunciators revision 1.6 software or higher.

Features
• 80-character Liquid Crystal Display
• Mimics all display information from the host panel
• Control switches for System Acknowledge, Signal Silence, Drill and Reset with enable key
• System status LEDs for Power, Alarm, Trouble, Supervisory, and Alarm Silenced
• No programming necessary – FDU-80G connects to the terminal mode port
• Displays device type identifiers, individual point alarm, trouble or supervisory, zone and custom alpha labels
• Time and date display field
• Aesthetically pleasing design
• May be powered by 24 VDC from the host FACP or by remote power supplies (requires 24 VDC)
• Up to 32 FDU-80G annunciators per FACP
• Plug-in terminal blocks for ease of installation and service
• Can be remotely located up to 6,000 ft (1828.8 m) from host control panel
• Local piezo sounder with alarm and trouble resound

• Semi-flush mounts to 2.188 in. (56 mm) minimum deep, three-gang electrical box or three-gangable electrical switchbox
• Surface mounts to SBB-3 surface backbox

Operation
The FDU-80G annunciator provides the FACP with point annunciation with full display text on an 80-character LCD display. The FDU-80G also provides an array of LEDs to indicate system status, and also includes control switches for remote control of critical system functions.

The FDU-80G provides the FACP with up to 32 remote serially connected annunciators. All field-wiring terminations on the FDU-80G use removable, compression-type terminal blocks for ease of wiring and circuit testing.

Communication between the FACP and the annunciators is accomplished over an EIA-485 serial interface, which greatly reduces wire and installation cost over traditional systems. Six wires total are required: four for the EIA-485 communications (two in and two return); and two for the 24 VDC regulated power. Dip switches control local functions such as: piezo disable, control switches/key switch disable, transmit/receive mode.
FDU-80G Terminal Mode Wiring Example

Notes:

1. EIA-485: Maximum of 6,000 ft (1828.8 m) cable length from FACP to FDU-80G annunciators and back to FACP (6,000 ft (1828.8 m) total). Circuit is power limited.
2. Up to 32 FDU-80G annunciators may be used on the EIA-485 circuit. When multiple FDU-80Gs are used, certain panels will require additional power supplies (refer to panel documentation).
3. Between each FDU-80G annunciator are four wires: a twisted-shielded pair for data communications and a pair for 24 VDC power. The return circuit only requires two wires for data communication supervision, wired from the last FDU-80G annunciator on the loop.
4. The FDU-80G annunciator can be semi-flush mounted in a three-gang electrical box with a minimum depth of 2.188 in. (5.6 cm).

Listings and Approvals*

UL .................................................. S635
FM .................................................. Approved
California State Fire Marshal ............... 7120-0028:209

*Listings and Approvals are under NOTIFIER.

Ordering Information

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<td>▶ 436141</td>
<td>SBB-3, Back Box, Surface</td>
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</table>
Detection and Control Components

LCD2-80 Liquid Crystal Display Terminal Mode Annunciator (IQ-318, IQ-636X-2)

General
The LCD2-80 is a backlit LCD annunciator for the Addressable AUTOPULSE fire suppression control panels that support the 80-character display format. The LCD2-80 may be connected onto the four-wire EIA-485 terminal port.

The LCD2-80 mimics the display of the IQ-318 and IQ-636X-2 control panels, the NCA-2 annunciator, and legacy panels (IQ-301, IQ-396X, and IQ-636X) that supported the LCD-80/LCD-80TM. Up to 32 LCD2-80 units can annunciate and provide remote reset, acknowledge, drill and silence of the control panel from remote locations.

Note: The LCD2-80 can be used with legacy panels that supported the LCD-80 terminal mode operation. Please refer to the LCD2-80 manual for more information.

Features
• 80-character backlit Liquid Crystal Display (20 characters x 4 lines)
• Display mimics panel or NCA annunciator
  – Event message
  – 20 characters for point label
  – 12 characters for extended label
  – Time, date, and point address
• Control switches for System Acknowledge, Signal Silence, Drill, and System Reset
• Mounts up to 6,000 ft (1828.8 m) segments between units
• Local piezo sounder with alarm/trouble resound
• Displays all analog, addressable points
• Displays device type identifiers
• Displays device and zone custom alpha labels
• Mounts to any CHS-4 chassis slot
• Slide-in label can be customized

• Flush/surface/panel mount option
• No programming necessary; LCD2-80 displays time, date, and custom messages received from the compatible panel or network annunciator
• LCD2-80 is 8.25 in. (210 mm) high, 4.375 in. (111 mm) wide, and 1.75 in. (44 mm) deep
• Up to 32 LCD2-80 annunciators may be used on one EIA-485 circuit

Note: The LCD2-80 must have sufficient regulated 24-volt power.
Agency Listings and Approvals

These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

UL Listed .................................................. S635
ULC Listed .................................................. S635
FM ........................................................... Approved
FDNY ......................................................... COA# 6067, 6065
CSFM ......................................................... 7165-0028:0243, 7165-0028-0224

Ordering Information

LCD2-80: Liquid Crystal Display Terminal Mode Annunciator. May be connected onto the four-wire EIA-485 terminal port.

ADP-4B: Annunciator dress plate, black. Allows panel mounting of up to four LCD2-80 modules in a CAB-4 Series cabinet.

ABF-1B: Annunciator flush box, 9.938 in. (252 mm) high, 4.625 in. (117 mm) wide, and 2.5 in. (64 mm) deep. Order AKS-1B key switch.

ABS-1TB: Deep surface back box (mounts one LCD2-80).

AKS-1B: Key Switch (black) to enable/disable controls when mounted in ABF-1B or ABS-1TB.

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<td>433520</td>
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<td>417657</td>
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<td>417493</td>
<td>ABS-1TB Annunciator Back Box, Surface, Deep</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td>417660</td>
<td>AKS-1B Annunciator Key Switch</td>
<td>1 (0.5)</td>
</tr>
</tbody>
</table>
General
The NOTIFIER NCA-2 is a second-generation Network Control Annunciator compatible for use with AUTOPULSE IQ-318 and IQ-636X-2 fire alarm control panels, as well as first-generation NCA Network Control Annunciators. The NCA-2 provides system control and display capabilities.

The NCA-2 display consists of a 640-character backlit LCD display, and a control interface consisting of “soft” keys used to navigate screen menus, “hard” keys with fixed control functions, and a QWERTY keypad.

Hardware Features
- Listed to UL Standard 864, 9th edition
- Full supervision of all inputs and network integrity
- Enhanced-format 640-character LCD display with backlighting
- ACS bus for LED or graphic annunciators (EIA-485)
- Optically isolated printer interface (EIA-232)
- 11 LED status indicators: Power, Controls Active, Fire Alarm, Pre-Alarm, Security, Alert, Supervisory, Trouble, Signal, Silence, CPU Failure, Point Disabled, Other Event
- Alphanumeric QWERTY rubber keypad
- Four status relays: Alarm, Trouble, Supervisory, Security (Form-C)
- Nonvolatile real-time clock can be synchronized with network by master node
- Optional Security Keyswitch enable Keypad functions
- Optional Security Tamper switch
- Supports up to 32 remote ACS annunciators and modules
- Requires 24 VDC and a network connection

Function Features
- Individual Enable/Disable or Group Enable/Disable local for networked AUTOPULSE series panels
- Lamp Test (local to NCA-2)
- History Buffer (1000 Alarm events; 4000 System events)
- Print NCA-2 programming and history reports
- Report status of panels and their respective field devices to a central station via a single UD ACT
- One Master level, nine User level passwords: The Master can assign each User access levels (programming, alter status)
- Interactive Summary Event Count display, event handling package
- Online programming and alter-status programs
- Intuitive user guidance program including interactive soft keys
- Enhanced Read Status/Alter Status displays
- New history filters for report displaying and printing: All Events, Only Alarms, Only Troubles, Only Supervisory, Only Security, Time Interval, Point Range
- Advanced/Basic Walk-Test program
- Timer control for Auto Silence, AC Fail Delay
- Meets Canadian ULC display requirements
- Environmental adjustment controls to maximize LCD legibility
- Meets NFPA requirements for Firefighter Smoke Control Station (FSCS) and HVAC

NCA-2 Indicators and Controls
LED Indicators:
- **Power** (green) illuminates when 24 VDC power is applied; LED goes out if power is removed and NCA-2 is using a battery.
- **Controls Active** (green) illuminates to indicate that the NCA-2 control functions are active.
- **Fire Alarm** (red) illuminates when at least one fire alarm event exists; flashes when any of these events remain unacknowledged.
- **Pre-Alarm** (red) illuminates when at least one pre-alarm event exists; flashes when any of these events remain unacknowledged.
- **Security** (blue) illuminates when at least one security event exists; flashes when any of these events remain unacknowledged.
NCA-2 Indicators and Controls (Continued)

LED Indicators: (Continued)

• **Supervisory** (yellow) illuminates when at least one supervisory event exists (i.e., sprinkler valve off normal, low pressure, fire pump running, guard’s tour, etc.); flashes when any of these events remain unacknowledged.

• **System Trouble** (yellow) illuminates when at least one trouble event exists; flashes when any of these events remain unacknowledged.

• **Other Event** (yellow) illuminates for any category of event not listed above; flashes when any of these events remain unacknowledged.

• **Signals Silenced** (yellow) illuminates if the NCA-2 Silence key has been pressed or if any other node sent a Network Silence command; flashes if only some points on a node are silenced.

• **Point Disabled** (yellow) illuminates when at least one disable exists on the network or in the system.

• **CPU Failure** (yellow) activated by the watchdog timer hardware, indicates an abnormal hardware or software condition. Contact technical support.

Fixed Function Keys

• **Acknowledge**

• **Signal Silence**

• **System Reset**

• **Drill**

• **Fire Alarm Scroll/Display**

• **Security Scroll/Display**

• **Supervisory Scroll/Display**

• **Trouble Scroll/Display**

• **Other Event Scroll/Display**

The five keys labeled Scroll/Display allow the user to scroll through messages for the particular event type. For example, pressing the Fire Alarm Scroll/Display key will scroll through all fire alarm events, as details of each are shown in the display area of the NCA-2.

**Note**: The Other Event Scroll/Display key also scrolls between Pre-Alarm and Disabled events.

• **Acknowledge**: Press this key to acknowledge off all active events.

• **Signal Silence**: Press this key to turn off all control modules, notification appliance circuits, and panel output circuits that have been programmed as Silenceable.

• **System Reset**: Press this key to clear all latched alarms and other events and turn off event LEDs.

• **Drill Hold 2 Sec**: Press this key, holding it down for two seconds, to activate all silenceable output circuits.

Special Function Keys

• **Print Screen**: Press this key to print what is currently on the LCD screen.

• **Lamp Test**: Press this key to test the LED indicators on the left of the keypad and to check firmware revision numbers.

• **Next Selection/Previous Selection**: These keys are used when setting parameters in NCA-2 data fields; for example, choosing a device type as a filter for requesting a Node History.

• **Battery Level**: Press this key to display voltage and charging current level for system batteries.

Specifications

Temperature and humidity ranges: This system meets NFPA requirements for operation at 32 °F-120 °F (0 °C-49 °C) and at a relative humidity (noncondensing) of 85% at 86 °F (30 °C) per NFPA, and 93% ± 2% at 89.6 °F ± 1.1 °F (32 °C ± 2 °C) per ULC. 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 all peripherals be installed in an environment with a nominal room temperature of 60 °F-80 °F (15 °C-27 °C).

Electrical Requirements

The NCA-2 may be powered from a Main Power Supply AMPS-24(E) mounted in the NCA-2 cabinet (see specifications below); or from any UL Listed non-resettable 24 VDC source from an AUTOPULSE control panel.

The battery on the NCA-2 motherboard is for RTC and SRAM; holds the history memory through power failure. Replacement is available.

**Power source**: 1) AMPS-24 (120 VAC, 50/60 Hz, 4.5 A maximum) or AMPS-24E (240 VAC, 50/60 Hz, 2.25 A maximum) power supply; 2) the AUTOPULSE IQ-638X-2 on-board power supply; or 3) a supervised +24 VDC power supply that is UL/ULC Listed for fire protective service.

**Total output 24 VDC power**: 4.5 V in alarm.

Listings and Approvals*

These listings and approvals apply to the NCA-2. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

UL .......................................................... S635
ULC .......................................................... S635
CSFM ....... 7165-0028:243, 7170-0028:244
MEA .......................... 128-07-E

*Listings and Approvals are under NOTIFIER.

