**INSTRUCTIONS FOR INSTALLATION AND USE**

**MN-240 SERIES DC-POWERED SMOKE DETECTORS**

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

**Features**
- Advanced 90° photoelectric detection pattern and specially designed smoke chambers 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.
- Optional Loud Red Piezoelectric alarm horn.
- Solid-state LED red Indicator Light.
- Form A (normally opened, alarm closed) alarm relay (standard);
- Optional Form C (normally opened/normally closed) auxiliary relay.
- 57°C (135°F) fixed temperature heat sensor option.
- Magnet-activated Sensitivity Test Switch.
- The unit will automatically perform a self-test once every 40 seconds and provide an audible trouble indication (in sounder-equipped units) if the unit has insufficient smoke sensitivity.
- Attractive styling for any decor.
- UL listed 5329.

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

**Models**
- MN240 Form ‘A’ Alarm Relay
- MN240T Form ‘A’ Alarm Relay and Fixed Temp (57°C) Sensor
- MN240R Form ‘A’ Alarm Relay and Auxiliary Form ‘C’ Relay
- MN240RT Form ‘A’ Alarm Relay and Auxiliary Form ‘C’ Relay and Fixed Temp (57°C) Sensor
- MN240S Form ‘A’ Alarm Relay and Sounder
- MN240ST Form ‘A’ Alarm Relay and Sounder and Fixed Temp (57°C) Sensor
- MN240SR Form ‘A’ Alarm Relay and Sounder and Auxiliary
- MN240SRF Form ‘A’ Alarm Relay and Sounder and Auxiliary Form ‘C’ Relay
- MN240STF Form ‘A’ Alarm Relay and Sounder and Auxiliary Form ‘C’ Relay and Fixed Temp (57°C) Sensor

**Introduction**

The DSC Meridian MN 240 Series Smoke Detectors are four-wire smoke detectors intended for open area protection. They are suited for commercial, institutional and residential fire alarm systems. The DSC Meridian 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 or User 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.

**How the Smoke Detector Works**

As shown in the illustration, the 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. On alarm, the Alarm Indicator Light will come ON and the Alarm Relay is activated to send an alarm signal to the control panel. The Sounder and the Auxiliary Relay, if equipped, are also activated on alarm. When the smoke clears from the smoke chamber, the unit will only reactivate the Sounder. The Relay(s) and Indicator Light will remain in the alarm state until reset by turning off the power supply from the control panel.

**Alarm Indications**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Alarm LED</th>
<th>Relay(s)</th>
<th>Sounder (if equipped)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Smoke or Heat</td>
<td>Pulse every 40 s</td>
<td>Deactivated</td>
<td>Silent</td>
</tr>
<tr>
<td>Smoke or Heat</td>
<td>On</td>
<td>Activated</td>
<td>Alarm</td>
</tr>
<tr>
<td>Automatic Self Test</td>
<td>Pulse every 40 s</td>
<td>Deactivated</td>
<td>Silent</td>
</tr>
<tr>
<td>Functioning Normally</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic Self Test</td>
<td>Pulse every 40 s</td>
<td>Deactivated</td>
<td>Chopped every 40 s</td>
</tr>
<tr>
<td>Insufficient Sensitivity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity Test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functioning Normally</td>
<td>ON</td>
<td>Activated</td>
<td>Alarm</td>
</tr>
<tr>
<td>Sensitivity Test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functioning Normally</td>
<td>OFF</td>
<td>Deactivated</td>
<td></td>
</tr>
<tr>
<td>Sensitivity Test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient Sensitivity</td>
<td>Pulse every 40 s</td>
<td>Deactivated</td>
<td>Silent</td>
</tr>
<tr>
<td>No Smoke or Heat</td>
<td>But Latched in Alarm</td>
<td>ON</td>
<td>Steady</td>
</tr>
</tbody>
</table>

**Limitations of Smoke Detectors**

While the Meridian 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 fail both.
- 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 Sensors on this Instruction Sheet; it is important that smoke detectors be located on at least every floor of the premises, preferably in every room. It is also important to make sure that the detectors are located so as to block dead air spaces into 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 sensor of a total 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 spacings may be required depending on ceiling height, air movement, the presence of joists, uninsulated ceilings, etc. Consult NFPA 72 (1993), CAN/ULC-S520-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 smoke 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).

**Testing Your Smoke Detector**

Never use burning or smouldering materials to test a smoke detector. Also, do not use high pressure aerosols to test smoke detectors. The use of burning materials or high pressure aerosols can give misleading and meaningless results.

