

# LifeSafety

MAGAZINE

Information on life safety from the leader in fire detection

Code, Training  
and Equipment:  
All Vital to  
Healthcare Fire  
and Life Safety

Communication Is  
Imperative for Duct  
Smoke-Detector  
Installations

Intelligent Smoke  
Detectors for Critical  
Applications

UL Revises 1971,  
Signaling Devices for  
the Hearing Impaired

The image shows the exterior of a large, multi-story hospital building with a grid of windows. The building is light-colored with dark window frames. In the foreground, there are green bushes and trees. The sky is clear and blue.  
**BARNES JEWISH**  
*Hospital*



# In an Emergency, Could *You* Find the Nearest Exit?

A life safety system should stand ready to evacuate the building, no matter the circumstances. But many factors can hinder a timely evacuation. Occupants may be unfamiliar with the building and its emergency egress routes. Persons with visual impairment may be unable to follow exit markings or signage. And if an area fills with smoke, even unimpaired occupants can become confused and disoriented. Such situations are a formula for tragedy.

When visual cues aren't enough, you need an evacuation signal that doesn't rely on perfect visibility. You need something that can cut through the confusion and guide people to safety. In short, you need ExitPoint.™

## Advanced Ideas. Advanced Solutions.

ExitPoint is the latest advanced idea from System Sensor and a quantum leap in egress technology. Utilizing a broadband signal – also known as Directional Sound – ExitPoint helps people evacuate a building even when all other exit cues are totally obscured. It can also pinpoint exits in non-fire emergencies, assisting egress within unfamiliar surroundings.

## Works With Existing Systems

Traditional notification appliances alert building occupants to an emergency – an essential function – but they don't tell people how to get out. ExitPoint, the audible exit sign, ties into a facility's fire alarm control panel and guides people to building exits reliably and safely. ExitPoint works with existing fire alarm systems; it's listed to UL 464, FM, and CSFM and the technology is under consideration for NFPA 72.

## Safer, Quicker Evacuation

ExitPoint can even overcome the natural tendency of people to exit the way they entered, which is not necessarily the safest or even the shortest way. Studies show that people intuitively follow the unique ExitPoint signal to the nearest exit, reducing evacuation times by as much as 75% and improving a fire system's potential to save lives.

For more information, visit [exitpoint.systemsensor.com](http://exitpoint.systemsensor.com). For a complete Specifier's Kit, including a demonstration CD-ROM and white paper, call 800-736-7672.



advanced ideas. advanced solutions.™

800/736-7672  
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FIRE

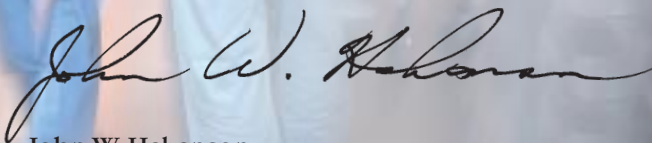
## We are Life Safety

Today's fire systems play a crucial role in alerting people to a potential threat. I heard a fire chief give a presentation to installers at a life-safety conference once. He said, "The truth is, you guys do the job for me. A fire erupts, we roll the trucks, get to the scene and usually everyone is already out of the building. I get interviewed and congratulated by the press, and all I did was fight the fire. You guys protected their lives."

Since 9/11, Honeywell companies all over the world have been joining forces to raise money for various catastrophes. Honeywell has already committed \$500,000 in response to Hurricane Katrina, as well as a dollar-for-dollar match to all employee personal donations. Our employees have been extremely giving, already pledging more than \$550,000.

Of course, System Sensor is always innovating ideas and solutions. Any time we learn of a fire or tragedy where lives were lost, our engineers are researching, testing and implementing preventative solutions. Historically, smoke detectors were capable of detecting smoke and making a noise. That was it. Today, we have control panels that distinguish between devices and communicate highly detailed information about the threat. We also have intelligent systems that process detailed, analog data from detectors about smoke levels.

We are not just in the fire detection business anymore. We are in life safety.



John W. Hakanson  
President  
System Sensor

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*Cover: Barnes-Jewish Hospital is ranked sixth in the nation by U.S. News & World Report's America's Best Hospitals 2005. The hospital is the largest in Missouri and the largest private employer in the St. Louis region. An affiliated teaching hospital of Washington University School of Medicine, Barnes-Jewish Hospital has a 1,700-member medical staff, many of whom are recognized as some of the "Best Doctors in America®" (<http://www.bestdoctors.com>).*



# LifeSafety

MAGAZINE

*LifeSafety Magazine* is provided as a courtesy to our colleagues in the fire and life-safety community. While we make every attempt to ensure the accuracy of all information contained herein, product specifications and building codes are always subject to change. Under no circumstances should product or code information published in *LifeSafety Magazine* be considered a substitute for written instructions from the manufacturer or Authority Having Jurisdiction. Always follow proper installation and maintenance practices, including carefully reading and understanding manufacturers' instructions before attempting to install, operate or maintain any life-safety equipment.

