STS® Passenger Protection System for Rail Doors

Sensotech inc

Sensotech STS® Sound to Sight for Rail Doors

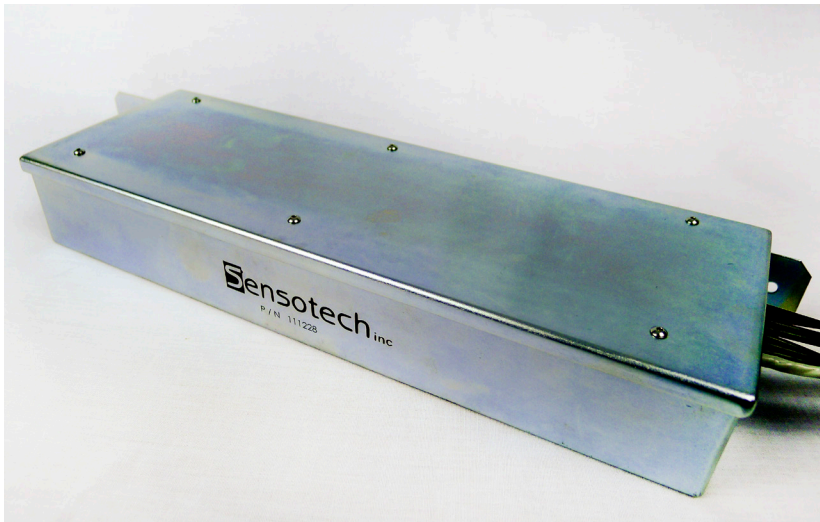
Solid state, contactless, intelligent, ultrasonic technology for door obstacle detection

The STS system improves door safety to better accommodate the young, aging, and physically challenged populations. Additionally, STS requires virtually no maintenance and enhances door system functionality.

The Advantages of Intelligent, Ultrasonic Door Sensors

Sensotech's STS technology provides you with a contactless rail door obstacle & passenger detection system that is uniquely intelligent and completely reliable. Here are the advantages for rail doors:

- ***Improves passenger comfort and safety*** – STS system monitors the complete door opening and prevents rail doors from making contact with passengers while the door is closing.
- ***Reduces Maintenance Expenses*** – the STS system replaces the high life cycle costs of optical detection sensors, push buttons, tape switches, touch bars, and light beams.
- ***Reduces Dwell Time*** – STS allows the doors to react directly to the stream of passengers, thereby reducing dwell time.
- ***Minimizes Passenger Contact*** – safe, inaudible and invisible ultrasonic sensor system minimizes passenger contact with the doors (doors will re-open if they are about to come into contact with a passenger).
- ***Robust Components*** – designed to resist dirt, humidity, temperature extremes, carbon dust, and vandalism.
- ***Advanced Detection Sensors*** – enhance function of existing sensitive edges and allow for integration of any kind of contact-sensitive edge to improve protection.
- ***Reliable Performance*** – solid-state signal processing attached to the car interior eliminates false activations.
- ***Diverse Applications*** – for new vehicles and retrofit installations across all types of rail vehicles & door types.
- ***Detection Quality*** – STS can also operate when the door is in its final closing stage; furthermore, STS detects moving and stationary objects but is not confused by hail, snow, or rain.
- ***Via its Command to open option*** – STS may allow contact-free selective door opening on passenger demand which improves comfort and enables energy savings.



A Multi-Function Exit Door Solution

STS consists of ultrasonic transducers and a signal-processing module. When activated, STS transducers emit bursts of ultrasonic pulses that survey specific spaces within the doorway. The signal-processing module instantly analyzes the echoes received by the sensors to determine whether or not an object (person, parcel or obstruction) is present. When an object is detected, the signal processing module signals to the door controls and initiates the appropriate door function. The STS system can be programmed to provide different functions during each phase of the door operation.

- ***Contactless Sensing*** – STS may work harmoniously to enhance the function of sensitive edges. As the doors close, the STS system enables passengers to exit without contacting the doors.
- ***Hold Open*** – STS system may function in hold open mode as follows: STS detects the stream of passengers and holds the door open for passenger safety and convenience.
- ***Command to Open option*** – STS system may function as a touch bar or touch tape for passenger actuation when a door is enabled but still closed.

STS system shown above is in the **Command to Open** function: when passengers place their hands anywhere within the detection zone, STS signals to open the doors (providing that the doors have been enabled).