Test the detector for minimum sensitivity by activating the test feature. To test the unit, hold the test magnet against the case as shown below. The Alarm Indicator Light will come ON, the Alarm Relay will be activated, the Sounder (if equipped) will sound, and the alarm control panel will indicate a fire alarm. The Sounder is controlled, but the Alarm Light and Relay will remain ON. Turn off the voltage supply to the detector for two seconds to reset the detector to normal.

Test the smoke detector after it has been installed, but before the Smoke Detector Installer or Dealer for service.

Smoke Sensitivity may be measured in a correlated UL217 or CAN/ULC-S520-M86 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. 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.

**Owner’s Maintenance Instructions**

The Meridian 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 the case gently with a soft cloth dampened with soap and water. Never disassemble the smoke detector; there are no user serviceable parts inside the unit. Never paint the unit, as paint will reduce the effectiveness of the smoke alarm.

Never disassemble the smoke detector; there are no user serviceable parts inside the unit. Never paint the unit, as paint will reduce the effectiveness of the smoke alarm.
Fire Safety In The Home

Most fires occur in the home, and to minimize this danger, it is important that a household fire safety audit be conducted and a family escape plan be developed.

Household Fire Safety Audit

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 evaluation.
2. Are all flammable liquids stored safely in closed containers in a cool, well-ventilated area? Cleaning with flammable liquids should be avoided.
3. Are hazardous materials such as matches out of the reach of children?
4. Are furnaces and wood burning appliances properly installed, clean, and in good working order? If in doubt, have a professional evaluation.

Family Escape Planning

There is often little time between the detection of a fire and the time it becomes deadly. Because of this, it is 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. It is essential that escape from a bedroom be possible without opening the interior door. Consider the following when making your escape plans:
   - Make sure that doors and windows that open to the outside are easily opened. Ensure that they are not painted shut, and that their locking mechanisms operate properly.
   - If opening the exit 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.
   - The family home is a well-determined assembly point where everyone can be accounted for; for example, across the street or at a neighbour’s house.
   - Once everyone is in the house, call the Fire Department.
   - A good plan emphasizes quick escape. Do not investigate first or attempt to fight the fire, and do not attempt to rescue belongings or valuables at this time. Once outside, do not re-enter the house; wait for the Fire Department.
   - Write the plan down and rehearse frequently so that should an emergency arise, everyone will know what to do. Review the plan as conditions change; for example, when there are more or fewer family members in the home, or if there are changes to the house.
   - Make sure your fire warning system is operational by conducting weekly tests. If you are unsure about system operation, contact your Smoke Detector Installer or Dealer.
   - It is recommended that you contact your local fire department and request further information on home fire safety and escape planning. If available, have your local fire prevention officer conduct an in-house fire safety inspection.

The Meridian Smoke Detector

12 to 24Vac or Full Wave Rectified power must be supplied from a ULC-listed power supply or the auxiliary power terminals of a ULC-listed alarm control unit. Wiring should be in accordance with the Canadian Electrical Code, Part I, and applicable local codes.

Installation Instructions

Specifications
Nominal Operating Voltage 12 - 24Vac or 24Vdc
Maximum Operating Voltage Range 10 - 30Vdc, or 12 - 24Vdc

Standby Current @12 & 24V
M240 15µA 45µA 35mA
M240T 25µA 60µA 45mA
M240R 25µA 60µA 45mA
M240RT 25µA 60µA 45mA
M240S 15µA 45µA 35mA
M240ST 15µA 45µA 35mA
M240SR 15µA 45µA 35mA
M240SRRT 15µA 45µA 35mA

Relay Rating (Resistive)
Form A Relay 1A at 30Vac / 24Vac
Form C Relay 2A at 30Vac / 24Vac
Smoke Sensitivity 2.5% 5% 95% RH, non-condensing
Operating Environment -5°C - 50°C (-22°F - 122°F)
Field Test Magnet-activated switch and/or **
Geminini 501 Smoke Alarm Analyser**
Tel: 408-584-0310

Dimensions

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.

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, securely insert the wires into the electrical box and secure the unit to the mounting plate.

For Information and Technical Assistance:

Digital Security Controls Ltd
1645 First Road
Downview, Ontario
Canada M3J 2G6
Phone: (416) 665-8460 • Fax: (416) 665-7498

Digital Security Controls Ltd
© 1997 Digital Security Controls Ltd.