Your thoughts and comments are welcome at [info@systemsensor.com](mailto:info@systemsensor.com).  
For more information on System Sensor products, call 800-736-7672 or visit [www.systemsensor.com](http://www.systemsensor.com).

## Code, Training and Equipment: All Vital to Healthcare Fire and Life Safety

*An interview with Barnes-Jewish Hospital's  
manager of plant operations.*

Mike Menzel, manager of plant operations for Barnes-Jewish Hospital in St. Louis, attributes the safety of patients and staff to a strict adherence to fire-protection codes, by-the-book installations and a commitment to maintenance and training.

Menzel oversees 6.5 million square feet of space at Barnes-Jewish Hospital, one of the most celebrated healthcare facilities in the world.

With continual testing of equipment and repeated practice by the entire hospital staff, Menzel and his crew are able to provide a safe and secure facility where physicians and researchers can concentrate on developing other types of life-saving techniques.

“Through our insurance company, we developed a system that adheres to NFPA 25 standards,” says Menzel. “We test every flow switch quarterly and inspect all the valves monthly. On the fire alarm system, we adhere to NFPA 72.”

Although Menzel conforms to NFPA 25 and 72, two of the most common standards for ensuring life safety, it's the scale of his operation that stands out. “We do all of our own maintenance,” says Menzel. “I have two electricians



(Continued on page 6)

## The RACE System

Mike Menzel, manager of plant operations, attests to the effectiveness of Barnes-Jewish Hospital's RACE Program, which stands for Remove, Activate, Contain and Extinguish.

"We had an incident last New Year's Eve," Menzel says. "This happened around midnight, and there were maybe four people working on the floor. A patient was admitted and that person was put on oxygen, but managed to conceal a pack of cigarettes and a lighter. The patient proceeded to light up a cigarette in the room, and you can imagine what happened with the oxygen. It started on fire. Well, the patient rang the bell right away and our patient-care

tech knew from our drills that he had to disconnect the oxygen immediately. The fire was contained, the patient was not seriously injured and building damage was minimal.

"My point is, when the alarm went off, the nursing staff reacted right away. They went around and closed the doors and made sure everything was secure and waited for the next instruction. That's why we drill 400 times a year. They can perform when needed to."

The patient-care technician followed the steps in the RACE program, and the result was minor patient injury and minimal building damage.



## Code, Training and Equipment: All Vital to Healthcare Fire and Life Safety

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and two plumbers in charge of that. They spend about three weeks out of a month just doing maintenance and testing. The other week of the month is usually taken up by fire marshal inspections, shut downs and other contractor requests.”

### Fire Drills Every Day

Menzel attributes Barnes-Jewish Hospital’s exemplary safety record to all staff members. “We have more than 400 fire drills every year. Every quarter, for every shift, we have a drill for each of the patient divisions,” he says. “So that means you have two shifts a day multiplied by 50 patient divisions. Then you figure in the ambulatory-care buildings that we drill four times each year. Plus, all the business groups are drilled annually.”

Menzel realizes that unwarranted fire alarms weaken the hospital’s rigid training regimen. To ward off apathy toward what could be perceived as invasive treatment, he uses the element of surprise. “Half of the drills are announced. They know ahead of time that we are having a drill,” he says. “But the other half is unannounced, so the staff is used to responding like there is a real fire. That’s what we need to happen. We had an issue many years ago where people were ignoring the fire alarm system because we were having problems with the bells going off due to the amount of tie-ins we had. People were becoming immune to it.”

To gain more control over the system, a concerted effort was made to reduce the amount of false alarms. This, in turn, made people more accountable for the real alarms. “We put tighter reigns on the contractors because you can’t have the fire department come out three times a night because the alarm system is going off. The cost is \$600 each time they come out,” says Menzel. “We also have modified our hot work-permit system because there were some problems with the way we were reporting work on the system and who it was being reported to. We now have control over the process. We put the detection system into silent mode for the area that is being worked on and monitor any alarm.”