Ordering Information

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General

VeriFire™ Tools is a programming and test utility for the AUTOPULSE IQ-318, IQ-636X-2, and NCA-2 with offline and online capabilities that can greatly reduce installation programming time and increase confidence in the site-specific software. It is Windows® based and provides technologically advanced capabilities to aid the installer. The installer may create the entire program for the control panel in the comfort of the office, test it, store a backup file, then bring it to the site and download from a laptop into the panel.

The program includes error checks for common programming mistakes, such as an input point that does not activate any outputs, or an output point that is not linked to any inputs. In online mode, users can perform point “read status” functions, change panel and device labels, and change detector sensitivities.

VeriFire™ Tools includes a compare routine, pictured at right, that can also greatly help the installer. When a new program is created, it may be compared with a previous version and differences are highlighted. If the program is modified from the panel keypad, it may be uploaded into VeriFire™ Tools, and compared with the previous version stored on disk. The identification of program differences greatly helps the installer in testing the installation. NFPA 72 requires that acceptance test of a fire alarm system be performed on 100% of all points that are “known” to be modified. VeriFire™ Tools allows the installer to determine the exact points that are changed.

Product Line Information

433365 – VeriFire™ Tools CD-ROM. Contains programming software for the AUTOPULSE IQ-318, IQ-636X-2, and NCA-2. Includes local panel hardware connection.

432798 – VeriFire™ Tools CD-ROM contains software only.

PC Specifications (minimum requirement)

- Pentium® II 300 MHz
- 64 MB of RAM
- 50 MB of hard drive space
- Windows® 98 Second Edition, ME, NT, 2000, or XP (Windows® 95 is not supported)
- Serial port
- XGA video (1024 x 768)
Detection and Control Components

SLR-24H Photoelectric/Heat Smoke Detector (IQ-318/IQ-636X-2 (with FZM))

Features

- Self-restoring integral 135 °F (57 °C) heat sensor, 50 ft (15 m) rating
- Low profile, 2.4 in. (60 mm) high – with base
- 2 or 4 wire base compatibility, relay bases available
- Highly stable operation, RF/Transient protection
- Low standby current, 45μA at 24 VDC
- Two built-in power/sensitivity supervision/alarm LEDs
- Non-directional smoke chamber
- Vandal resistant security locking feature
- Built-in magnetic go/no go detector test feature
- Removable smoke labyrinth for cleaning or replacement
- Automatic Sensitivity window verification function meets outlined requirements in NFPA 72, Chapter 7, Inspection, Testing and Maintenance
- Backwards compatible with SLK and SIH detectors

Applications

The SLR-24H Photoelectric/Heat 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. It is best suited for smoldering or flaming fires.

The 135 °F (57 °C) heat sensor can initiate an alarm independently. The heat detector is UL listed for 50 ft (15 m) spacing when used for evacuation alarm, if used for suppression release the spacing should be reduced.

The detectors are used in combination with an AUTOPULSE Control System and a fire suppression system for automatic detection, alarm, equipment control, and fire suppression system release capabilities.

Description

The SLR-24H photoelectric/heat smoke detector utilizes two bicolor LEDs for indication of status. In a normal standby condition the LEDs flash Green every 3 seconds. When the detector senses that its sensitivity has drifted outside the UL listed sensitivity window, the LEDs will flash Red every 3 seconds. When the detector senses smoke and goes into alarm, the status LEDs will latch on Red.

The detector utilizes an infrared LED light source and silicon photo diode receiving element in the smoke chamber. In a normal standby condition, the receiving element receives no light from the pulsing LED light source. In the event of a fire, smoke enters the detector smoke chamber and light is reflected from the smoke particles to the receiving element. The light received is converted into an electronic signal.

Signals are processed and compared to a reference level, and when two consecutive signals exceeding the reference level are received within a specified period of time, the time delay circuit triggers the SCR switch to activate the alarm signal. The status LEDs light continuously during the alarm period.
### Technical Information

**Detector Base/Control Unit Compatibility**

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<th>Detector Base</th>
<th>AUTOPULSE</th>
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<td>HSB-21 (417457)</td>
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<td>NS4-224 (427599)</td>
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<tr>
<td>HSC-224RA (416849)</td>
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</table>

**WIRING DIAGRAM – TWO WIRE OPERATION**

- **Color:** Bone White
- **Ambient Temperature:** +32 °F to +120 °F (0 °C to 49 °C)
- **Surge Current:** 160 μA maximum @ 24 VDC
- **Supervisory Current:** 45 μA maximum @ 24 VDC
- **Maximum Allowable Voltage:** 42 VDC
- **Rated Voltage:** 17.6 to 33.0 VDC
- **Working Voltage:** 15 to 33.0 VDC
- **Heat Detector:** 135 °F (57 °C) self-restoring, fixed temp.
- **Light Source:** GaAl as infrared emitting diode
- **Alarm Current:** 150 mA maximum @ 24 VDC
- **Ambient Temperature:** +32 °F to +120 °F (0 °C to 49 °C)
- **Color:** Bone White
- **Sensitivity Test Feature:** Automatic sensitivity window verification test
- **Air Velocity:** Maximum 300 FPM

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### 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.

The following bases are compatible with the SLR-24H Photoelectric/Heat Smoke Detector:

- **HSB-21:** 4 in. (102 mm) Octagon, 4 in. (102 mm) Square
- **NS4-224:** 3 in. (76 mm) Octagon
- **NS6-224:** 4 in. (102 mm) Octagon, 4 in. (102 mm) Square
- **HSC-224RA:** 4 in. (102 mm) Octagon, 4 in. (102 mm) Square

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### Listings and Approvals*

UL: S1383
ULC: CS463
California State Fire Marshal (CSFM): 7272-0410:107
Factory Mutual (FM): 105A1.AY
MEA: 284-91-E

### Ordering Information

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<td>HSC-224RA Relay Base</td>
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<td>415730</td>
<td>Test Magnet</td>
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<td>405491</td>
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* Listings and Approvals are under HOCHIKI AMERICA CORPORATION

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* Do not wire HSC-224RA to remote LED as shown. Annunciation for the relay base (HSC-224RA) must be wired to the relay contacts using external power.
Detection and Control Components

AutoPulse

SLR-24 Photoelectric Smoke Detector (IQ-318/IQ-636X-2 (with FZM))

Features
- Low profile, 1.8 in. (46 mm) high – with base
- 2 or 4 wire base compatibility, relay bases available
- Highly stable operation, RF/Transient protection
- Low standby current, 45μA at 24 VDC
- Two built-in power/sensitivity supervision/alarm LEDs
- Non-directional smoke chamber
- Vandal resistant security locking feature
- Built-in magnetic go/no go detector test feature
- Removable smoke labyrinth for cleaning or replacement
- Automatic Sensitivity window verification function meets outlined requirements in NFPA 72, Chapter 7, Inspection, Testing and Maintenance
- Backwards compatible with SLK and SIH detectors

Applications
The SLR-24 Photoelectric 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 AUTOPULSE Control System and an fire suppression system for automatic detection, alarm, equipment control, and fire suppression system release capabilities.

Description
The SLR-24 photoelectric smoke detector utilizes two bicolor LEDs for indication of status. In a normal standby condition the LEDs flash Green every 3 seconds. When the detector senses that its sensitivity has drifted outside the UL listed sensitivity window the LEDs will flash Red every 3 seconds. When the detector senses smoke and goes into alarm the status LEDs will latch on Red.

The detector utilizes an infrared LED light source and silicon photo diode receiving element in the smoke chamber. In a normal standby condition, the receiving element receives no light from the pulsing LED light source. In the event of a fire, smoke enters the detector smoke chamber and light is reflected from the smoke particles to the receiving element.

Signals are processed and compared to a reference level, and when two consecutive signals exceeding the reference level are received within a specified period of time, the time delay circuit triggers the SCR switch to activate the alarm signal. The status LEDs light continuously during the alarm period.

DIMENSIONS – NS6-224 BASE
- TO 4 IN. (102 mm) SQUARE OR OCTAGON OUTLET BOX
- 7/16 IN. (11 mm)
- 5 7/8 IN. (149 mm)
- 1 7/8 IN. (47 mm)

DIMENSIONS – NS4-224 BASE
- TO 3 IN. (76 mm) OCTAGON OUTLET BOX
- 5/16 IN. (8 mm)
- 3 15/16 IN. (100 mm)
- 1 7/8 IN. (47 mm)

DIMENSIONS – HSB-21 BASE
- TO 4 IN. (102 mm) SQUARE OUTLET BOX
- 9/16 IN. (14 mm)
- 5 7/8 IN. (149 mm)
- 1 15/16 IN. (49 mm)

DIMENSIONS – HSC-224RA BASE
- TO 4 IN. (102 mm) OCTAGON OUTLET BOX
- TO 3 IN. (76 mm) OR 4 IN. (102 mm) OCTAGON OUTLET BOX
- 2 1/2 IN. (63 mm)
- 1 1/8 IN. (29 mm)
- 5 7/8 IN. (149 mm)
Technical Information

Detector Base/Control Unit Compatibility

<table>
<thead>
<tr>
<th>Detector Base/Control Unit Compatibility</th>
<th>Autopulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS4-224 (427598)</td>
<td>Yes</td>
</tr>
<tr>
<td>HSB-21 (417457)</td>
<td>No</td>
</tr>
<tr>
<td>NS6-224 (427599)</td>
<td>Yes</td>
</tr>
<tr>
<td>HSC-224RA (416849)</td>
<td>No</td>
</tr>
</tbody>
</table>

Rated Voltage: 17.7 to 33.0 VDC
Working Voltage: 15 to 33.0 VDC
Surge Current: 160µA @ 24 VDC
Normal Current: 45µA @ 24 VDC
Alarm Current: 150 mA maximum @ 24 VDC
Ambient Temperature: +32 °F to +120 °F (0 °C to 49 °C)
Humidity: 95% R.H. maximum
Color: Bone White

Detector Base/Control Unit Compatibility

<table>
<thead>
<tr>
<th>Detector Base/Control Unit Compatibility</th>
<th>Autopulse</th>
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<tr>
<td>NS4-224 (427598)</td>
<td>Yes</td>
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<tr>
<td>HSB-21 (417457)</td>
<td>No</td>
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<tr>
<td>NS6-224 (427599)</td>
<td>Yes</td>
</tr>
<tr>
<td>HSC-224RA (416849)</td>
<td>No</td>
</tr>
</tbody>
</table>

Rated Voltage: 17.7 to 33.0 VDC
Working Voltage: 15 to 33.0 VDC
Surge Current: 160µA @ 24 VDC
Normal Current: 45µA @ 24 VDC
Alarm Current: 150 mA maximum @ 24 VDC
Ambient Temperature: +32 °F to +120 °F (0 °C to 49 °C)
Humidity: 95% R.H. maximum
Color: Bone White

WIRING DIAGRAM – TWO WIRE OPERATION
NS4 AND NS6 SERIES BASE

RESISTOR SHOWN IS FOR EXAMPLE ONLY. NOT ALL ANNUNCIATORS HAVE IN-LINE RESISTANCE.

UL LISTED CONTROL PANEL

LISTED END OF LINE DEVICE

ANNUNCIATION DEVICE MUST BE CURRENT LIMITED TO 20 mA @ 24 VDC MAXIMUM. NOT LIMITING CURRENT COULD RESULT IN DAMAGE TO THE DETECTOR OR CAUSE A NO ALARM CONDITION.

NOTE: WIRING TERMINALS FOR THE NS4 AND NS6 ARE IDENTICAL. BASES WITH THE "W" SUFFIX ARE WHITE IN COLOR.

WIRING DIAGRAM – HSB-21 AND HSC-224RA* STANDARD BASES, STYLE B

REMOTE LED (16 mA MAX)

REMOTE LED (16 mA MAX)

SYSTEM COMMON (DC RETURN)

* Do not wire HSC-224RA to remote LED as shown. Annunciation for the relay base (HSC-224RA) must be wired to the relay contacts using external power.

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.

