

AMS-220/220T

Addressable Smoke Detector



INSTALLATION AND OPERATION INSTRUCTIONS

**READ THIS INSTRUCTION SHEET THOROUGHLY BEFORE
INSTALLING AND USING YOUR SMOKE DETECTOR**

Features

- **Advanced 90° photoelectric detection pattern and specially designed smoke chamber* for superior detection and dust resistance**
- **Unique high signal-to-noise ratio and superior RFI immunity to prevent false alarms**
- **Excellent smoke access provides reliable detection for all smoke flow directions and velocities**
- **Solid-state LED red Indicator Light**
- **57°C (135°F) fixed temperature heat sensor option (AMS-220T)**
- **Attractive styling for any decor**
- **ULC listed S529 / UL listed UL 268**

Specifications

Current Rating 0.8 mA standby; 1.5 mA in test/alarm mode
Temp Sensor 135°F / 57°C fixed
Smoke Sensitivity 2.3%/ft obscuration ±0.5%/ft (UL) 2.5%/ft obscuration ±0.5%/ft (ULC)
Operating Environment 0°C - 37.8°C (32°F - 100°F) 5% - 93% RH, non-condensing
Field Test Smoke Test programming options Gemini 501 Smoke Alarm Analyser**
Dimensions 2"/51mm deep; 5.13"/131mm wide

Models

- AMS-220: Addressable Smoke Detector
- AMS-220T: Addressable Smoke Detector and Fixed Temp. (135°F / 57°C) Sensor

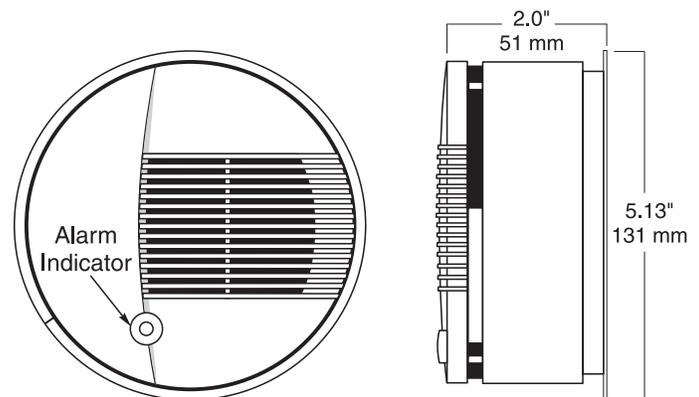
Control Panel Compatibility

AMS220/220T Smoke Detectors are addressable system detectors that are **only** for use with DSC fire and security control panels equipped with the compatible interface. The AMS220/220T Smoke Detectors **cannot** be used with a standard 2-wire smoke detector interface. Any standard 2-wire smoke detector, including the DSC MN220 series, will **not** operate on an addressable circuit. The AMS220/220T series and the MN220 series are **not** compatible, interchangeable or substitutable.

The addressable interfaces have a proprietary power and signaling system. Voltage ratings are not indicative of compatibility. The current rating is provided for circuit loading calculations only. Please refer to the control panel information for details on the installation of addressable circuits.

AMS220/220T detectors are compatible with the following control units:

PC4010/4020 v3.0



Introduction

The DSC AMS-220/220T Smoke Detectors are smoke detectors intended for open area protection. They are suited for commercial, institutional and residential fire alarm systems.

The DSC AMS-220/220T Photoelectric Smoke Detector incorporates many advanced design features to provide years of reliable operation. It is important to follow the installation and operation instructions on this sheet to ensure that the unit will function properly — even the best designed smoke detector will be rendered useless if it is not connected or located properly.

It is very important that you understand how to test and maintain your system. Refer to the instruction manual for your alarm system, and familiarise yourself with how the fire alarm functions of your system operate. Be sure to test your system regularly following the test procedures described in your manual. If you should ever have problems operating or testing your system, and especially if there are problems with the fire alarm functions, contact your smoke detector installer or dealer immediately for service.