Along with the plant operations team, there are several others involved in this campus-wide effort. “The hospital put

together a team of 10 people from security, facility engineering and safety for the fire drills,” Menzel explains. “We are now set up so that we talk to each other when there will be work on the system. The security department manages the monitoring about four blocks from here because we’re mandated to have offsite monitoring of our system. All of our buildings’ systems report to that location.”

### A Century of Progress

“We will be 98 percent sprinkled as of the end of 2006,” Menzel reports. However, getting to this point was not an easy task. “On the Barnes-Jewish campus, we have buildings with construction dates that range from the early 1900s to our newest one that was opened in 2004.

“The real issue you face is when buildings are partially





renovated over the years,” explains Menzel.

With each new nurse call system or additional lighting, the wire starts to mount up in the ceiling, and eventually becomes jumbled. This mess of wire makes the installation of sprinkler systems tedious.

“When we decided to renovate different areas of the hospital, we bit the bullet and have been dealing with the wiring issue. We are taking the time to put everything into trays, labeling them and cleaning it up.”

The decision to go forward with sprinkling the entire facility was a monumental step to ensure occupant safety. As with any major spending project, the decision required backing from the highest levels of administration. “You do need the support to make these projects happen,” says Menzel.

The hospital’s safety focus spawned an Interior Review Committee that must check all hospital materials for flammability. “We don’t let just any material in the hospital,” Menzel says. “Your carpeting, drapes and such are flame

### People and Visits:

Employees: 9,201  
 Physicians: 1,770  
 Residents/Interns/Fellows: 887  
 Staffed Beds: 962  
 Inpatient Admissions: 50,558  
 Outpatient Surgery Visits: 15,954  
 Outpatient Registrations: 461,059  
 Emergency Department Visits: 70,022

### Life-Safety Equipment:

Flow Switches: 600  
 Pressure Switches: 20  
 Control Valves: 700  
 Dry Pipe Valves: 22  
 Siamese Connections: 14  
 Hose Angle Valves: 900  
 Check Valves: 600  
 Smoke Detection Devices: 7,800

retardant, even the furniture in the room. We use metals and materials that won’t catch on fire. A lot of thought goes into this to make sure we are providing a safe environment. Even the closets are all sprinkled because of the linens. Sprinklers and smoke detection in every patient room is critical.”

### In the Event of Fire

“If we have a fire somewhere, we do not evacuate the building. We move horizontally through the building,” says Menzel. “To move people in a high-rise, especially sick people, is difficult. Most occupants are unable to help themselves, so our focus is on creating safe zones for them to go to in the event of a

fire. But that means we have to be careful of what we do when we change the configuration of the building.”

Equally as important as the layout of the building is the plan that goes into action once an alarm sounds. “If you have a smoke detector alarm going off and then the suppression system kicks in, now you know you have an actual fire,” says Menzel. “Then, if you have more smoke detectors go off nearby, you know it’s spreading. There’s a whole philosophy that goes on in the hospital. You really depend on the systems you put in place to take care of the people. Human intervention and common sense are a big part of the life-safety system.” <sup>[LS]</sup>

## Communication Is Imperative for Duct Smoke-Detector Installations

*Craftsmen must coordinate efforts to properly install detectors.*



The proper installation of duct smoke detectors is critical to preventing the transfer of smoke and other toxic gases during a fire. Unlike standard smoke detectors that are set up by a single installer, heating/ventilation/air conditioning (HVAC)-contaminant monitors can be set up by installers of various trades, making communication imperative.

Installers of at least four crafts may be involved in a duct smoke-detector installation, including an air conditioning or roof top unit (RTU) installer; a mechanical contractor responsible for duct work; an electrician for handling high-voltage wiring and conduit; and a technician who installs the building control panel.

“Traditionally, it goes by union guidelines,” says Chuck

Harding, general manager and founder of Harding Heating in Schaumburg, Ill. “Sheet metal workers do the duct work. So, they connect the smoke detector to the HVAC system. The electricians then provide the power. Those are the traditional jurisdiction lines that are pretty much defined throughout the country, as far as the unions are concerned.”

However, Harding has seen jobs during 20 years of running his own business that were not as traditional. “I’ve also seen each one of the crafts do the entire job by themselves. It just depends on who is on the job. You can’t always assume that all the crafts are involved. If it is a smaller job, it’s not uncommon for the HVAC guy to do it all.”