The following bases are compatible with the SLR-24 Photoelectric Detector:

<table>
<thead>
<tr>
<th>Base</th>
<th>Type of Mounting Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSB-21</td>
<td>4 in. (102 mm) Octagon, 4 in. (102 mm) Square</td>
</tr>
<tr>
<td>NS4-224</td>
<td>3 in. (76 mm) Octagon</td>
</tr>
<tr>
<td>NS6-224</td>
<td>4 in. (102 mm) Octagon, 4 in. (102 mm) Square</td>
</tr>
<tr>
<td>HSC-224RA</td>
<td>4 in. (102 mm) Octagon, 4 in. (102 mm) Square</td>
</tr>
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</table>

HSC-224RA RELAY CONTACT TERMINAL STRIP

<table>
<thead>
<tr>
<th>WIRE</th>
<th>TERMINAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORANGE</td>
<td>1</td>
</tr>
<tr>
<td>VIOLET</td>
<td>NC 2</td>
</tr>
<tr>
<td>YELLOW</td>
<td>NO 3</td>
</tr>
<tr>
<td>GRAY</td>
<td>NO 4</td>
</tr>
<tr>
<td>GREEN</td>
<td>NC 5</td>
</tr>
<tr>
<td>BLUE</td>
<td>C 6</td>
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Listings and Approvals*

ULC: S1383
ULC: CS463
California State Fire Marshal (CSFM): 7272-0410:107
Factory Mutual (FM): 105A1.AY
MEA: 284-91-E

* Listings and Approvals are under HOCHIKI AMERICA CORPORATION

Ordering Information

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<td>427596</td>
<td>SLR-24 Photoelectric Detector</td>
<td>1 (0.4)</td>
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<tr>
<td>427598</td>
<td>NS6-224 Base</td>
<td>0.5 (0.2)</td>
</tr>
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<td>427599</td>
<td>NS4-224 Base</td>
<td>0.5 (0.2)</td>
</tr>
<tr>
<td>417457</td>
<td>HSB-21 Base</td>
<td>0.5 (0.2)</td>
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<tr>
<td>416849</td>
<td>HSC-224RA Relay Base</td>
<td>0.5 (0.2)</td>
</tr>
<tr>
<td>415730</td>
<td>Test Magnet</td>
<td>0.5 (0.2)</td>
</tr>
<tr>
<td>405491</td>
<td>Punk Stick (Pack of 10)</td>
<td>0.5 (0.2)</td>
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</tbody>
</table>

Tyco Fire Protection Products
One Stanton Street
Marquette, WI 54143-2542
715-735-7411

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Form No. T-2007118-3
Detection and Control Components

(Page Left Intentionally Blank)
General

- All cabinets for the AUTOPULSE IQ-636X-2 fire alarm control panel are fabricated from 16-gauge steel. The cabinet assembly consists of two basic parts: a backbox and a locking door. Cabinets are red with LEXAN® windows.
  - The key-locked door is provided with a pin-type hinge, two keys and the necessary hardware to mount the door to the backbox.
  - The backbox has been engineered to provide ease-of-entry for the installer. Knockouts are positioned at numerous points to aid the installer in bringing a conduit into the enclosure.
  - Right- or left-hand hinges, selectable in the field. Door opens 180°.
- Cabinets are arranged in four sizes, A (one tier) through D (four tiers).
  - A trim ring option is available for semi-flush mounting.

Agency Listings and Approvals

UL Listed .................................................. S635
U.S. Coast Guard ........................................ 161.002/42/1
ULC Listed .................................................. S635/CS118
FM .......................................................... Approved
California State Fire Marshal .................. 7165-0028:214
........................................ 7170-0028:216
MEA (NYC) .............................................. 17-96-E Vol. VI; 128-07-E Vol. 5

DIMENSIONAL DRAWINGS OF ‘B,’ ‘C,’ AND ‘D’ SIZED CABINETS ARE PROVIDED ON PAGE 2
Ordering Information

A complete cabinet assembly consists of: a door, a backbox, an optional battery plate, and an optional semi-flush trim ring. For each cabinet required, order one “DR” door and one “SBB” backbox. The BP-4 battery plate is required for each cabinet assembly that mounts batteries and/or a power supply in the lower position of the cabinet. The optional trim ring is an attractive “picture frame”-style black metal ring.

One Tier, “A” Size:

Part No. 435598 DR-A4R: Door assembly, LEXAN window, one tier, RED. (ULC Part No. 437039)
Part No. 433526 SBB-A4R: Backbox assembly, one tier, RED. (ULC Part No. 437043)
Part No. 433534 TR-A4: Accessory semi-flush-mount trim ring, one tier (opening 24.062 in. (611 mm) W x 20.062 in. (510 mm) H), BLACK. Note: Black trim rings are used with red cabinets. (ULC Part No. 437047)
Part No. 432795 BP-4: Battery panel. Used to cover battery and power supply when lower position is used in backbox.

Two Tiers, “B” Size:

Part No. 435599 DR-B4R: Door assembly, LEXAN window, two tiers, RED. (ULC Part No. 437040)
Part No. 433527 SBB-B4R: Backbox assembly, two tiers, RED. (ULC Part No. 437044)
Part No. 433535 TR-B4: Accessory semi-flush-mount trim ring, two tiers (opening 24.062 in. (611 mm) W x 28.562 in. (725 mm) H), BLACK. Note: Black trim rings are used with red cabinets. (ULC Part No. 437048)
Part No. 432795 BP-4: Battery panel. Used to cover battery and power supply when lower position is used in backbox.

Three Tiers, “C” Size:

Part No. 435600 DR-C4R: Door assembly, LEXAN window, three tiers, RED. (ULC Part No. 437041)
Part No. 433529 SBB-C4R: Backbox assembly, three tiers, RED. (ULC Part No. 437045)
Part No. 433589 TR-C4: Accessory semi-flush-mount trim ring, three tiers (opening 24.062 in. (611 mm) W x 37.187 in. (945 mm) H), BLACK. Note: Black trim rings are used with red cabinets. (ULC Part No. 437049)
Part No. 432795 BP-4: Battery panel. Used to cover battery and power supply when lower position is used in backbox.

Four Tiers, “D” Size:

Part No. 435601 DR-D4R: Door assembly, LEXAN window, four tiers, RED. (ULC Part No. 437042)
Part No. 433532 SBB-D4R: Backbox assembly, four tiers, RED. (ULC Part No. 437046)
Part No. 433590 TR-D4: Accessory semi-flush-mount trim ring, four tiers (opening 24.062 in. (611 mm) W x 45.812 in. (1164 mm) H), BLACK. Note: Black trim rings are used with red cabinets. (ULC Part No. 437050)
Part No. 432795 BP-4: Battery panel. Used to cover battery and power supply when lower position is used in backbox.

Accessories:

Part No. 433521 DP-1B: Blank dress panel, covers one CAB-4 tier, BLACK. (ULC Part No. 437058)

Agency Listings and Approvals

See the first page of this data sheet for listing agencies and file numbers. These listings and approvals apply to the CAB-4 Series Cabinets. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.
General
The LEM-320 module is used to expand the AUTOPULSE IQ-636X-2 to a second signaling line circuit (SLC) loop.

Features
• Up to 12,500 ft (3,810 m) on a Class B (Style 4) SLC loop (twisted unshielded)
• Built-in degraded mode increases survivability
• Very simple installation — plug-in style

Specifications
• **Voltage:** 24 VDC nominal, 27.6 VDC maximum
• **Maximum loop length:** The maximum wiring distance of an SLC using 12 AWG (3.1 mm²) twisted-pair wire is 12,500 ft (3,810 m) per channel. For a twisted unshielded pair, 12 AWG (3.1 mm²) to 18 AWG (0.78 mm²).
  - Distance with 12 AWG: 12,500 ft (3,810 m)
  - Distance with 14 AWG: 8,000 ft (2,438 m)
  - Distance with 16 AWG: 4,875 ft (1,486 m)
  - Distance with 18 AWG: 3,225 ft (983 m)
  - 50 ohms maximum per length of Style 6 and 7 loops
  - 50 ohms maximum per branch for Style 4 loop
• **Maximum current:** for LEM-320: 100 mA; for single SLC loop: 400 mA maximum*
  *Note: Maximum short circuit — circuit will shut down until short-circuit condition is corrected.
• **Maximum resistance:** 50 ohms (supervised and power-limited)
• **Temperature and humidity ranges:** This system meets NFPA requirements for operation at 32 °F to 120 °F (0 °C to 49 °C); and at a relative humidity (noncondensing) of 85% at 86 °F (30 °C) per NFPA, and 93% ± 2% at 89.6 °F ± 1.1 °F (32 °C ± 2 °C) per ULC. 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 all peripherals be installed in an environment
  - with a nominal room temperature of 60 °F to 80 °F (15 °C to 27 °C).

Listings and Approvals
UL Listed . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S635
ULC Listed . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S635/CS118
California State Fire Marshal. . . . . . . . . . . . . . . . . . . 7170-0028.26
FM. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Approved
MEA (NYC) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 128-07-E Vol. 5
City of Denver
Hong Kong

Product Line Information
LEM-320 Loop Expander Module, Expands AUTOPULSE IQ-636X-2 to two loops.
Installation
Mount LEM-320 module within the cabinet with the CPU; standard mounting locations are adjacent to the panel or in the row immediately below it. See panel installation manuals for instructions on installing modules and/or option boards in the chassis.

After the LEM-320 module is mounted in the cabinet, connect the SLC loop to TB1. Up to 159 detectors and 159 modules can be connected to the SLC loop. FlashScan® devices can operate in either FlashScan or CLIP mode, but CLIP devices in CLIP mode must be set to address 99 or lower.

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
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<td>433508</td>
<td>LEM-320 Loop Expander Module</td>
<td>1 (0.45)</td>
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<tr>
<td>437062</td>
<td>LEM-320 Loop Expander Module (ULC)</td>
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</table>

FlashScan is a registered trademark of Honeywell International.

TYCO FIRE PROTECTION PRODUCTS
ONE STANTON STREET
MARNETTE, WI 54143-2542
715-735-7411
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Form No. T-2007107-3
Features

• Plug-in detector line – mounting base included.
• Large wire-entry port.
• In-line terminals with SEMS screws.
• Mounts to octagonal and single-gang backboxes, 4 in. (102 mm) square backboxes, or directly to ceiling.
• Stop-Drop ‘N Lock™ attachment to base.
• Removable detector cover and chamber for easy cleaning.
• Built-in remote maintenance signaling.
• Drift compensation and smoothing algorithms.
• Simplified sensitivity measurement.
• Wide-angle, dual-color LED indication.
• Loop testing via “EZ Walk” feature.
• Built-in test switch.

Description

New Series photoelectric and photoelectric/thermal smoke detectors represent a significant advancement in conventional detection, incorporating three key features: installation ease, intelligence, and instant inspection.

Installation ease: The New Series redefines installation ease with its plug-in design. This allows an installer to pre-wire the bases included with the heads. The large wire-entry port and in-line terminals provide ample room for neatly routing the wiring inside the base. The base accommodates a variety of backbox mounting methods, as well as direct mounting with drywall anchors. To complete the installation, New Series heads plug into the base with a simple Stop-Drop ‘N Lock action.

Intelligence: New Series detectors offer a number of intelligent features to simplify testing and maintenance. Drift compensation and smoothing algorithms, to minimize nuisance alarms, are standard in the New Series. When connected to an AUTOPULSE 542R/542D Control Panel, two-wire New Series detectors are capable of generating a remote maintenance signal when they need cleaning. This signal is indicated by LEDs located at the AUTOPULSE 542R/542D Control Panel.

Instant inspection: The New Series provides wide-angle red and green LED indicators for instant inspection of detector condition. The LEDs indicate: normal standby, out-of-sensitivity, alarm, or freeze trouble conditions. The “EZ Walk” loop test feature is available on two-wire New Series detectors when connected to an AUTOPULSE 542R/542D Control Panel. The “EZ Walk” feature verifies the initiating loop wiring by providing LED status indication at each detector.

Physical Specifications

Operating Temperature Range: For models 2W-B and 4WB: 32 °F to 120 °F (0 °C to 49 °C); for thermal models 2WT-B and 4WT-B: 32 °F to 100 °F (0 °C to 38 °C).

Storage Temperature Range: –4 °F to +158 °F (–20 °C to +70 °C).

Operating Humidity Range: 10% – 95% RH, non-condensing.

Thermal Sensor: 135 °F (57 °C) fixed (models 2WT-B, 4WT-B).

Freeze Trouble: 41 °F (5 °C) (models 2WT-B and 4WT-B).

Sensitivity: 2.5%/ft (0.762%/meter) nominal.

Input Terminals: Utilize 14 to 22 AWG wire.

Dimensions (including base): 5.3 in. (135 mm) diameter, 2.0 in. (51 mm) high.

Weight: 6.3 oz (178.6 grams).

Mounting Options: 3.5 in. (89 mm) octagonal backbox; 4 in. (102 mm) octagonal backbox; single-gang backbox; 4 in. (102 mm) square backbox with a plaster ring; or direct mount to ceiling.
**Electrical Specifications**

**Operating Voltage:** 12/24 V non-polarized nominal; 8.5 V minimum; 35 V maximum.

**Maximum Ripple Voltage:** 30% of nominal (peak to peak).

**Standby Current:** 50 μA maximum average. Peak standby current: for two-wire models: 100 μA; not applicable for four-wire models.