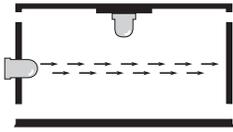
While smoke detectors and alarm systems are designed to warn you of potentially dangerous situations, no system can prevent emergencies. An alarm system is not a substitute for life and property insurance; you should always maintain appropriate insurance coverage.

* Protected under Canadian patent No. 1452296. Other patents pending.

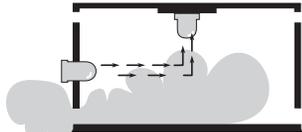
** Gemini Scientific, 1122B Aster Ave., Sunnyvale, CA 94086
Tel: 408-554-0310

How the Smoke Detector Works

As shown in the illustration, a light source is directed across the smoke chamber and is not normally reflected into the sensing element. When smoke enters the chamber, the light beam is scattered by the smoke and is reflected into the sensor. When enough light is detected by the sensor, an alarm is activated.



Normally, light pulses in the Smoke Chamber do not reach the light sensor



Smoke in the Smoke Chamber deflects light into the light sensor, triggering an alarm.

The control panel checks the devices routinely to monitor any alarm or trouble condition. If the device's power is too low, it will send a low power trouble to the control panel.

The AMS-220/220T is programmed to test its sensitivity every 45 seconds. If the sensitivity is too low, it will send a low sensitivity trouble to the control panel.

Normally the indicator light pulses every 45 seconds. When smoke is detected, the indicator light flashes rapidly and a smoke alarm signal is sent to the control panel. When the smoke clears the detector automatically resets, however the control panel will remain in alarm until an access code is entered at a system keypad.

When a high temperature is detected, the indicator light continues to pulse once every 45 seconds and a heat alarm signal is sent to the control panel. The control panel will remain in alarm until an access code is entered at a system keypad. The detector resets automatically when the temperature goes below 135°F/57°C.

Limitations of Smoke Detectors

While the AMS-220/220T Smoke Detector has been designed for reliability, it is important to know that all smoke detectors have limitations.

- Smoke detectors will not work without power. Devices powered from a control panel will not function if the control panel's AC and battery backup power supplies both fail.
- Smoke detectors can only generate an alarm when smoke gets inside the smoke chamber; anything that prevents smoke from entering the smoke chamber may prevent or delay an alarm. Refer to the 'Guidelines for Locating Smoke Detectors' on this *Instruction Sheet*; smoke detectors should be located on at least every floor of the premises, preferably in every room. It is also important to avoid obstructions, such as closed doors, that may prevent smoke from reaching the unit. A smoke detector will not detect a fire in the walls, in the chimney or on the roof of a building until smoke enters the smoke chamber.
- Smoke detectors have certain obvious limitations: they may not provide protection for someone smoking in bed, for children playing with matches, or for sudden and violent explosions. A smoke detector is a single part of overall fire safety precautions. The smoke detector should never be seen as a substitute for a complete fire safety program.

Guidelines for Locating Smoke Detectors

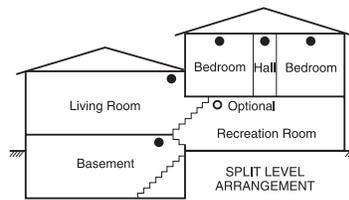
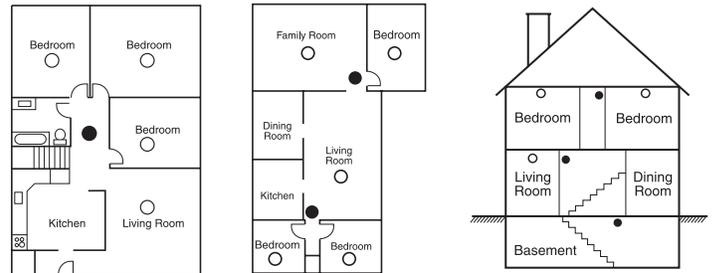
On smooth ceilings, detectors may be spaced 9.1m (30 feet) apart as a guide. Other spacing may be required depending on ceiling height, air movement, the presence of joists, uninsulated ceilings, etc. Consult National Fire Alarm Code NFPA 72, CAN/ULS-S553-M86 or other appropriate national standards for installation recommendations.