(Continued on page 10)



# But, What Are the Chances of a Fire?



*The complete Selectable Output Outdoor line includes horn, strobe, and speaker products, all rated from -40° to +151°F.*

You'll find System Sensor products in the strangest places. For example, in order to test the new **Selectable Output Outdoor Speaker/Strobe**, Underwriters Laboratories completely submerged it in water for 24 hours. Then they removed it, dried it out, and subjected it to a battery of audibility tests. Not only that, they sprayed it with multiple water nozzles and exposed it to temperature and voltage extremes, corrosion, and impact tests.

OK, we know you'll never need to install one of our speaker/strobes in a fish tank. But isn't it reassuring to know that System Sensor's new line of outdoor audible/visible products passed every one of UL's demanding tests? What's more, they even passed our own more stringent internal quality requirements. All without blowing a gasket.

And speaking of gaskets, ours have been evaluated — along with our special polymers and outdoor back boxes — to ensure reliable operation from -40° to +151°F. All of this means that our new line of horns, strobes, and speakers is not simply "weatherproof", but **outdoor rated**. There is a difference.

In terms of real-world performance, the new outdoor AV line meets the same high standard you've come to expect from System Sensor. We raised the bar for sound quality in voice evacuation speakers by insisting on the importance of intelligibility. Our outdoor speakers reproduce sound with the same high fidelity as our indoor speakers, while also meeting UL 1480 audibility requirements.

Innovation and reliability don't stop with our speakers; our outdoor horns and strobes are every bit as user-friendly as our indoor products. They incorporate features like dual-voltage strobes with rear candela switch and side candela indicator, and a horn with eight separate tone combinations for volume, frequency, and temporal tone.

Got an unusual application, one where standard audible/visible devices aren't up to the challenge? Specify and install the new System Sensor Selectable Output Outdoor products. Whether it's bitterly cold, sweltering hot, or just plain wet, you'll find they're right at home.

To learn more about the **Selectable Output Outdoor Speaker/Strobe** series and to receive a free copy of the E•DOCS™ CD-ROM from System Sensor, call **800/736-7672**.



advanced ideas. advanced solutions.™

800/736-7672  
www.systemsensor.com

## Communication Is Imperative for Duct Smoke-Detector Installations

(Continued from page 8)

***“I’ve also seen each one of the crafts do the entire job by themselves. It’s not uncommon for the HVAC guy to do it all.”***

– Chuck Harding,  
general manager and  
founder, Harding Heating

### Which Code Authorities Prevail?

The importance of top-down communication can also be critical in making sure a job follows the strict body of laws that govern it. But, sometimes the installers are unaware of which code prevails: national or local. Therefore, communicating the certified code of the Authority Having Jurisdiction (AHJ) is a critical first step for every installer.

For example, installation may be originated by the ductwork installer or the RTU installer. However, if the voltage to power the detector is 120 VAC, in accordance to the National Electrical Code, an electrician must install the conduit and run the wire. Who, then, is responsible for connecting the RTU to the auxiliary relays for shutdown during a fire?

“Fortunately, in larger jobs, this is normally written in the specification,” explains Harding. “The engineer’s orders tell you who is the authority having

jurisdiction. These are written commonly in a way that identifies such-and-such trade will provide ‘X’ service, while another provides different service. A lot of it depends on the detector; some are high voltage, some are low voltage. Again, it all comes back to the engineer’s order, but I have seen it where the owner dictates this. Some dictate a lot on a job.”

Knowing who the AHJ is, therefore, must be relayed to the installers for each job. Companies like Harding Heating, which take on jobs in Illinois, Wisconsin and Indiana, have to

be aware of the many different codes that may be applicable.

“It’s village-to-village and depends on the authority having jurisdiction,” says Harding. “Some villages have more emphasis on some things than others do. For duct smoke detectors in particular, the Building Officials and Code Administrators code says they must be installed in buildings that have 2,000 cubic feet of airflow per minute. But, some village codes exceed this; some don’t. Just like some have remote testing requirements and others don’t. It makes



### DH100ACDCLWP

Conventional Four-Wire, Photoelectric, Watertight NEMA-4 Duct Smoke Detector Specifications:

#### DH100ACDCLWP

Wiring:	4-wire
Operating Temperature Range:	32°F to 131°F (0°C to 55°F)
Storage Temperature:	-22°F to 158°F (-30°C to 70°C)
Operating Humidity Range:	10% to 93% non-condensing
Air Duct Velocity:	100 to 4,000 ft./min.
Dimensions:	5.5" W x 14.375" L x 2.75" D
Shipping Weight:	3.75 lbs.
Voltage Range:	24VAC/VDC; 120/220 VAC
Alarm auxiliary contacts (DPDT):	10 A @ 30 VDC; 10A @ 250 VAC

## Typical Testing Procedures for Duct-Type Smoke Detectors

A manufacturer's specific recommended practices must be followed when testing duct-type smoke detectors (refer to NFPA Standard 90A, Section 6.4, 2002 Edition, and NFPA Standard 72, Chapter 10, 2002 Edition).