**Maximum Start-Up Capacitance:** For two-wire models: 0.1 μF; not applicable for four-wire models.

**Latching Alarm:** Reset by momentary power interruption.

**Maximum Initial Start-Up Time:** For two-wire models: 45 seconds; for four-wire models: 15 seconds.

**Maximum Alarm Current:** For two-wire models: 130 mA limited by control panel; For four-wire models: 20 mA @ 12 V, 23 mA @ 24 V.

**Alarm Contact Ratings:** For four-wire models: 0.5 A @ 30 VAC/VDC; not applicable for two-wire models.

**Alarm Reset Voltage:** 2.5 V.

**Alarm Reset Time:** 0.3 seconds.

---

**Agency Listings and Approvals**

UL Listed . . . . . . . . . . . . . . . . . . . . . . . . S911

FM . . . . . . . . . . . . . . . . . . . . . . . . . Approved

CSFM . . . . . . . . . . . . . . . . . . . . . 7272-1653:152

MEA . . . . . . . . . . . . . . . . . . . . . 290-01-E

Maryland State Fire Marshal . . . . . . . Permit No. 2093

ETL . . . . . . . . . . . . . . . . . . . . . Approved

USCG. . . . . . . . . . . . . . . . . . . . . 161.002/A42/1

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**Ordering Information**

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<td>435894</td>
<td>2WT-B: Two-Wire Photoelectric Smoke Detector with 135 °F (57 °C) Fixed Thermal Sensor</td>
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<tr>
<td>435895</td>
<td>4W-B: Four-Wire Photoelectric Smoke Detector</td>
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<tr>
<td>435896</td>
<td>4WT-B: Four-Wire Photoelectric Smoke Detector with 135 °F (57 °C) Fixed Thermal Sensor</td>
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**Wiring Diagrams**

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**Power Up Sequence for LED Indication**

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<tr>
<th>Condition</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial LED Status Indication</td>
<td>80 Seconds</td>
</tr>
<tr>
<td>Initial LED Status Indication (if excessive electrical noise is present)</td>
<td>4 Minutes</td>
</tr>
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**LED Modes**

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<th></th>
<th>Green LED</th>
<th>Red LED</th>
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<tbody>
<tr>
<td>Power Up</td>
<td>Blink every 10 seconds</td>
<td>Blink every 10 seconds</td>
</tr>
<tr>
<td>Normal (Standby)</td>
<td>Blink every 5 seconds</td>
<td>OFF</td>
</tr>
<tr>
<td>Out of Sensitivity</td>
<td>OFF</td>
<td>Blink every 5 seconds</td>
</tr>
<tr>
<td>Freeze Trouble</td>
<td>OFF</td>
<td>Blink every 10 seconds</td>
</tr>
<tr>
<td>Alarm</td>
<td>OFF</td>
<td>Solid ON</td>
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---

**Stop-Drop 'N Lock™** is a trademark of Honeywell International Inc.
Detection and Control Components

2151 Photoelectric Smoke Detector (542R/542D)

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 AUTOPULSE Control System and an 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 ft per minute
(15 m per second)

2151 PHOTOELECTRIC SMOKE DETECTOR WITH BASE

B110LP OPTIONAL NFPA CLASS “A” WIRING
Technical Information (Continued)

<table>
<thead>
<tr>
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<th>Standby Voltage</th>
<th>Current Draw on Alarm</th>
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<td>B110LP</td>
<td>2-Wire</td>
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<td>12-24 VDC</td>
<td>10-100 mA*</td>
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<td>12-24 VDC</td>
<td>10-100 mA*</td>
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<td>B401B</td>
<td>2-Wire</td>
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<td>——</td>
<td>8.5-35 VDC</td>
<td>10-100 mA*</td>
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<tr>
<td>B401BR-750</td>
<td>2-Wire</td>
<td>Yes</td>
<td>——</td>
<td>17-32 VDC</td>
<td>10-39 mA</td>
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<tr>
<td>B402B</td>
<td>2/4 Wire</td>
<td>Yes</td>
<td>Form A/C</td>
<td>17-32 VDC</td>
<td>14-39 mA</td>
</tr>
</tbody>
</table>

* Limited by control unit

Detector Base/Control Unit Compatibility

<table>
<thead>
<tr>
<th>Detector Base Model</th>
<th>AUTOPULSE Base (Part No.)</th>
<th>AUTOPULSE Base (Part No.)</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>B110LP (430025)</td>
<td>542R, 542D</td>
<td>AUTOPULSE 542R, 542D</td>
<td>Yes</td>
</tr>
<tr>
<td>B401 (423026)</td>
<td>542D, 542D</td>
<td>AUTOPULSE 542D, 542D</td>
<td>Yes</td>
</tr>
<tr>
<td>B401B (417996)</td>
<td>542D, 542D</td>
<td>AUTOPULSE 542D, 542D</td>
<td>No</td>
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<tr>
<td>B401BR-750 (78997)</td>
<td>542D, 542D</td>
<td>AUTOPULSE 542D, 542D</td>
<td>No</td>
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<tr>
<td>B402B (79011)</td>
<td>542D, 542D</td>
<td>AUTOPULSE 542D, 542D</td>
<td>4-wire only</td>
</tr>
</tbody>
</table>

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. (89 mm) octagon, 4 in. (102 mm) octagon, or a 4 in. (102 mm) square outlet box.

Listings and Approvals*

- UL ............................................. S911
- California State Fire Marshal (CSFM) ........ 7271-1209:159
- Factory Mutual (FM) ............................ Approved
- MEA ................................................ 205-94-E

* Listings and Approvals are under SYSTEM SENSOR

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight (lb)</th>
<th>(kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>430023</td>
<td>2151, Photoelectric Detector</td>
<td>1</td>
<td>(0.4)</td>
</tr>
<tr>
<td>430025</td>
<td>B110LP Standard Base</td>
<td>0.5</td>
<td>(0.2)</td>
</tr>
<tr>
<td>430026</td>
<td>B401 4 in. Dia Base</td>
<td>0.5</td>
<td>(0.2)</td>
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<tr>
<td>428138</td>
<td>F110 Trim Ring, Low Profile</td>
<td>0.5</td>
<td>(0.2)</td>
</tr>
<tr>
<td>417675</td>
<td>M02-04 Test Magnet</td>
<td>0.5</td>
<td>(0.2)</td>
</tr>
<tr>
<td>417699</td>
<td>EOL, Power Supervision Relay</td>
<td>1</td>
<td>(0.4)</td>
</tr>
</tbody>
</table>
Features

- Backlit 80-character LCD display (20 characters x 4 lines)
- Mimics all display information from the host panel.
- Control switches for System Acknowledge, Signal Silence, Drill, and Reset.
- Control switches can be independently enabled or disabled at the AUTOPULSE 542R/542D Control Panel.
- Keyswitch enables/disables control switches and mechanically locks annunciator enclosure
- Keyswitch can be enabled or disabled at the AUTOPULSE 542R/542D Control Panel.
- Enclosure supervised for tamper.
- System status LEDs for AC Power, Alarm, Trouble, Supervisory, and Alarm Silenced conditions.
- Local sounder can be enabled or disabled at the AUTOPULSE 542R/542D Control Panel.
- ANN-80 connects to the ANN-BUS terminal on the AUTOPULSE 542R/542D Control Panel and requires minimal panel programming.
- Displays device type identifiers, individual point alarm, trouble, supervisory, zone, and custom alpha labels.
- Time-and date display field.
- Aesthetically pleasing design constructed of durable Lexan.
- Surface mount directly to wall or to single, double, or 4 in. (102 mm) square electrical box.
- Semi-flush mount to single, double, or 4 in. (102 mm) square electrical box.
- Can be remotely located up to 6,000 ft (1,800 m) from the panel.
- Backlight turns off during AC loss to conserve battery power but will turn back on if an alarm condition occurs.
- May be powered by 24 VDC from the host AUTOPULSE 542R/542D Control Panel or by remote power supply (requires 24 VDC).
- Up to eight (8) ANN-80s can be connected on the ANN-BUS.

Description

The ANN-80 Annunciator is a compact, backlit, 80-character LCD fire annunciator that mimics the AUTOPULSE 542R/542D Control Panel display. It provides system status indicators for AC Power, Alarm, Trouble, Supervisory, and Alarm Silenced conditions. The ANN-80 and the AUTOPULSE 542R/542D Control Panel communicate over a two-wire serial interface employing the ANN-BUS communication format. Connected devices are powered, via two additional wires, by either the host AUTOPULSE 542R/542D Control Panel or a remote UL-listed, filtered power supply.

The ANN-80 displays English-language text of system point information including device type, zone, trouble or supervisory status, as well as any custom alpha labels programmed into the control panel. It includes control switches for remote control of critical system functions. (A keyswitch prevents unauthorized operation of the control switches).

Up to eight (8) ANN-80s may be connected to the ANN-BUS of the AUTOPULSE 542R/542D Control Panel. Minimal programming is required, which saves time during system commissioning.

The ANN-BUS can be powered by an auxiliary power supply when the maximum number of ANN-BUS devices exceeds the ANN-BUS power requirements. See the AUTOPULSE 542R/542D manual for more information.

Each ANN-BUS device requires a unique address (ID Number) in order to communicate with the AUTOPULSE 542R/542D Control Panel. A maximum of eight (8) devices can be connected to the AUTOPULSE 542R/542D Control Panel ANN-BUS communication circuit. See the AUTOPULSE 542R/542D manual for more information.

Controls and Indicators

- AC Power
- Alarm
- Trouble
- Supervisory
- Alarm Silenced
Specifications

- Operating voltage range: 18 VDC to 28 VDC
- Current consumption @ 24 VDC nominal (filtered and non-resettable): 40 mA maximum.
- Ambient temperature: 32 °F to 120 °F (0 °C to 49 °C).
- Relative humidity: 93% ± 2% RH (non-condensing) at 90 °F ± 3 °F (32 °C ± 2 °C).
- 5 3/8 in. (137 mm) high x 6 7/8 in. (175 mm) wide x 1 3/8 in. (35 mm) deep
- For use indoors in a dry location.
- All connections are power-limited and supervised.

Wiring Requirements

The ANN-80 connects to the AUTOPULSE 542R/542D Control Panel ANN-BUS communications circuit. To determine the type of wire and the maximum wiring distance that can be used with AUTOPULSE 542R/542D Control Panel ANN-BUS accessory modules, it is necessary to calculate the total worst case current draw for all modules on a single 4-conductor bus. The total worst case current draw is calculated by adding the individual worst case currents for each module.

Note: For total worst case current draw on a single ANN-BUS, refer to the AUTOPULSE 542R/542D manual.

After calculating the total worst case current draw, the table below specifies the maximum distance the modules can be located from the AUTOPULSE 542R/542D Control Panel on a single wire run. The table ensures 6.0 volts of line drop maximum. In general, the wire length is limited by resistance, but for heavier wire gauges, capacitance is the limiting factor.

These cases are marked in the chart with an asterisk (*). Maximum length can never be more than 6,000 ft (1,829 m), regardless of gauge used. See table below.

A 14 to 18 AWG (0.75 – 2.08 mm²) wire for 24 VDC power circuit is acceptable. All connections must be power-limited and supervised. A maximum of eight (8) ANN-80 modules may be connected to this circuit.

<table>
<thead>
<tr>
<th>Total Worst Case Current Draw (amps)</th>
<th>22 Gauge</th>
<th>18 Gauge</th>
<th>16 Gauge</th>
<th>14 Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.100</td>
<td>1,852 ft (565 m)</td>
<td>4,688 ft (1,429 m)</td>
<td>*6,000 ft (1,829 m)</td>
<td>*6,000 ft (1,829 m)</td>
</tr>
<tr>
<td>0.200</td>
<td>926 ft (282 m)</td>
<td>2,344 ft (715 m)</td>
<td>3,731 ft (1,137 m)</td>
<td>5,906 ft (1,800 m)</td>
</tr>
<tr>
<td>0.300</td>
<td>617 ft (188 m)</td>
<td>1,563 ft (476 m)</td>
<td>2,488 ft (758 m)</td>
<td>3,937 ft (1,200 m)</td>
</tr>
<tr>
<td>0.400</td>
<td>463 ft (141 m)</td>
<td>1,172 ft (357 m)</td>
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<td>2,953 ft (900 m)</td>
</tr>
<tr>
<td>0.500</td>
<td>370 ft (113 m)</td>
<td>938 ft (286 m)</td>
<td>1,493 ft (455 m)</td>
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</tr>
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<td>0.600</td>
<td>309 ft (94 m)</td>
<td>781 ft (238 m)</td>
<td>1,244 ft (379 m)</td>
<td>1,969 ft (600 m)</td>
</tr>
<tr>
<td>0.700</td>
<td>265 ft (81 m)</td>
<td>670 ft (204 m)</td>
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</tr>
<tr>
<td>1.000 (max.)</td>
<td>185 ft (56 m)</td>
<td>469 ft (143 m)</td>
<td>746 ft (227 m)</td>
<td>1,181 ft (360 m)</td>
</tr>
</tbody>
</table>
Features
- ANN-LED connects to the ANN-BUS terminal on the AUTOPULSE 542R/542D Control Panel and requires minimal programming.
- Mounts in the DP-51050LED Dress Panel or in a separate enclosure.
- Provides three (3) LEDs for each zone: Alarm, Trouble and Supervisory.
- Can be remotely located up to 6,000 ft (1,829 m) from the panel.
- May be powered by 24 VDC from the host AUTOPULSE 542R/542D Control Panel or by remote power supply (requires 24 VDC).
- Up to eight (8) ANN-BUS devices may be connected to the ANN-BUS of the AUTOPULSE 542R/542D Control Panel.