Do not locate smoke detectors at the top of peaked or gabled ceilings; the dead air space in these locations may prevent the unit from detecting smoke.

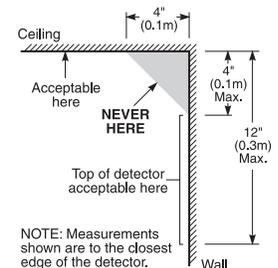
Avoid areas with turbulent air flow, such as near doors, fans or windows. Rapid air movement around the detector may prevent smoke from entering the unit.

Do not locate detectors in areas of high humidity.

Do not locate detectors in areas where the temperature rises above 38°C (100°F) or falls below 5°C (41°F).



- Smoke detectors for better protection
- Smoke detectors for minimum protection



NOTE: Measurements shown are to the closest edge of the detector.

Smoke detectors should always be installed in accordance with NFPA 72, the National Fire Alarm Code. Smoke detectors should always be located in accordance with:

- Paragraph 2-2.1.1.1 of NFPA 72, Chapter 2: "Smoke detectors shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms and on each additional story of the family living unit, including basements and excluding crawl spaces and unfinished attics. In new construction, a smoke detector also shall be installed in each sleeping room."
- Paragraph 2-2.1.1.2 of NFPA 72, Chapter 2: "Split level arrangement. Smoke detectors are required where shown. Smoke detectors are optional where a door is not provided between living room and recreation room."

Owner's Maintenance Instructions

The AMS-220 Smoke Detector is designed to require a minimum of maintenance. If the case becomes dusty, wipe the case gently with a soft dry cloth. If the case is greasy, wipe it gently with a soft cloth slightly dampened with soapy water.

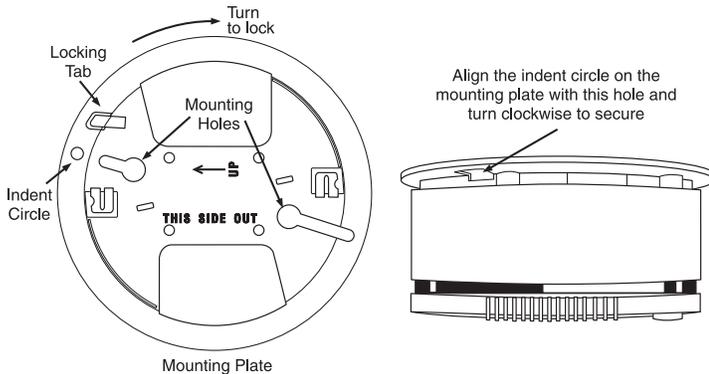
Never disassemble the smoke detector. There are no user serviceable parts inside the unit. Never paint the unit, as paint may prevent smoke from entering the unit. If you are planning renovations or repainting, contact your Installer and ask that the unit be temporarily removed until work is complete.

If the unit is located in an area where it is exposed to high levels of dust or insects and is found to cause false alarms, it may require service; contact your smoke detector installer or dealer.

Mounting the Unit

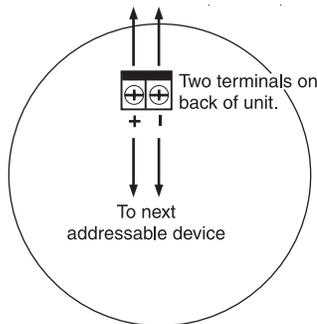
The AMS-220 Smoke Detector mounts to a standard 4" octagonal electrical box.

Remove the mounting plate from the case by pushing the locking tab and turning the mounting plate counter-clockwise. Attach the mounting plate to the electrical box (see diagram below for orientation).



Wiring

Refer to the connection diagram below:



Before connecting the unit, prepare the wires from the electrical box for connection; the wires should not be frayed or bent.

CAUTION: If the power connections are reversed, the unit will not operate. The unit is protected against damage from incorrect wiring.