In general, all smoke detectors should be tested or inspected at least annually. This will ensure the detectors are sampling the air stream, are operative and are producing the intended response.

Duct fires should not be used to test duct smoke detectors. This procedure does not provide a consistent, measurable method of determining if the detectors are performing properly. The test procedures and test equipment recommended by the detector's manufacturer are the best way to test these detectors.

Most detectors are equipped with a built-in test mechanism, electronic metering equipment or aerosol test apparatus (refer to manufacturer's specifications for details). However, you still have to notify the proper authorities, including those who would automatically receive a real fire alarm signal, to prevent unnecessary responses.

Always restore the zone or system at the completion of the testing. Then, notify all the people contacted at the beginning of the test and let them know that testing has been completed and the system is operational.

## APPLICATION DOCUMENTS

There are several important documents that provide guidance concerning the performance, application and installation of duct smoke detectors:

1. **U.L. Standard 268A, Standard for Smoke Detectors for Duct Applications**
2. **NFPA Standard 90A, Section 6.4 (2002 Edition), Installation of Air Conditioning and Ventilating Systems**
3. **NFPA 92A, Recommended Practice for Smoke Control Systems**
4. **NFPA Standard 72, Chapter 10 (2002 Edition), National Fire Alarm Code**
5. **NFPA Standard 101, Life Safety Code**
6. **ASHRAE Handbook and Product Directory, "Fire and Smoke Control"**



communication very important."

Another code-adherence tip Harding offers is to make sure the duct smoke detector's installation paperwork is handed down the line to the craftsmen who will handle the final phases of installation, as is required by national code. "Passing off the installation manual is a must. We leave it in the detector," says Harding. "But, somewhere down the line, someone takes it or does not think to leave it for the next guy. It's not intentional, but it is a violation of the code."

## Start-up and Maintenance

System Sensor smoke detectors are designed to be as maintenance-free as possible. However, due to the environment they are in, dust, dirt and other foreign matter can accumulate inside detectors, changing the level of sensitivity. This is especially true with duct smoke detectors. More sensitivity results in unwanted alarms. Less sensitivity results in reduced protection. Both cases are undesirable. Detectors should be tested periodically and

maintained at regular intervals (see "Typical Testing Procedures for Duct-Type Smoke Detectors").

"I always tell my customers to follow a stringent testing program," says Harding. "Of course, they work the first day, but what about three years down the road? You have to follow the maintenance procedures set out by the manufacturer, as well as the code. Remember, the building code is there for a purpose: It is the minimum for safety. It is not to be violated or ignored for installation or maintenance." <sup>LS</sup>

## Intelligent Smoke Detectors for Critical Applications

*Ultra-sensitive laser-based technology protects electronic equipment.*

Fire and smoke not only endanger lives, they can also cause varying degrees of damage to any type of facility. In a high-tech facility, such as a hospital, even a small fire can be devastating to its operation.

Electronic equipment is particularly vulnerable to smoke, much more so than heat. In many cases, the fire is contained to a small physical area and extinguished relatively quickly, but the entire facility is still negatively affected by the smoke.

For example, smoke in telecommunications facilities can disrupt service for up to several weeks, cause major disruptions in telephone communications and cause costly damage to equipment, even when the fire is promptly controlled. In critical applications, such as telecommunications switching stations, computer rooms, clean rooms, hospitals, museums, archives and historic buildings, installing the highest sensitivity spot-type smoke detectors is the best bet for protection against damage to electronic equipment.

Intelligent microprocessor-controlled smoke detectors that incorporate laser-based technology, such as System Sensor's laser detector, are able to pinpoint the exact locations of a fire by identifying the address of the detector sensing the smoke. This can greatly reduce response time in real fire situations because smoke at such low levels

is not visible to the human eye.

Ideal for critical applications, System Sensor's laser detector is capable of sensing the presence of smoke and triggering an alarm up to 20 minutes earlier than standard photoelectric smoke detectors. While this type of ultra-sensitive detector works on the same light-scattering principle as standard photoelectric detectors, System Sensor's laser detector operates with sensitivity levels 100 times greater.