Description
The ANN-LED annunciator module provides LED annunciation of general system faults and input zones/points when used with a compatible AUTOPULSE 542R/542D Control Panel. The ANN-LED module provides alarm (red), trouble (yellow) and supervisory (yellow) indication for up to ten (10) input zones or addressable points.

The ANN-LED is supplied standard with certain Canadian FACP’s as required by ULC.

The ANN-LED and the AUTOPULSE 542R/542D Control Panel communicate over a two-wire serial interface employing the ANN-BUS communication format. An additional two wires are used for 24-volt DC power. A single four-conductor unshielded cable may be used for both power and data communications.

Up to eight (8) ANN-BUS devices may be connected to the ANN-BUS of the AUTOPULSE 542R/542D Control Panel.

ANN-BUS devices can be powered by an auxiliary power supply when available panel power is exceeded. See the AUTOPULSE 542R/542D manual for information.

Each ANN-BUS device requires a unique address (ID Number) in order to communicate with the AUTOPULSE 542R/542D Control Panel. A maximum of eight (8) devices can be connected to the AUTOPULSE 542R/542D Control Panel ANN-BUS communication circuit. See the AUTOPULSE 542R/542D manual for more information.

Specifications
- Maximum ANN-BUS Voltage: 24 VDC
- Maximum Current: Alarm: 68 mA Standby: 28 mA
- Maximum wiring distance from AUTOPULSE 542R/542D Control Panel: 6,000 ft (1,829 m)
- Ambient Temperature: 32 °F to 120 °F (0 °C to 49 °C)
- Relative Humidity: 93% ± 2% RH (non-condensing) at 90 °F ± 3 °F (32 °C ± 2 °C)
- For use indoors in a dry location

Wire Requirements
The ANN-LED connects to the AUTOPULSE 542R/542D Control Panel ANN-BUS communications circuit. To determine the type of wire and the maximum wiring distance, calculate the total worst case current draw for all modules on a single 4-conductor bus. Use the table on the following page to determine the maximum distance the modules can be located from the AUTOPULSE 542R/542D Control Panel. In general, the wire length is limited by resistance, but for heavier wire gauges, capacitance is the limiting factor. These cases are marked in the chart with an asterisk (*). Maximum length can never be more than 6,000 ft (1,800 m), regardless of gauge used.

Note: Refer to the AUTOPULSE 542R/542D manual for wiring details and printer settings.

ANN-LED Connection to AUTOPULSE 542R/542D Control Panel
## Agency Listings and Approvals

- UL: S635
- CSFM: 7165-0595:118
- MEA: 333-07-E

## Ordering Information

The ANN-LED module provides alarm (red), trouble (yellow) and supervisory (yellow) indication for up to ten (10) input zones or addressable points.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
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### Ordering Information Table

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<th>16 Gauge</th>
<th>14 Gauge</th>
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<td>469 ft (143 m)</td>
<td>746 ft (227 m)</td>
<td>1,181 ft (360 m)</td>
</tr>
</tbody>
</table>
Features

- ANN-RLY connects to the ANN-BUS terminal on the AUTOPULSE 542R/542D Control Panel and requires minimal programming.
- Provides ten (10) programmable Form-C relays.
- Ten (10) Form-C relays can be programmed for various functions; Alarm, Trouble, Supervisory, AC Loss, Waterflow Delay, Input Zones and Silenceable Alarm.
- May be powered by 24 VDC from the host AUTOPULSE 542R/542D Control Panel or by remote power supply (requires 24 VDC).
- Up to eight (8) ANN-BUS devices may be connected to the ANN-BUS of the AUTOPULSE 542R/542D Control Panel.

Description

The ANN-RLY relay module provides ten (10) programmable Form-C relays when used with a compatible AUTOPULSE 542R/542D Control Panel. The ANN-RLY module may be mounted inside the AUTOPULSE 542R/542D Control Panel main circuit board chassis or in the battery area of the enclosure using optional mounting bracket Part No. 435897. Reference Installation Instructions in the AUTOPULSE 542R/542D manual.

The ANN-RLY and the AUTOPULSE 542R/542D Control Panel communicate over a two-wire serial interface employing the ANN-BUS communication format. An additional two wires are used for 24-volt DC power. A single four-conductor unsheilded cable may be used for both power and data communications.

Up to eight (8) ANN-BUS devices may be connected to the ANN-BUS of the AUTOPULSE 542R/542D Control Panel.

ANN-BUS devices can be powered by an auxiliary power supply when available panel power is exceeded. See the AUTOPULSE 542R/542D manual for information.

Each ANN-BUS device requires a unique address (ID Number) in order to communicate with the AUTOPULSE 542R/542D Control Panel. A maximum of eight (8) devices can be connected to the AUTOPULSE 542R/542D Control Panel ANN-BUS communication circuit. See the AUTOPULSE 542R/542D manual for more information.

Specifications

- Maximum ANN-BUS Voltage: 24 VDC
- Maximum Current: – Alarm: 75 mA Standby: 15 mA
- Ambient Temperature: 32 ºF to 120 ºF (0 ºC to 49 ºC)
- Relative Humidity: 93% ± 2% RH (non-condensing) at 90 ºF ± 3 ºF (32 ºC ± 2 ºC)
- For use indoors in a dry location

Wire Requirements

The ANN-RLY connects to the AUTOPULSE 542R/542D Control Panel ANN-BUS communications circuit. To determine the type of wire and the maximum wiring distance, calculate the total worst case current draw for all modules on a single 4-conductor bus. Use the table on the following page to determine the maximum distance the modules can be located from the AUTOPULSE 542R/542D Control Panel. In general, the wire length is limited by resistance, but for heavier wire gauges, capacitance is the limiting factor. These cases are marked in the chart with an asterisk (*). Maximum length can never be more than 6,000 ft (1,800 m), regardless of gauge used.

Note: Refer to the AUTOPULSE 542R/542D manual for wiring details.

ANN-RLY Wiring to AUTOPULSE 542R/542D Control Panel
Agency Listings and Approvals
UL .................................................. S635
CSFM .............................................. 7165-0595:118
MEA .................................................. 333-07-E

Ordering Information
• ANN-RLY Relay Module provides ten (10) programmable Form C relays.
• ANN-MBRLY Optional mounting bracket.

<table>
<thead>
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<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
</tr>
</thead>
<tbody>
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<td>ANN-RLY Relay Module</td>
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</tr>
<tr>
<td>437021</td>
<td>ANN-RLY Relay Module (ULC)</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td>435897</td>
<td>ANN-MBRLY Mounting Bracket</td>
<td>1 (0.5)</td>
</tr>
</tbody>
</table>

Communication Pair Wiring Distance: AUTOPULSE 542R/542D Control Panel to Last ANN-BUS Module

<table>
<thead>
<tr>
<th>Total Worst Case Current Draw (amps)</th>
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</table>

TYCO FIRE PROTECTION PRODUCTS
ONE STANTON STREET
MARINETTE, WI 54143-2542 715-735-7411

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Form No. T-2008063-3
Detection and Control Components

4XTM Transmitter Module (542R/542D)

**Description**
The 4XTM Transmitter Module is an option for the AUTOPULSE control systems. The module provides a supervised output for local energy municipal box transmitter (for NFPA 72 Auxiliary Protective Signaling System) and alarm and trouble reverse polarity circuits (for NFPA 72 Remote Station Protective Signaling System). Also included is a DISABLE switch and disable trouble LED. A jumper option allows the reverse polarity circuit to open with a System Trouble condition if no alarm condition exists.

**Technical Information**
For Local Energy Municipal Box service (NFPA 72 Auxiliary Protective Signaling System):
- Supervisory Current . . . . . . . . . . . . . . . . 5.0 mA
- Trip Current . . . . . . 0.35 amps (subtracted from indicating appliance power)
- Coil Voltage . . . . . . . . . . . . . . . . . . . 3.65 VDC
- Coil Resistance . . . . . . . . . . . . . . . . 14.6 ohms
- Total wire resistance between unit and trip coil . . 3 ohms

For Remote Station service (NFPA 72 Remote Station Protective Signaling System):
- Maximum Load for each circuit . . . . . . . . . . 10 mA
- Reverse Polarity Output Voltage . . . . . . . . . 24 VDC

**Listings and Approvals***
- UL . . . . . . . . . . . . . . . . . . . . . . . . . . . S635
- ULC . . . . . . . . . . . . . . . . . . . . . CS118, CS733
- Factory Mutual (FM). . . . . . . . . . . . . . Approved
- MEA . . . . . . . . . . . . . . . . . . . . . 104-93-E Vol. VI
- CSFM . . . . . . . . . . . . . . . . . . . . 7165-0028:245

* Listings and Approvals are under NOTIFIER

**Ordering Information**

<table>
<thead>
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<th>Part No.</th>
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<tbody>
<tr>
<td>435602</td>
<td>4XTM Transmitter Module</td>
<td>1 (0.5)</td>
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</tbody>
</table>

4XTM TRANSMITTER MODULE
(POLARITIES SHOWN IN ACTIVATED POSITIONS)
Detection and Control Components

AutoPulse

(Page Left Intentionally Blank)
**Detection and Control Components**

**LIFEalarm® Photoelectric Smoke Detectors with Smoke/Heat Detection (Z-10)**

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**Features**

LIFEalarm detection combines photoelectric detection with heat detection to provide a multi-mode detector with four detection mechanisms:

- Stable and reliable photoelectric smoke detection with built-in LIFEalarm sensitivity drift compensation
- Resettable, thermistor-based fixed temperature detection
- Resettable, thermistor-based rate-of-rise temperature detection
- A built-in analysis of photoelectric and thermal activity trending that provides fire detection with higher accuracy than either detection means used separately

**Functional chamber enclosure:**

- Louvered design enhances smoke capture by directing flow to chamber
- Entrance areas are minimally visible when ceiling mounted

**Multi-function LED indicator:**

- Indicates normal and alarm conditions
- Provides status during magnetic functional test

**Magnetically operated functional test:**

- Initiates alarm and verifies performance
- Identifies general sensitivity status using detector LED pulses (normal, more sensitive, or less sensitive)
- With detectors categorized as normal or needing cleaning or other service, maintenance priorities can be more easily determined

**Available base options:**

- Bases for 2-wire operation
- Auxiliary alarm relay output
- Remote alarm indicating LED output

**Optional remote LED alarm indicator**

**Listings and Approvals**

- UL Listed: S6648
- ULC Listed: S6648
- FM Approved: 3015976
- MEA (NYC): Approved
- CSFM: Approved

* LIFEalarm detectors are protected by one or more of the following U.S. Patents: 5,155,468; 5,173,683; 5,400,014; 5,543,777; 5,710,541; 5,818,326; 6,195,011; D383,407; D388,352; D392,573.

**Description**

LIFEalarm photoelectric smoke detectors combine photoelectric smoke detection technology and quick response thermistor-based heat detection technology into a sophisticated, intelligent detector that analyzes each of these activities and their combination to determine whether alarm conditions are present. An onboard microprocessor provides four independent detection modes: photoelectric detection with sensitivity drift compensation, fixed temperature heat detection, rate-of-rise temperature heat detection, and photoelectric/heat trending analysis and alarm detection. If any of these alarm conditions are experienced, an alarm is initiated.