When wiring is completed, inspect the wiring and correct any errors before applying power to the unit. When the wiring has been thoroughly reviewed, neatly insert the wires into the electrical box and secure the unit to the mounting plate.

THIS EQUIPMENT SHOULD BE INSTALLED IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION'S STANDARD 72 (National Fire Protection Association, Batterymarch Park, Quincy, MA 02269).

Device Enrollment

The serial number located on the back of the device must be enrolled into the alarm control panel via Installer's Programming ([*] [8] [Installer's Code]). This procedure is outlined for the PC4010/4020 v3.0 in the control panel Installation Manual.

WARNING: Connect only DSC Addressable Series devices to the addressable loop connections. Connection of ANY other type of device will impair operation. Any devices other than Addressable Series devices which require power to operate must be powered separately.

Dust Cover

The dust cover is intended to protect the unit from dust and dirt entry, only while the unit is not in service.

CAUTION: The smoke detector will not function with the dust cover in place.

Installation Testing

When all connections are completed, apply power to the system as described in the control panel's installation manual. If all connections are correct, there should be no alarm from any of the smoke detectors. If an alarm occurs, ensure that there is not an actual alarm condition. If there is no actual alarm, remove power from the system and check all smoke detectors for correct wiring.

If no alarm occurs, test each smoke detector by turning the **Smoke Test** option ON in the control panel's installer's programming mode. The programming sections are as follows:

PC4010/4020 (v3.0) Reference Number [0014XX02]
where XX=Partition #

If a detector fails any part of the test, the zone will be latched in the trouble state until the next test or until you exit the Installer's Programming mode. The test will take 60 seconds.

Testing Smoke Detector Sensitivity

The sensitivity of the smoke detector should be verified at least once per year.

Smoke sensitivity may be measured in a correlated UL268 or CAN/ULC S529-M87 smoke box. DSC will conduct this test for a nominal charge. If a returned unit is found outside of its marked sensitivity range, DSC will clean and restore the unit's sensitivity to its marked range.

Smoke sensitivity of installed detectors can be measured without removal with the Gemini Model 501 Aerosol Smoke Detector Analyzer*. Follow the instructions supplied with the instrument. Start with the sensitivity corresponding to the lowest marked detector sensitivity; no alarm should be indicated. Reset with the highest sensitivity setting; an alarm should then be indicated. (Enter an access code at a system keypad to silence the alarm. Consult the system instruction manual for information on fire alarm operation and testing. Before testing, alert the occupants and the monitoring station that a fire alarm test is being conducted.) These results indicate that the unit is within its marked sensitivity range. Other settings can be tried to bracket the detector's sensitivity to a narrower sensitivity range, such as may be important during annual tests to quantify any change over time.

Installer's Maintenance Instructions

Normally, the AMS-220 Smoke Detector will not require maintenance. If the unit is mounted in a high dust environment, the inlet areas of the case may be vacuumed with a soft brush attachment.

Be sure to inform the user and their monitoring station when maintenance of any sort is performed on the smoke detector or any part of the alarm control system. Always test smoke detectors after maintenance. If a smoke detector continues to generate nuisance alarms even after vacuuming, return the unit to DSC for service. Contact DSC at the address and number below to obtain a return authorisation number before returning the unit.

Installer's Responsibility to the User

It is the Installer's responsibility to thoroughly instruct the end user of the system on the operation, testing and maintenance of their system. The Installer should fully explain and demonstrate all functions of the alarm control system and any equipment, such as smoke detectors, connected to it. The user should be provided with all instruction sheets and manuals for their system and any components connected to it. Complete and thorough instruction for the user is essential to ensure they will obtain the greatest benefit from their system. Providing the user with complete operational information will also benefit the Installer through a reduction in service calls for nuisance alarms.

Household Fire Safety Audit

Most fires occur in the home. To minimize this danger, we recommend that a household fire safety audit be conducted and a fire escape plan be developed.

