



DASMA TECHNICAL DATA SHEET

Door & Access Systems
Manufacturers Association
International

OPERATOR & ELECTRONICS DIVISION

#368

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Sensing Edges

INTRODUCTION

Sensing edges respond to obstructions in openings controlled by garage doors, rolling doors, rolling grilles or gates and signal motor operators. These edge devices are usually attached to, or are part of, the bottom edge of an upward acting door or grille - or a leading and/or trailing edge of a horizontally moving gate. Activation of a sensing edge will cause the motor operator to perform one of three different actions on the door/grille/gate:

1. stop during either a closing or an opening movement,
2. stop and open during a closing movement, or
3. prevent a closing action from an open position.

This Technical Data Sheet will help you understand the capabilities of sensing edges and will provide important safety information. It is important to remember that a sensing edge provides a signal to an operator and does not itself control a door/grille/gate.

PRINCIPLES

NON-MONITORED EDGES

Pneumatic Sensing Edge

A pneumatic sensing edge is a flexible astragal or weather seal, with a rubber or plastic tube inside the full length of the astragal. A plug seals one end of the tube and the other end is attached to a pneumatically activated electric switch that is connected to the control circuit of the motor operator. When a door/grille/gate closes on an obstruction, the pressure in the tube increases and activates the electric switch. – thus activating the sensing edge circuit.

Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.

This Technical Data Sheet was prepared by the members of DASMA's Operator & Electronics Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacture or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.

Electric Sensing Edge

2 wire - An electric sensing edge consists of two (2) adjacent conductive materials inside an astragal. These conductive materials are normally separated by a small gap. When the astragal is compressed, the conductive materials make contact - thus activating the sensing edge circuit.

MONITORED EDGES

Electric Sensing Edge

2 wire – monitored – An electric sensing edge that functions with self-monitoring circuitry. This circuitry detects fault conditions in the edge. Special motor controls may be required.

4 wire - An electric sensing edge having wires connected to both ends of the conductive materials to check for open or short conditions in the edge itself. Special motor controls may be required.

Optical Electronic Sensing Edge

An optical electronic sensing edge consists of a light transmitter and a light receiver. The system contains self-monitoring circuitry to detect faults occurring from eye blockage, wiring opens/shorts, and loss of power. The transmitter and receiver may be inserted into the weather seal (astragal) or inserted into a holder. When a door/grille/gate closes on an obstruction, the light beam is interrupted - thus activating the sensing edge circuit.

Invisible Field Sensing Edge

An invisible field sensing edge is a non-contact sensing system consisting of a flexible astragal with an integrated sense antenna that is a part of a powered closing device. Connected to this sense antenna are electronics that create an invisible field that surrounds or precedes the closing device. The invisible field will sense conductive objects in its path before contact is made. When an obstruction is sensed, the invisible field circuitry will send a signal - thus activating the sensing edge circuit.

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IMPORTANT SAFETY INFORMATION

Sensing edges must be visually inspected and tested in accordance with the manufacturer's written instructions for damage to the sensing edge and the wiring between the sensing edge and the motor operator. The stopping capability must be tested frequently. It is important to refer to the operator instructions and to contact the operator manufacturer or sensing edge manufacturer for information on compatible sensing edges. Fault conditions may be overridden by manual control of the door/grille/gate if provided by the motor operator.

Pneumatic Sensing Edge

To ensure safe operation of the door/grille/gate, the electric air switch should be adjusted to the highest sensitivity that is practical. If the tube is cut open or an end plug falls out, the sensing edge may not function properly. In order to prolong the life and effectiveness of the sensing edge, the tube inside the pneumatic sensing astragal should not be compressed when the door/grille/gate is closed. Stops can be attached to the door/grille/gate to prevent a compressed astragal from occurring.

Two-Wire Electric Sensing Edge

In the event that the conductive strips break, the section of the sensing edge beyond the break will cease to function. It is important to frequently test the activation along the entire length of the sensing edge. When a wire is open between the sensing edge and the motor operator, such as coil cord or retracting reel, the sensing edge capability is lost until the circuit is restored.

Four-Wire Electric Sensing Edge

Circuits for these types of sensing edges are designed to keep a motor operator from closing the door/grille/gate when a fault is detected. Any short or open will cause a fault condition. (Note: Special motor controls are required.)

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Optical Electronic Sensing Edges

Circuits for these types of sensing edges are designed to keep a motor operator from closing the door/grille/gate when a fault is detected. Any eye blockage, wiring opens/shorts, or loss of power will cause a fault condition. (Note: Special motor controls are required.)

Field Sensing Edge

Circuits for these types of sensing edges are designed to keep a motor operator from closing the door/grille/gate when a fault is detected. Any short or open in the antenna (sensor) or loss of power will cause a fault condition. (Note: Special motor controls are required). When detecting a fault in any of the monitored functions, the sensing edge sends a signal to the motor operator indicating that there has been a sensor fault. The motor operator must then take appropriate safety related action. (Note: A non-conductive obstruction will not be detected prior to contact. Individuals and metal items are conductive, but paper, wood and plastic are not conductive and will not be detected.)

Transmitters

Wireless transmitters and receivers can be used to send signals to the door/grille/gate operator in place of “hard wires”, i.e. coil cords, retracting reels, etc.. Common wireless transmitter systems are radio frequency (RF) and infrared (IR). The transmitter is activated when the sensing edge is contacted. RF system range and operation may be affected by metal objects, EMI (electromagnetic interference) or RFI (radio frequency interference). Receiver antennas should be located as high as possible or away from the metal enclosure of the door/grille/gate control. IR systems require an unobstructed line of sight between the transmitter and receiver. Periodic maintenance is required to ensure system integrity (such as servicing batteries).

Installation

DASMA recommends that installers of doors, grilles and gates verify that all functions of the commercial door/grille/gate and the operator are working correctly according to the manufacturer’s installation instructions and also verify that the sensing edge works properly.

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