**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>15 to 32 VDC, from Control Panel IDC</td>
</tr>
<tr>
<td>Standby Current</td>
<td>100 µA @ 24 VDC</td>
</tr>
<tr>
<td>Alarm Current, 2-Wire Operation</td>
<td>Up to 86 mA maximum, exact current is determined by alarm current limiting of connected IDC (initiating current device)</td>
</tr>
<tr>
<td>Auxiliary Relay Ratings</td>
<td>Refer to page 3 under Product Selection</td>
</tr>
<tr>
<td>Rate-of-Rise Temperature Alarm*</td>
<td>≤ 20° F/min (11° C/min), only effective at temperatures above 90° F (32° C)</td>
</tr>
<tr>
<td>Fixed Temperature Alarm</td>
<td>135° F (57° C)</td>
</tr>
<tr>
<td>UL Listed Temp. Range</td>
<td>32° F to 100° F (0° C to 38° C)</td>
</tr>
<tr>
<td>Operating Temp. Range</td>
<td>15° F to 100° F (-9° C to 38° C)</td>
</tr>
<tr>
<td>Smoke Obscuration Sensitivity</td>
<td>2.8%/ft Nominal, per UL268</td>
</tr>
<tr>
<td>UL Listed Temp. Range</td>
<td>32° to 100° F (0° to 38° C)</td>
</tr>
<tr>
<td>Operating Temp. Range</td>
<td>15° to 122° F (-9° to +50° C)</td>
</tr>
<tr>
<td>Air Velocity Range</td>
<td>0-2000 ft/min (0-610 m/min)</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>10% to 95% RH from 32° to 122° F (0° to 50° C)</td>
</tr>
<tr>
<td>Color</td>
<td>Frost White</td>
</tr>
<tr>
<td>Dimensions</td>
<td>4 7/8 in. Dia. x 2 in. H, mounted in base (124 mm x 51 mm)</td>
</tr>
</tbody>
</table>

* Always locate this and all rate-of-rise heat detection devices away from extremes of temperature fluctuation.
**Description (Continued)**

**Intelligent Data Evaluation.** Conventional smoke detectors will typically drift toward being too sensitive due to the accumulation of dust and dirt. With LIFEalarm analog detection, data from the photoelectric chamber is monitored and analyzed at the detector to provide a continuously shifting reference point.

**Drift Compensation.** The data evaluation and its shifting reference point provide a software filtering process that compensates for environmental factors (dust, dirt, etc.) and component aging, establishing an accurate reference for evaluating new activity. With this filtering, the resulting drift compensation provides a significant reduction in the probability of false or nuisance alarms caused by shifts in sensitivity — either up or down.

**Maintained Sensitivity and Dirty Status Indications.** With its onboard software compensation, the detector maintains its sensitivity much longer in the presence of dust and dirt accumulation. Additionally, it will determine when the dirt accumulation is approaching the limit of compensation, and will indicate that condition via its status indicator LED (see diagnostic information).

**Electronic Heat Detection**

- **Fixed Temperature Heat Detection** is provided with the addition of a fast response thermistor that causes an alarm at a fixed temperature of 135°F (57°C).

- **Rate-of-Rise Heat Detection** occurs at ≥20°F/min (11°C/min). To minimize the possibility of false alarms, rate-of-rise detection is correlated to the ambient temperature and is only in effect above 90°F (32°C).

**Diagnostic Information**

- **Magnetic Test Information.** Status information is available by performing the magnetic test and observing the detector LED pulses. The LED will normally go directly into alarm with the magnetic test. If there is an off-normal condition, the LED pulses first to indicate the condition and then goes into alarm.

**Application Notes**

**Observe heat detector location guidelines.** Ambient temperature operating range is 32°F to 100°F (0°C to 38°C). Temperature fluctuations should be below 6°F/min (3.3°C/min).

Detector locations should be determined only after careful consideration of the physical layout and contents of the area to be protected.
Product Selection

Smoke Detector

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>430560</td>
<td>LIFEalarm photoelectric detector with photoelectric/thermal detection</td>
<td>Compatible with detector bases: Part Nos. 430567 and 430569</td>
</tr>
</tbody>
</table>

Detector Bases

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>430567</td>
<td>2-Wire Base with connections for Remote Alarm LED Indicator</td>
<td>• IDC and LED connections are screw terminals for in/out wiring, #18 to #14 AWG</td>
</tr>
</tbody>
</table>
| 430569   | 2-Wire Base with Auxiliary Alarm Relay and connections for Remote LED Indicator | Relay Ratings, Dual Form "C," For Suppressed Loads:
  • Power limited, 1 A @ 28 VDC
  • Non-power limited, 1/2 A @ 120 VAC
Wiring Connections (In/Out where required):
  • Relay contacts and IDC (-), color coded #18 AWG leads
  • IDC (+) and LED wiring, screw terminals for #18 to #14 AWG
Note: Must be connected as the only device on the IDC to ensure relay operation. |

Detector Accessories

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>430572</td>
<td>Remote LED Indicator</td>
<td>• Mounted on single gang stainless steel plate</td>
</tr>
</tbody>
</table>

Dimensions and Reference Information

 DETECTOR (PART NO. 430560) MOUNTED ON BASE

REMOTE RED LED INDICATOR (PART NO. 430572) (NOT TO SCALE)
**Visible LED Status Indications**

<table>
<thead>
<tr>
<th>LED Indication</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashes every 4 seconds</td>
<td>Circuit is <strong>Normal</strong>, power is applied</td>
</tr>
<tr>
<td>Steady On</td>
<td>Detector is in <strong>Alarm</strong></td>
</tr>
</tbody>
</table>

**LED Response to Magnetic Test**

<table>
<thead>
<tr>
<th>LED Indication</th>
<th>Alarm Response</th>
<th>Detector Status</th>
<th>Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED turns ON</td>
<td>Alarm is initiated</td>
<td><strong>Normal</strong>, sensitivity is within compensation range</td>
<td>None</td>
</tr>
<tr>
<td>Flashes quickly, 6 times in 3 seconds, then turns ON</td>
<td>Alarm is initiated</td>
<td><strong>More sensitive</strong>, out of normal compensation range</td>
<td>Cleaning or other service is required</td>
</tr>
<tr>
<td>Flashes slowly, 4 times in 8 seconds, then turns ON</td>
<td>Alarm is initiated</td>
<td><strong>Less sensitive</strong>, out of normal compensation range</td>
<td>Service is required</td>
</tr>
<tr>
<td></td>
<td>Alarm is NOT initiated</td>
<td>Detector is malfunctioning</td>
<td>Service is required</td>
</tr>
</tbody>
</table>

* Testing requires placing a magnet at the designated location on the detector cover for 4 seconds.

**Mounting Information**

**ELECTRICAL BOX REQUIREMENTS:**

**WITHOUT RELAY** (BASES, PART NO. 430567):

- 4 IN. (102 mm) OCTAGONAL OR 4 IN. (102 mm) SQUARE, 1 1/2 IN. (38 mm) DEEP
- SINGLE GANG, 2 IN. (51 mm) DEEP

**WITH RELAY** (BASES, PART NO. 430569):

- 4 IN. (102 mm) OCTAGONAL, 1 1/2 IN. (38 mm) DEEP, WITH 1 1/2 IN. (38 mm) EXTENSION RING
- 4 IN. (102 mm) SQUARE, 1 1/2 IN. (38 mm) DEEP, WITH 1 1/2 IN. (38 mm) EXTENSION RING

**Visible LED Status Indications**

<table>
<thead>
<tr>
<th>LED Indication</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashes every 4 seconds</td>
<td>Circuit is <strong>Normal</strong>, power is applied</td>
</tr>
<tr>
<td>Steady On</td>
<td>Detector is in <strong>Alarm</strong></td>
</tr>
</tbody>
</table>

**LED Response to Magnetic Test**

<table>
<thead>
<tr>
<th>LED Indication</th>
<th>Alarm Response</th>
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<tr>
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<td>Alarm is initiated</td>
<td><strong>More sensitive</strong>, out of normal compensation range</td>
<td>Cleaning or other service is required</td>
</tr>
<tr>
<td>Flashes slowly, 4 times in 8 seconds, then turns ON</td>
<td>Alarm is initiated</td>
<td><strong>Less sensitive</strong>, out of normal compensation range</td>
<td>Service is required</td>
</tr>
<tr>
<td></td>
<td>Alarm is NOT initiated</td>
<td>Detector is malfunctioning</td>
<td>Service is required</td>
</tr>
</tbody>
</table>

* Testing requires placing a magnet at the designated location on the detector cover for 4 seconds.
LIFEalarm® Photoelectric Smoke Detectors
For Two-Wire Bases (Z-10)

Features
LIFEalarm® Photoelectric smoke detector with on-board sensitivity drift compensation*

Functional chamber enclosure:
- Louvered design enhances smoke capture by directing flow to chamber
- Entrance areas are minimally visible when ceiling mounted

Multi-function indicator LED indicates normal and alarm conditions

Magnetically operated functional test:
- Initiates alarm and verifies performance
- Identifies general sensitivity status using detector LED

Models available in two sensitivity settings:
- Part No. 430559, Standard Sensitivity, nominal 2.8%/ft obscuration
- Part No. 430562, Special Application Sensitivity, nominal 3.5%/ft obscuration

Available base options:
- Bases for 2-wire operation
- Auxiliary alarm relay output

Optional remote alarm indicating LED

Description
LIFEalarm photoelectric detectors provide many of the proven analog sensing features for applications where detectors are connected to conventional 2-wire initiating device circuits (IDCs). Each detector has an on-board microprocessor that evaluates its photoelectric light scattering chamber activity and makes an intelligent decision based on light obscuration history as to whether an alarm condition is present.

LIFEalarm detectors are packaged in a patented housing that minimizes the visibility of the air intake louvers from the normal viewing locations while maintaining a high performance smoke capture ability. Bases are available for remote alarm LED indicator connections and auxiliary relay outputs.

* LIFEalarm smoke detector operation is protected by one or more of the following U.S. Patents: 5,155,468; 5,173,683; 5,400,014; 5,543,777; 5,710,541; D383,407; D388,352; D392,573.

Specifications

<table>
<thead>
<tr>
<th>Voltage</th>
<th>15 to 32 VDC, from Control Panel IDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standby Current</td>
<td>100 μA @ 24 VDC</td>
</tr>
<tr>
<td>Alarm Current, 2-Wire Operation</td>
<td>Up to 86 mA maximum, exact current is determined by alarm current limiting of connected IDC</td>
</tr>
<tr>
<td>Auxiliary Relay Ratings</td>
<td>Refer to page 2 under Product Selection</td>
</tr>
<tr>
<td>Air Velocity Range</td>
<td>0-2000 ft/min (0-610 m/min)</td>
</tr>
<tr>
<td>UL Listed Temp. Range</td>
<td>32° to 100 °F (0° to 38 °C)</td>
</tr>
<tr>
<td>Operating Temp. Range</td>
<td>15° to 122 °F (–9° to + 50 °C)</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>10% to 95% RH from 32° to 122 °F (0° to 50 °C) non-condensing</td>
</tr>
<tr>
<td>Color</td>
<td>Frost White</td>
</tr>
<tr>
<td>Dimensions</td>
<td>4 7/8 in. Dia. x 1 7/8 in. H, mounted in base (124 mm x 48 mm)</td>
</tr>
</tbody>
</table>

Listings and Approvals
- UL Listed: S6648
- ULC Listed: S6648
- FM Approved: 3015976
- CSFM: Approved
- MEA (NYC): Approved
Smoke Detector Features

**Intelligent Data Evaluation.** Conventional smoke detectors will typically drift toward being too sensitive due to the accumulation of dust and dirt. With analog detection, data from the photoelectric chamber is monitored and analyzed at the detector to provide a continuously shifting reference point.

**Drift Compensation.** The data evaluation and its shifting reference point provide a software filtering process that compensates for environmental factors (dust, dirt, etc.) and component aging, establishing an accurate reference for evaluating new activity. With this filtering, the resulting drift compensation provides a significant reduction in the probability of false or nuisance alarms caused by shifts in sensitivity—either up or down.

**Magnetic Test Information.** Status information is available by performing the magnetic test and observing the detector LED pulses. The LED will normally go directly into alarm with the magnetic test. If there is an off-normal condition, the LED pulses first to indicate the condition and then goes into alarm.

Application Reference

**Detector Locations.** Locations should be determined only after careful consideration of the physical layout and contents of the area to be protected.

For further detailed installation information, refer to Detectors, Sensors, and Bases Application Manual (Part No. 431424).

**Sensitivity Selection.** The standard sensitivity detector (Part No. 430559) is recommended for most applications. When a special application for a reduced sensitivity detector is required (Part No. 430562) should be considered.