1. Are all electrical appliances and outlets in a safe condition? Check for frayed cords, overloaded lighting circuits, etc. If you are uncertain about the condition of your electrical appliances or household service, have a professional evaluate these units.
2. Are all flammable liquids stored safely in closed containers in a well ventilated cool area? Cleaning with flammable liquids should be avoided.
3. Are fire hazardous materials (matches) well out of reach of children?
4. Are furnaces and wood burning appliances properly installed, clean and in good working order? Have a professional evaluate these appliances.

Fire Escape Planning

There is often very little time between the detection of a fire and the time it becomes deadly. It is thus very important that a family escape plan be developed and rehearsed.

1. Every family member should participate in developing the escape plan.
2. Study the possible escape routes from each location within the house. Since many fires occur at night, special attention should be given to the escape routes from sleeping quarters.
3. Escape from a bedroom must be possible without opening the interior door.

Consider the following when making your escape plans:

- Make sure that all perimeter doors and windows are easily opened. Ensure that they are not painted shut, and that their locking mechanisms operate smoothly.
- If opening or using the exit is too difficult for children, the elderly or handicapped, plans for rescue should be developed. This includes making sure that those who are to perform the rescue can promptly hear the fire warning signal.
- If the exit is above the ground level, an approved fire ladder or rope should be provided as well as training in its use.
- Exits on the ground level should be kept clear. Be sure to remove snow from exterior patio doors in winter; outdoor furniture or equipment should not block exits.
- Each person should know of a predetermined assembly point where everyone can be accounted for i.e.: across the street or at a neighbour's house. Once everyone is out of the building, call the fire department.
- A good plan emphasizes quick escape. Do not investigate or attempt to fight the fire, and do not gather belongings or pets as this wastes valuable time. Once outside, do not re-enter the house. Wait for the fire department.
- Write the fire escape plan down and rehearse it frequently so that should an emergency arise, everyone will know what to do. Revise the plan as conditions change, such as the number of people in the home, or if there are changes to the building's construction.
- Make sure your fire warning system is operational by conducting weekly tests. If you are unsure about system operation, contact your installing dealer.
- We recommend that you contact your local fire department and request further information on fire safety and escape planning. If available, have your local fire prevention officer conduct an in-house fire safety inspection.

Limited Warranty

Digital Security Controls Ltd. warrants that for a period of five years from the date of purchase, the product shall be free of defects in materials and workmanship under normal use and that in fulfillment of any breach of such warranty, Digital Security Controls Ltd. shall, at its option, repair or replace the defective equipment upon return of the equipment to its repair depot. This warranty applies only to defects in parts and workmanship and not to damage incurred in shipping or handling, or damage due to causes beyond the control of Digital Security Controls Ltd. such as lightning, excessive voltage, mechanical shock, water damage, or damage arising out of abuse, alteration or improper application of the equipment.

The foregoing warranty shall apply only to the original buyer, and is and shall be in lieu of any and all other warranties, whether expressed or implied and of all other obligations or liabilities on the part of Digital Security Controls Ltd. Digital Security Controls Ltd. neither assumes, nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

In no event shall Digital Security Controls Ltd. be liable for any direct, indirect or consequential damages, loss of anticipated profits, loss of time or any other losses incurred by the buyer in connection with the purchase, installation or operation or failure of this product.

Smoke Detectors

Smoke detectors that are a part of this system may not properly alert occupants of a fire for a number of reasons, some of which follow. The smoke detectors may have been improperly installed or positioned. Smoke may not be able to reach the smoke detectors, such as when the fire is in a chimney, walls or roofs, or on the other side of closed doors. Smoke detectors may not detect smoke from fires on another level of the residence or building.

Every fire is different in the amount of smoke produced and the rate of burning. Smoke detectors cannot sense all types of fires equally well. Smoke detectors may not provide timely warning of fires caused by carelessness or safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches or arson.

Even if the smoke detector operates as intended, there may be circumstances when there is insufficient warning to allow all occupants to escape in time to avoid injury or death.

Warning: Digital Security Controls Ltd. recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

Important Information: Changes or modifications not expressly approved by Digital Security Controls Ltd. could void the user's authority to operate this equipment.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



For more information and technical assistance:

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