Using an extremely bright, controlled laser diode, the laser beam is transmitted through the chamber to a light trap to eliminate any reflection. If a particle of smoke enters the chamber, light from the laser is scattered.

System Sensor's laser detector then uses its patented on-board algorithms to check the nature of the scattered light and determine if smoke is actually present. If smoke is positively confirmed, the alarm signals. The algorithms, which include multi-stage drift compensation, internal self-diagnostics and transient signal rejection algorithms, help prevent nuisance and false alarms, even when set to extremely high sensitivity.

### **Laser Detector vs. Aspirating Systems**

Traditionally, the only way to achieve highly sensitive smoke detection was through the use of

aspirating smoke-detection systems. Aspirating systems operate by drawing air and smoke through a network of pipe, or tubing, which is then routed throughout the protected space. By their nature, these types of systems are subject to the effects of dilution.

During an actual fire, smoke is drawn into the aspirating system's pipe through one of its sampling ports. At the same time, the system's other sampling ports may continue to draw clean air into the pipe from areas that the smoke has not yet reached. As a result, the sensitivity level in an aspirating system's smoke sensor must be set much higher to offset the effects of dilution.

In critical applications that require very early warning detection, you can use either an aspirating system or a detector like System Sensor's laser model. If the building already has a fire alarm control panel, or if one will be installed, System Sensor's laser detector will be more cost effective for several reasons. For one, System Sensor's laser detector will be installed on the same pair of wires as the other detectors that have been installed. Also, the company that installs the fire alarm control panel will install, service and maintain these detectors too.

Laser-based spot-type detectors, such as System Sensor's Pinnacle™ or Notifier's View, are not subject to dilution. In fact,

## Pinnacle™ Intelligent Laser Smoke Detector Specifications

System Sensor's Pinnacle™ Intelligent Laser Smoke Detector is designed for critical applications where highly sensitive smoke detection is required. Specifications for this plug-in type smoke sensor that uses a laser-based sensing chamber are:

### Pinnacle

Operating Voltage Range:	15 to 32 VDC
Standby Current:	330 $\mu$ A @ 24 VDC (one communication every 5 sec. with LED blink enabled)
Max. Alarm Current (LED on):	6.5 mA @ 24 VDC
Operating Humidity Range:	10% to 93% Relative Humidity, non-condensing
Operating Temperature Range:	0°C to 38°C (32°F to 100°F); U.S. -10°C to 50°C (14°F to 122°F); Europe
Height:	1.7 inches (43 mm) installed in B210LP Base
Diameter:	6.1 inches (155 mm) installed in B210LP Base 4.1 inches (104 mm) installed in B501 Base
Weight:	5.0 oz. (142 g)
Additional Bases Available:	All 200/500 Series bases are compatible

they perform as good or better than aspirating technologies in high-sensitivity environments. In an aspirating system, the smoke is sensed at one central unit, allowing dilution to negatively affect response time. With Pinnacle, measurement points away from the fire do not degrade response time, regardless of the size of the fire.

### Flexibility and Cost Savings

In general, systems that incorporate Pinnacle can be extremely flexible and cost effective. For instance, one fire alarm control panel loop can have a variety of smoke detectors installed on one pair of wires. Only critical areas with high-tech electronic equipment that require ultra-high sensitive smoke detection need to use Pinnacle.

Non-critical areas can simply use standard photoelectric or ionization smoke detectors. Regardless of type, all of the detectors install in the same mounting bases, so system designers can seamlessly mix Pinnacle with other standard detection technologies, thereby reducing overall cost. [LS](#)



## UL Revises 1971, Signaling Devices for the Hearing Impaired

*New standards cut back system failure risks.*

In May 2004, Underwriters Laboratories (UL) revised UL 1971, regulating how operating currents are to be measured and how voltage ranges are to be listed and published.

Historically, fire-alarm system designers used 24-volt current draw for computing voltage drops on audible and visible (AV) circuits. However, voltage drops based on 24-volt current draw only provide an illusion of lower current draw, placing the reliability of the circuit in question.

UL recognized confusion within the industry because AV appliance circuit calculations were being performed with the wrong current draw. They saw the potential for circuit failures.

### UL Max to Denote Current Ratings

Seldom is the voltage at AV devices exactly 24 volts. This is due to the natural voltage drop in the circuit. Depending where the device is located on the circuit, the voltage could drop to its lowest operating voltage.

This means that because device currents vary with applied voltage, the only way to assure the power supply will provide enough current to the entire circuit is to measure current for each device at its highest value.