Product Selection

<table>
<thead>
<tr>
<th>Smoke Detectors</th>
<th>Description</th>
<th>Nominal Sensitivity</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>430559</td>
<td>LIFEalarm Photoelectric Detector</td>
<td>2.8%/ft (standard)</td>
<td>Compatible with detector bases: Part Nos. 430567 and 430569</td>
</tr>
<tr>
<td>430562</td>
<td></td>
<td>3.5%/ft</td>
<td></td>
</tr>
</tbody>
</table>

**Compatible Bases**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>430567</td>
<td>2-Wire Base with connections for Remote Alarm LED Indicator</td>
<td>IDC and LED connections are screw terminals for in/out wiring, 18 to 14 AWG</td>
</tr>
<tr>
<td>430569</td>
<td>2-Wire Base with Auxiliary Alarm Relay &amp; connections for Remote LED Indicator</td>
<td>Relay Ratings, Dual Form 'C', For Suppressed Loads: Power limited, 1 A @ 28 VDC Non-power limited, 1/2 A @ 120 VAC Wiring Connections (In/Out where required): Relay contacts and IDC (–), color coded 18 AWG leads IDC (+) and LED wiring, screw terminals for 18 to 14 AWG</td>
</tr>
<tr>
<td>430570</td>
<td>2-Wire Base with Remote LED Indicator</td>
<td>Note: Must be connected as the only device on the IDC to ensure relay operation.</td>
</tr>
</tbody>
</table>

**Detector Accessories**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>430572</td>
<td>Remote LED Indicator</td>
<td>Mounted on single gang stainless steel plate</td>
</tr>
</tbody>
</table>
Detector Status LED Indications

<table>
<thead>
<tr>
<th>LED Indication</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses approximately every 4 seconds</td>
<td>Normal</td>
</tr>
<tr>
<td>Steady On</td>
<td>Alarm</td>
</tr>
</tbody>
</table>

### LED Response to Magnetic Test *

<table>
<thead>
<tr>
<th>LED Indication</th>
<th>Followed By</th>
<th>Status</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED turns ON</td>
<td>Alarm is initiated</td>
<td>Normal, sensitivity is within compensation range</td>
<td>None</td>
</tr>
<tr>
<td>LED pulses <em>quickly</em>, 6 times in 3 seconds, then turns ON</td>
<td>Alarm is initiated</td>
<td>More sensitive, out of normal compensation range</td>
<td>Cleaning or other service is required</td>
</tr>
<tr>
<td>LED pulses <em>slowly</em>, 4 times in 8 seconds, then turns ON</td>
<td>Alarm is initiated</td>
<td>Less sensitive, out of normal compensation range</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Does not initiate Alarm</td>
<td>Detector is malfunctioning</td>
<td>Service is required</td>
</tr>
</tbody>
</table>

* Testing requires placing a magnet at the designated location on the detector cover for 4 seconds.

### Dimensions and Reference Information

Dimensions and Reference Information

**Dimensions MOUNTED ON BASE**

- Base Height: 1 7/8 IN. (48 mm)
- LED Status Indicator (With Clear Lens): 4 7/8 IN. (124 mm)
- Remote Red LED Indicator (Part No. 430572) (Not to Scale)

PART NO. 430559 AND PART NO. 430562 DIMENSIONS MOUNTED ON BASE
Mounting Information

ELECTRICAL BOX REQUIREMENTS:
WITHOUT RELAY (BASE, PART NO. 430567):
4 IN. (102 mm) OCTAGONAL OR 4 IN. (102 mm) SQUARE, 1 1/2 IN. (38 mm) DEEP
SINGLE GANG, 2 IN. (51 mm) DEEP

WITH RELAY (BASE, PART NO. 430569):
4 IN. (102 mm) OCTAGONAL, 1 1/2 IN. (38 mm) DEEP, WITH 1 1/2 IN. (38 mm) EXTENSION RING
4 IN. (102 mm) SQUARE, 1 1/2 IN. (38 mm) DEEP, WITH 1 1/2 IN. (38 mm) EXTENSION RING

PART NO. 430569 INCLUDES A RELAY MODULE THAT MOUNTS IN BASE ELECTRICAL BOX

SMOKE DETECTOR BASES (PART NO. 430567 AND 430569)

SMOKE DETECTOR (PART NO. 430559 AND 430562)
Detection and Control Components

Electronic Heat Detectors
For Two-Wire Bases (Z-10)

Features
Accurate and reliable heat detection for protection of property

Available with rate-of-rise temperature detection:
- Dual thermistor rate-of-rise operation
- For use where anticipated ambient temperature changes are less than 6 °F/minute (3.33 °C/minute)

Epoxy encapsulated electronic design provides:
- Easily tested, self-restoring operation with repeatable accuracy
- Alarm indicating LED located on detector
- Current limited alarm that is compatible with two wire initiating device circuits (IDCs)

Optional remote alarm indicating LED

Available base options:
- Bases for 2-wire operation
- Auxiliary relay output (refer to selection chart on for relay ratings)
- Remote alarm indicating LED output

Description
Rate-of-rise detection is determined by comparing two thermistor responses. By combining accurate thermistors with proper physical placement, this patented rate-of-rise detection design achieves a high level of performance not normally available with mechanical detection.

Listings and Approvals
- UL Listed: S6651
- ULC Listed: S6651
- FM Approved: 3015976
- CSFM (Approved)
- MEA (NYC) (Approved)

Specifications

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>15 to 32 VDC (filtered DC with 30% maximum ripple)</td>
</tr>
<tr>
<td>Standby Current</td>
<td>80 μA typical, 100 μA maximum</td>
</tr>
<tr>
<td>Alarm Current, 2-Wire Operation</td>
<td>Up to 100 μA maximum, exact current is determined by alarm current limiting of connected IDC</td>
</tr>
<tr>
<td>Rate-of-Rise Operation</td>
<td>Meets FM requirements for operation between 15° and 25 °F/min (8.33° and 13.88 °C/min)</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>10% to 95% RH from 32° to 122 °F (0° to 50 °C), not intended for outdoor applications</td>
</tr>
<tr>
<td>Color</td>
<td>Frost-White</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Refer to diagram on page 3</td>
</tr>
<tr>
<td>Ambient Temperature Operating Range</td>
<td></td>
</tr>
<tr>
<td>135° F Models</td>
<td>32° to 100 °F (0° to 38 °C)</td>
</tr>
<tr>
<td>200° F Models</td>
<td>32° to 150 °F (0° to 66 °C)</td>
</tr>
</tbody>
</table>

Electronic Heat Detector Mounted in Base

Applications Reference
Heat detectors are used where property protection is desired and where life safety protection is not required or is performed by other equipment.

The rate-of-rise operation provides heat detection for use where temperature fluctuations are controlled and are less than 6 °F/min (3.33 °C/minute). Where temperatures may fluctuate more quickly, use fixed temperature detection.

Refer to NFPA 72, the National Fire Alarm Code, for additional guidance in applying and locating heat detectors.

Alarm Indicating LED Operation
The heat detector LED turns ON continuously when in alarm. During normal conditions the LED is OFF.

Hazardous levels of smoke and toxic gas can build up before the heat detection device initiates an alarm. To ensure the safety of personnel, the use of smoke detection is highly recommended.

WARNING

Electronic heat detector design is protected by the following U.S. Patents: 5,450,066; DES.377,460.
### Heat Detector Selection Chart

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Fixed Temperature Operation at</th>
<th>Rate-of-Rise Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>430565</td>
<td>135 °F (57 °C)</td>
<td>Between 15° and 25° F/min (8.33° and 13.88° C/min)</td>
</tr>
<tr>
<td>430566</td>
<td>200 °F (93 °C)</td>
<td></td>
</tr>
</tbody>
</table>

### Heat Detector Base Selection Chart

#### Smoke Detectors

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Connection</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>430567</td>
<td>2-Wire Base, with connections for remote LED alarm indicator</td>
<td>IDC connections</td>
<td>Screw terminals for in/out wiring, 18 to 14 AWG</td>
</tr>
<tr>
<td>430570</td>
<td>2-Wire Base with remote LED alarm indicator</td>
<td>IDC connections</td>
<td>Screw terminals for 18 to 14 AWG for in/out wiring of zone (+), color coded 18 AWG leads for in/out wiring of zone (–)</td>
</tr>
<tr>
<td>430569</td>
<td>2-Wire Base with auxiliary alarm relay output</td>
<td></td>
<td>Note: Must be connected as the only device on the IDC to ensure relay operation.</td>
</tr>
</tbody>
</table>

#### Relay Operation Type

- Power-limited: 1 A @ 28 VDC
- Nonpower-limited: 3 A @ 120 AC

#### Wiring Connections

- IDC connections: Color coded 18 AWG leads
- LED connections: Color coded 18 AWG leads
- Relay connections: Color coded 18 AWG leads

### Heat Detector Accessories

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Details</th>
<th>Base Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>430572</td>
<td>Remote Red LED Alarm Indicator</td>
<td>Mounted on single gang stainless steel plate, wiring connections are 18 AWG color coded leads</td>
<td>Part No. 430570 only</td>
</tr>
<tr>
<td>430573</td>
<td>End-of-Line Relay</td>
<td>Epoxy encapsulated design, 24 VDC operation, wiring connections are 18 AWG color coded leads</td>
<td>—</td>
</tr>
</tbody>
</table>

Metric wire equivalents: 18 AWG = 0.82 mm²; 14 AWG = 2.08 mm²
Dimensions and Reference Information

REMOTE RED LED INDICATOR (PART NO. 430572) (NOT TO SCALE)

LED STATUS INDICATOR

BASE HEIGHT
11/16 IN. (17 mm)

2 3/8 IN. (60 mm)

ALARM

4 7/8 IN. (124 mm)

1 1/6 IN. (17 mm)

2 3/8 IN. (60 mm)
### Mounting Information

<table>
<thead>
<tr>
<th>Base</th>
<th>Electrical Box Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>430567</td>
<td>4 in. (102 mm) octagonal or 4 in. (102 mm) square box, 1-1/2 in. (38 mm) deep</td>
</tr>
<tr>
<td></td>
<td>Single gang box, 2 in. (51 mm) deep</td>
</tr>
<tr>
<td>430569</td>
<td>4 in. (102 mm) octagonal or 4 in. (102 mm) square box, 1-1/2 in. (38 mm) deep with</td>
</tr>
<tr>
<td>430570</td>
<td>1-1/2 in. (38 mm) deep extension ring (see diagram below)</td>
</tr>
</tbody>
</table>

![Diagram showing mounting information](image)

**Base (Part No. 430569)** includes a relay that mounts in base electrical box.

**Base (Part No. 430570)** includes a remote LED interface module that mounts in base electrical box.

**Heat Detector Bases (Part Nos. 430569 and 430570)**
Detection and Control Components

Abort Switches and Releasing Appliance Circuit (RAC) Maintenance Switches (Z-10)

Features

• Abort switches provide a manual Fire Suppression System release abort request:
  – Pushbutton momentary switch is mounted on a stainless steel single-gang plate
  – A protruding collar protects the switch from accidental contact (collar is removable if required)
  – Available flush or surface mount
  – Flush mounting requires standard single-gang box
  – Surface mounting includes a red mounting box
  – Models are available with internal 1.2kΩ resistor for current limited operation

• Maintenance switches provide a secure and visible disconnect means for servicing Fire Suppression System Releasing Appliance Circuits (RACs):
  – Maintained position keyswitch is mounted on a stainless steel double-gang plate
  – Key is removable in either normal or disabled position
  – Disabled position opens connection to output circuit to initiate a supervisory condition at the host panel
  – Disconnect indicator lamp is a bright incandescent bulb with red lens, powered from separate 24 VDC
  – Available for flush or surface mount
  – Flush mounting requires a standard double-gang box
  – Surface mount models include a red mounting box

• UL listed to Standard 864, 9th Edition

Description

Releasing systems typically require maintenance disconnect switches and often require abort switches. These abort and maintenance switches are clearly labeled and combine easy operation with rugged construction for high integrity operation.

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Electrical Ratings</th>
<th>Wiring Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abort Switch; One Contact block</td>
<td>Silver contacts; 1 NO &amp; 1 NC; rated 2 A resistive @ 30 VDC</td>
<td>Terminal blocks for in/out wiring; 18 to 14 AWG wire (0.82 mm² to 2.08 mm²)</td>
</tr>
<tr>
<td>Maintenance Switch with Lamp; Two Contact blocks</td>
<td>Circuit control: Silver contacts; 1 NO &amp; 1 NC; rated 2A resistive @ 30 VDC</td>
<td>Terminal blocks for first wire connection; 18 to 14 AWG wire (0.82 mm² to 2.08 mm²); 18 AWG wire lead for second wire connection</td>
</tr>
<tr>
<td>Maintenance Switch Indicator Light</td>
<td>Replaceable 2 W incandescent bulb; 24 to 30 VDC typical; 83 mA @ 35 VDC; requires separate 24 VDC</td>
<td></td>
</tr>
</tbody>
</table>

Wiring Connections

<table>
<thead>
<tr>
<th>Wiring Connections</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Abort Switch</td>
<td>Terminal blocks for in/out wiring; 18 to 14 AWG wire (0.82 mm² to 2.08 mm²)</td>
</tr>
<tr>
<td>Abort Switch with Current Limited Resistor</td>
<td>Terminal blocks for first wire connection; 18 to 14 AWG wire (0.82 mm² to 2.08 mm²); 18 AWG wire lead for second wire connection</td>
</tr>
<tr>
<td>Maintenance Switch</td>
<td>18 AWG (0.82 mm²) color coded wire leads for suppression circuit; terminal blocks for lamp wiring; 18 to 14 AWG wire (0.82 mm² to 2.08 mm²)</td>
</tr>
</tbody>
</table>

Environmental Ratings

<table>
<thead>
<tr>
<th>Environmental Ratings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Range</td>
<td>32 °F to 120 °F (0 °C to 49 °C)</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>Up to 93% at 90 °F (32 °C)</td>
</tr>
</tbody>
</table>

Abort Switch

Maintenance Switch with Disconnect Indicator Lamp

006550

006549
Abort Switch Installation Reference

- **Box Width**: 3 in. (76 mm)
- **Abort Switch Width**: 2 3/4 in. (70 mm)
- **Abort Switch Height**: 4 1/2 in. (114 mm)
- **Switch Recess Depth**: 5/32 in. (4 mm)
- **Supplied Gasket**: Attaches to box; field installed for flush mount; pre-attached for surface mount.
- **Note**: For flush mounting, use a 2 3/4 in. deep (70 mm) single-gang box.