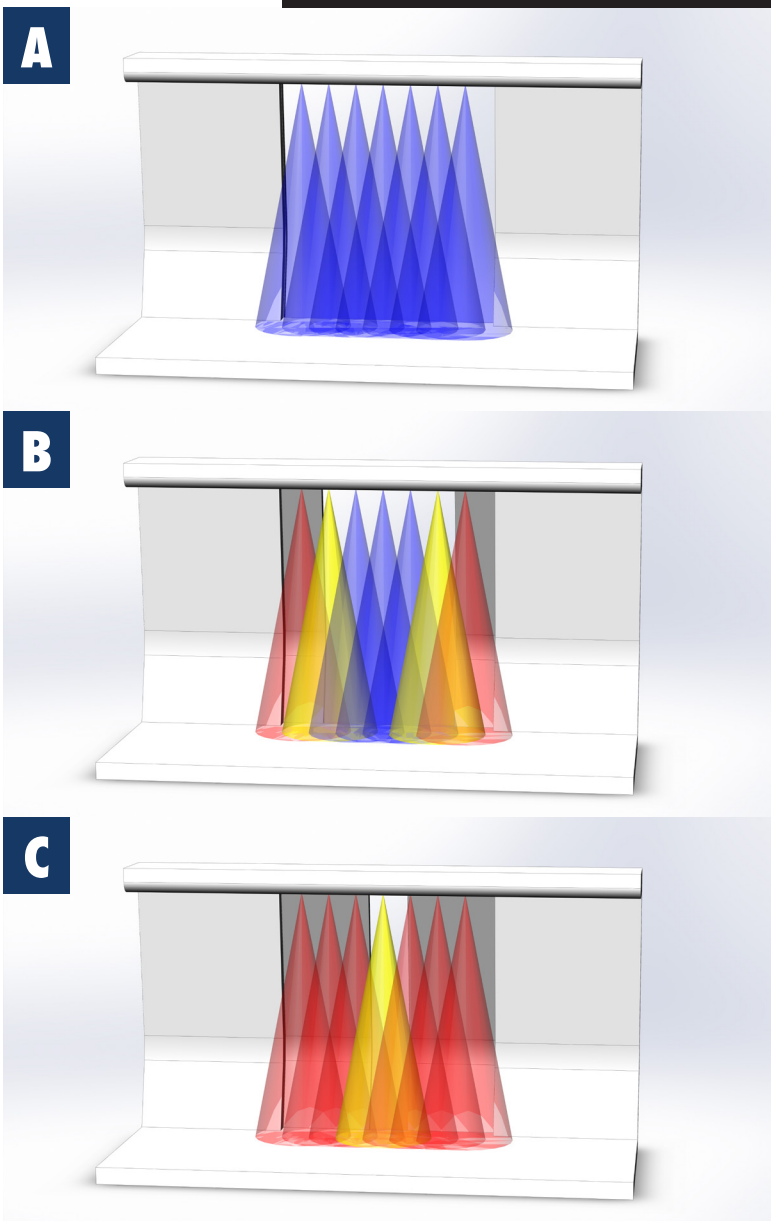
STS® Detection Zone and Actuation Operation

Here is an example of STS detection zones and operation on a rail sliding door. Other STS zone configurations may be used to optimize performance with specific vehicles and/or door and/or operating practices.

Illustration A: When the doors are fully open, the signal-processing module automatically activates all transducers. This extends the detection zones almost to floor level and to the full door opening width which allows the STS system to monitor the entire exit door area and maintain the doors in their open position for any entering or exiting passengers.

Illustration B: As the doors begin to close, the sensors continue to monitor the gap between the doors.

Illustration C: When the doors are nearly closed the center transducer continues to detect activity. It can remain in that mode for as long as is required by the customer. STS may be turned off at any time while the door is closing depending on customer specific requirements. Typically it is set to remain active until the doors are within 10mm of their fully closed position.



- Active transducer monitoring for objects
- Active transducer acknowledging presence of the door within its detection zone
- Non-active transducer (the doors have already passed its detection zone)

Ideal for Any Rail Application

The STS system can be applied to all transit vehicles and common door geometries. The STS system can be installed on new vehicles during manufacture, or retrofitted onto many existing vehicles. Your Sensotech representative would welcome an opportunity to review your specific applications and through consultation arrive at the appropriate configuration and functionality.

STS Difference

- Contactless both for on-demand door opening, and passenger protection upon closing
- Continues to be active until the rail door is virtually closed
- Immune to carbon dust and weather conditions
- Programmable detection zones and self monitoring (self diagnosing)

Unlike passenger detection systems based on infrared or visible light, the STS system self calibrates and can monitor different spaces during various phases of the door operating cycle. This is a significant advantage that facilitates object detection regardless of light levels, ambient temperature, moisture, humidity, and rain.

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Specifications

Design Life

- 15 Years

Power Supply

- Operating Voltage: 36VDC or 72VDC nominal
- Minimum Operating Voltage: 10VDC
- Maximum Operating Voltage: 80VDC
- Maximum Surge Voltage (1 sec. max. duration): 100VDC
- Transient Voltage Spikes (1 msec. max. duration): +/- 250VDC
- Total System Power Consumption: 10W max.

Inputs

Working voltage range is the same as the main power voltage specification.

Outputs

- Dry contacts capable of driving 200mA inductive load
- Solid-state outputs capable of sinking or sourcing 500mA

Sensors

- Power: +120 volts from internal power supply
- Analog Output: AC coupled 0-5 volts peak
- Operating Frequency: 40 kHz to 60 kHz

Temperature Range

- -20° C to +60° C

For more information on the STS system, and other Sensotech products, please contact Sensotech.

Call today: (514) 788-5135
Or visit us online: www.sensotech.ca

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