Based on this logic, UL now requires that current-rating published in installation manuals are to symbolize the maximum

current draw (UL Max) over the listed voltage range. These true current ratings will:


1. Reflect device power usage more accurately.
2. Ensure compatibility between devices and outputs on the control panel, regardless of manufacturer.
3. Present comparable current-draw data amongst manufacturers.

### Incorrect Data is Still Printed Today

Despite UL's efforts, some manufacturers are still printing 24-volt current draws on their data sheets. Current draws based

on 24 volts can confuse industry professionals who don't realize that these specifications shouldn't be used for circuit calculations.

To eliminate confusion throughout the industry, System Sensor is advertising a white paper that gives details and examples of the UL 1971 revision.

You can download a free copy of the white paper, and you can sign up for one of System Sensor's Fire Protection seminars to learn about the latest fire-detection technologies and UL requirements, by visiting System Sensor's website at [www.systemsensor.com](http://www.systemsensor.com). 



### The SpectrAlert® P1224MC

is a red Selectable Output Horn/Strobe that self-adjusts for either 12 or 24 volt operation.

24VDC Horn/Strobe UL Max. Current Draw Measurements (mA RMS)

Candela Setting	Temporal			
	Low Volume		High Volume	
	Electromechanical	3000 Hz	Electromechanical	3000 Hz
15	71	70	73	75
15/75	86	85	87	88
30	99	98	100	100
75	166	166	167	170
110	209	209	210	213
Non-Temporal				
15	74	74	79	82
15/75	86	88	93	96
30	101	101	107	110
75	167	167	173	176
110	213	213	218	222

**NEW  
5601P**  
with Plain Housing  
Now  
Available

Model #	Alarm Temp.	Identification Method on Exterior	Activation Type	Circuits
5601P	135°F	None	Fixed Temp./ROR	Single
5602	194°F	Lettering	Fixed Temp./ROR	Single
5603	135°F	Lettering	Fixed Temp.	Single
5604	194°F	Lettering	Fixed Temp.	Single
5621	135°F	Lettering	Fixed Temp./ROR	Dual
5622	194°F	Lettering	Fixed Temp./ROR	Dual
5623	135°F	Lettering	Fixed Temp.	Dual
5624	194°F	Lettering	Fixed Temp.	Dual

# A Line of Mechanical Heat Detectors for All Applications

Now that System Sensor® offers a state-of-the-art, unmarked heat detector, every heat detection application has an advanced solution. The new 5601P is a 135°F fixed, rate-of-rise (ROR) heat detector with no letters, numbers, or markings on the exterior. It is perfect for applications where external markings on the device may compromise the visual integrity of its surroundings.

**Experience** Not all applications are suited for smoke detectors. The 5600 Series is designed for property protection against fire and for non-life-safety installations where smoke detectors are inappropriate. System Sensor's years of research and field-testing experience has resulted in the innovative 5600 Series.

**Benefits** The 5600 Series offers multiple configurations to suit a broad range of installations. Both single- and dual-circuit models offer your choice of fixed-temperature and combination fixed-temperature/rate-of-rise activation, with either 135° or 194° ratings.

**Quality** When it comes to property protection, you can't afford second best. System Sensor is first in quality, dependability and product innovation. Industry-setting features include easily identifiable detection capabilities in alpha-numeric text on seven units and one plain unit housing (5601P), easy-to-use terminal screws that provide a more positive wiring connection, and increased mounting options. Whether you are specifying, installing or recommending, you can count on quality being an integral part of the 5600 Series.

**Service** System Sensor's dedication to meeting your needs doesn't end at the point of sale. We have application engineers ready to help... a customer support department that is on call to support your needs... and technical documentation available 24/7 through automated FAX or CD-ROM.

To learn more about the new line of **Mechanical Heat Detectors** and to receive a free copy of the E•DOCS™ CD-ROM from System Sensor, call **800/736-7672**.



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**800/736-7672**  
www.systemsensor.com

## DH100ACDCLP Photoelectric Duct Smoke Detectors

- Air velocity rating from 100 to 4000 feet per minute
- Patented interconnectability for multi-fan shutdown
- Patented cover tamper trouble signal
- Equipped with two DPDT Form C relay Contacts
- 3-year warranty



## DH100ACDCLWP Watertight Duct Smoke Detector

- NEMA 4 UL listed for non-hazardous indoor and outdoor applications
- Eliminates the need for a separate enclosure
- Air velocity rating from 100-4000 feet per minute
- 24VAC/DC or 120/240VAC operation
- Ideal for rooftop applications