Maintenance Switch Installation Reference

- **Box Dimensions**: 4 13/16 in. (122 mm) square
- **Maintenance Switch Width**: 4 9/16 in. (116 mm)
- **Disk/Disable**:
- **Note**: For flush mounting, use a 2 3/4 in. deep (70 mm) single-gang box.

**Listings and Approvals**
- UL Listed: S8332
- ULC Listed: S8332
- CSFM: Approved
- MEA (NYC): Approved

**Ordering Information**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>433936</td>
<td>Flush Mount Maintenance Switch</td>
<td>2 (0.9)</td>
</tr>
<tr>
<td>433937</td>
<td>Surface Mount Maintenance Switch</td>
<td>2 (0.9)</td>
</tr>
<tr>
<td>433940</td>
<td>Flush Mount Abort Switch</td>
<td>1 (0.5)</td>
</tr>
</tbody>
</table>
Features

- **Isolated Loop Circuit Protector (ILCP) for up to 5 A of DC or audio current:**
  - Low impedance design minimizes voltage drop
  - For internal or external applications (refer to page 2 for external wiring requirements)
  - Refer to specific panel field wiring diagrams for additional application information
- **Operation is compatible with**:
  - DC notification appliance circuits (NACs)
  - Speaker circuit NACs (25 VRMS)
- **Multiple stages of protection for DC and audio circuits:**
  - Line-to-Line Protection
  - Line-to-Earth Protection
- **Rugged epoxy encapsulated package**

Description

Electrical transients caused by lightning or by disturbances on high voltage power lines are conditions that require low voltage wiring circuits to be adequately protected. This protection is most effective when placed at the location where such circuits leave or enter the building.

The Isolated Loop Circuit Protector (ILCP) (Part No. 430685) is designed to protect Fire Alarm circuits from those electrical transients induced on wire runs that are routed external to the building. Because of its small package size, it can be easily mounted at the location that achieves maximum protection.

**Performance of this device has been quantified for use with other circuit types for specific applications where its low resistance is desired.**

Listings and Approvals

UL Listed E197916

Operating Specifications

<table>
<thead>
<tr>
<th>Line-to-Line Rating</th>
<th>38 VDC, 28 VAC RMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line-to-Ground Rating</td>
<td>48 VDC, 33 VAC RMS</td>
</tr>
<tr>
<td>Shield-to-Ground Rating</td>
<td>5 A</td>
</tr>
<tr>
<td>Continuous Current Rating</td>
<td>0.1 Ω/line</td>
</tr>
<tr>
<td>Series Inductance</td>
<td>68 μH/line</td>
</tr>
<tr>
<td>Shunt Capacitance</td>
<td>0.017 μF</td>
</tr>
<tr>
<td>Response Time</td>
<td>&lt;1 Nanosecond (10⁻⁹)</td>
</tr>
<tr>
<td>Maximum Current Line-to-Line and Line-to-Earth</td>
<td>2000 A (8 x 20 μsec pulse)</td>
</tr>
<tr>
<td>Maximum Current Shield-to-Earth</td>
<td>5000 A (10 x 50 μsec)</td>
</tr>
</tbody>
</table>

Mechanical Specifications

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>3 3/8 in. W x 2 in. D x 1 in. H (86 mm x 50 mm x 25 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Package</td>
<td>Epoxy encapsulated, beige</td>
</tr>
<tr>
<td>Electrical box requirement</td>
<td>4 in. (102 mm) square box, 2 1/8 in. (54 mm) minimum depth</td>
</tr>
<tr>
<td>Wire Leads</td>
<td>Color coded, #18 AWG, 8 in. long (203 mm)</td>
</tr>
</tbody>
</table>
External Wiring Requirements

Fire alarm system wiring that is run external to the building and is protected by the use of ILCPs shall be installed in accordance with the individual system component’s installation instructions including properly grounded, twisted and shielded pairs, and observance of the following precautions.

Location. To ensure optimized protection, the ILCPs shall be located as close as possible to the point at which the circuits leave or enter the buildings and installed in dedicated metallic electrical boxes.

Wiring Distance. Wiring is limited to one contiguous property. The total maximum wire length is determined by the individual application’s allowable limit as specified with ILCPs, but must not exceed 3270 ft (996.7 m).

Underground Wiring. Wiring must be in a wiring trough that is separate from commercial power distribution wiring.

Overhead Wiring

1. Wiring must be run on poles separate from those supporting any commercial power distribution wiring.

2. Wiring shall be run in parallel with the commercial power distribution wiring and be separated by a minimum distance of either 100 ft (30 m) or the maximum span between any two adjacent poles of either the system’s circuit or the commercial power distribution circuit.

The grounding conductor shall be #12 AWG with a maximum length of 28 ft (8.5 m), run in as straight a line as possible and connected to the building grounding electrode system (unified earth ground) per Article 800-40 of NFPA 70, the National Electrical Code.

Typical Connections
Detection and Control Components

ANSUL AUTOMAN II-C Releasing Device

Applications
The ANSUL AUTOMAN II-C is an automatic, electric pneumatic releasing device for actuating a fire suppression system upon receipt of an electrical input signal. It may be automatically actuated via a detection/control system and/or manually through use of an integral manual strike strike button; or through use of a remote electric or remote mechanical pull station.

Description
The device is made up of an enclosure, releasing device and auxiliary switch. The NEMA Type I all-steel enclosure has four holes for surface mounting and a hinged cover with key lock. The cover contains a window for visual verification that the releasing device is armed. A standard pattern of wiring knockouts is provided, and connections are made to heavy duty screw terminals — no soldering required.

The releasing device has a stored pressure cartridge (order separately) and provides pneumatic actuation for the release mechanisms on agent container tanks. Pressure is released from the cartridge by piercing the cartridge seal with a mechanical puncture pin. The pin release can be accomplished manually through a STRIKE button on the front cover or automatically through the solenoid. Optional electric or mechanical manual pull stations provide additional actuation capability, if desired. An auxiliary switch may be used to provide shutdown of equipment or provide feedback of actuation to the detection/control system.

Technical Information
Temperature Range: . . . +32 °F to +120 °F (0 °C to +49 °C)
Solenoid Voltage: ................. 24 VDC Nominal
Solenoid Operating Current: ........ 750 mA @ 24 VDC
Solenoid on Time: ................. 50 mS
Coil Resistance: ................. 26 Ω
Auxiliary Switch Contact Ratings: .......... 20A, 125/250VAC
......................................... 2 HP, 250VAC
......................................... 1 HP, 125VAC
Weight: ................. 26 lb (11.8 kg)
Overall Dimensions:
Height: ................. 24.5 in. (662 mm)
Width: ................. 12.5 in. (311 mm)
Depth: ................. 4.25 in. (108 mm)

The release contains a second integral switch which shuts off the solenoid after operation, approximately 50 mS. Supervision can be accomplished by passing a limited current of 50 mA or less through the solenoid circuit.

The number of devices that can be operated from the pneumatic output of one ANSUL AUTOMAN II-C is determined by the minimum anticipated temperature, the amount of piping required, and the nature of the devices being actuated. If additional actuation capability should ever be required as an option, remote pressure booster type actuators can readily fill the need.
Approvals

The ANSUL AUTOMAN II-C releasing device is Underwriters Laboratories listed for use with piped, fixed nozzle fire suppression systems (R5998). It complies with the requirements of all current applicable NFPA standards covering fire extinguishing agent systems.

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Shipping Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>17728</td>
<td>ANSUL AUTOMAN II-C Assembly</td>
<td>26 (11.8)</td>
</tr>
<tr>
<td>35619</td>
<td>Weatherproof ANSUL AUTOMAN II-C Assembly</td>
<td>28 (12.7)</td>
</tr>
<tr>
<td>17966</td>
<td>Lock with 2 Keys</td>
<td>0.25 (0.1)</td>
</tr>
<tr>
<td>70480</td>
<td>Key</td>
<td>0.1 (0.05)</td>
</tr>
</tbody>
</table>
Applications
The explosion-proof ANSUL AUTOMAN II-C is an automatic, electric pneumatic releasing device which, upon receipt of an electrical input signal, actuates the fire suppression system which is installed in a hazardous location.

It may be automatically actuated via a detection/control system and/or manually through use of an integral manual strike button; or through use of a remote electric or, mechanical remote pull station.

Description
The device is made up of an enclosure, and releasing device. The NEMA Type I all steel enclosure has four holes for surface mounting and a hinged cover with key lock. The cover contains a window for visual verification that the releasing device is armed. Wiring knockouts are provided, and connections are made to the solenoid through two 18 AWG leads exiting the conduit fitting on the explosion-proof solenoid.

The releasing device uses a stored pressure nitrogen cartridge and provides pneumatic actuation for the agent container tank valve. Pressure is released by piercing the cartridge seal with a mechanical puncture pin. The pin release can be accomplished manually through a STRIKE button on the front cover or automatically through the solenoid. Optional electric or mechanical manual pull stations provide additional actuation capability, if desired.

To provide shutdown of equipment or provide feedback of actuation to the detection/control equipment, an explosion-proof pressure switch (not provided) can be added to the system.

The explosion-proof releasing device is suitable for use in the following areas: Class I, Groups C and D Hazardous Locations.

Technical Information
Temperature Range: . . . . . . . . . . . . 32 °F to 130 °F (0 °C to 54 °C)
Part Number: . . . . . . . . . . . . . . 31492 32525 32526
Operating Voltage: . . . . . . . . . . . . . . . . . . . . . . . . . . . 24 VDC 120 VAC 240 VAC
Operating Current: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 500 mA 100 mA 50 mA
Coil Resistance: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 52 ohms 100 ohms 200 ohms
Solenoid Rating: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Explosion-proof, Continuous Duty
Weight: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 26 lb (11.8 kg)
Overall Dimensions:
  Height . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 24.5 in. (662 mm)
  Width . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 12.5 in. (311 mm)
  Depth . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 4.25 in. (108 mm)

CAUTION
The explosion-proof ANSUL AUTOMAN II-C CANNOT be used with a CO₂ Cartridge. Although other cartridges will fit, they MUST NEVER be used in this unit.

Use only the LT-30-R Nitrogen cartridge (Part No. 5373).

The solenoid employed is rated for continuous duty. Should it be desirable to interrupt power to the solenoid after system actuation, an explosion-proof pressure switch can be utilized.

The number of devices that can be operated from the pneumatic output of one ANSUL AUTOMAN II-C is determined by the minimum anticipated temperature, the amount of piping required, and the required pressure to operate the devices being actuated. If additional actuation capability should ever be required, as an option, remote pressure booster type actuators can readily fill the need.
**Listings and Approvals**

The ANSUL AUTOMAN II-C explosion-proof releasing device is Underwriters Laboratories listed (E62842) for use in Class 1, Groups C and D Hazardous Locations with piped, fixed nozzle fire suppression systems.

It complies with the requirements of all current applicable NFPA Standards covering fire extinguishing agent systems.

**Ordering Information**

<table>
<thead>
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<th>Part No.</th>
<th>Description</th>
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<td>ANSUL AUTOMAN II-C Explosion-Proof Releasing Device, 24 VDC</td>
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<td>32525</td>
<td>ANSUL AUTOMAN II-C Explosion-Proof Releasing Device, 120 VAC</td>
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<td>(11.8)</td>
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<tr>
<td>32526</td>
<td>ANSUL AUTOMAN II-C Explosion-Proof Releasing Device, 240 VAC</td>
<td>26</td>
<td>(11.8)</td>
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