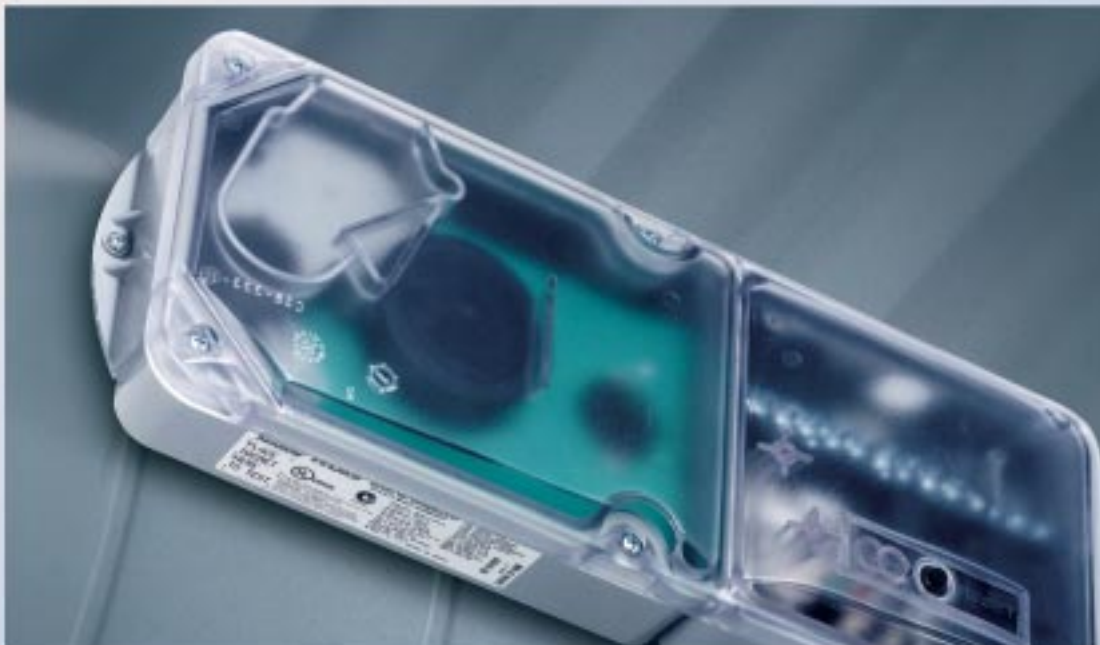
## 2151 Low-Profile Detector for Special Applications

- UL 268A listed specifically for use in 0-500 feet per minute no-flow/low-flow air-handling systems.
- Low standby current
- Field sensitivity metering of detector to meet the requirements of NFPA 72
- 120VAC and 24VAC/DC bases with built-in shunting spring



## Complete Line of Accessories Available, Including the SSK451 Remote Annunciator

- Audible and visible alarm annunciation
- Key activated test and reset functions
- Green, amber, and red LEDs provide visual indication of power, trouble and alarm conditions
- Optional smoke strobe (shown)



## One company, one family, one solution...

**System Sensor** draws on years of experience in designing and testing detection and annunciation devices to offer the **Innovair™** family of duct smoke detectors and accessories. The standard Innovair model, DH100ACDCLP, with Low-Flow technology results in superior detection even in low air speed environments. Time saving features and innovation, coupled with System Sensor's experience and service are at the heart of Innovair's field proven designs.

**Today's** Variable Air Volume systems and fire/smoke damper applications are often associated with lower air speed conditions which can challenge detection devices. Innovair with Low-Flow technology, capable of a 100-4000 FPM air velocity rating, is perfectly suited for these difficult airflow environments.

**To complement** the standard Innovair, Watertight model DH100ACDCLWP with UL NEMA 4 rating is ideal for rooftop applications while providing a greater level of environmental protection. Our complete offering of audible and visual accessories, including the SSK451 Multi-signaling device, broadens the level of annunciation and makes meeting local codes a breeze.

**Call on** System Sensor to simplify your projects and provide cost effective solutions with the Innovair family. System Sensor's dedication to meeting your needs doesn't end at the point of sale. We have application engineers ready, a customer support department on call and technical documentation available 24/7 through the internet or CD-ROM.

Find out how Innovair Smoke Detectors with Low-Flow technology offer an advanced solution to your air duct smoke detection needs. For a free E•DOCS™ CD-ROM, a comprehensive resource of technical information, call **800/736-7672**.



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**Whether you're specifying, installing, or recommending smoke detection products, count on the Innovair family from System Sensor.**