



Public Transportation

Solutions for passenger protection

Mayser components protect passengers in public transportation

The entry and exit areas of buses and trains are major hazard zones in public transportation. Reliable obstacle detection and drag detection systems are important concerns not only for passengers and transport providers, also for manufacturers of vehicles and vehicle doors. The Mayser system provides this safety.

It features these safety components:

- APS: Anti-pinch sensor
- Safety edges with safety elements
- Control units
- Safety steps

Mayser safety systems have been exceeding statutory regulation demands for over 20 years. The company is the leader in product quality in both Europe and North America along with being the world class leader in drag detection. Thanks to the reliability and availability of its solutions, the company is a yardstick for door area safety. Furthermore, Mayser safety systems integrate seamlessly into public transportation vehicles. This ensures higher cycle times.

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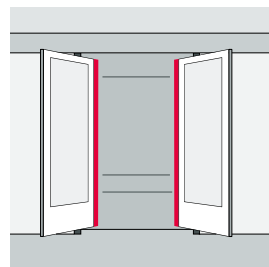
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1 Areas of application

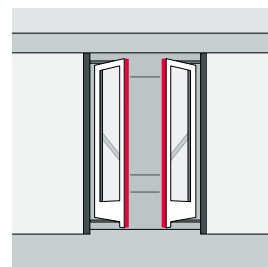
Mayser supplies pressure-sensitive sensors for buses and trains. Our sensors stop dangerous movements of automatic doors. They also provide reliable obstacle detection and drag detection.

Mayser offers solutions for:

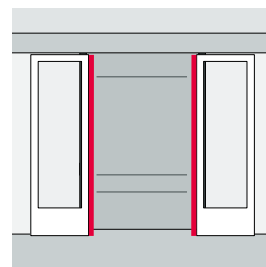
- External swing doors
- Bi-fold Doors
- Plug Doors
- Platform Screen Doors
- Entry Steps/Floors
- Wheel Chair Ramps
- Roof Hatch/Power Vent
- Power Windows
- Other custom applications



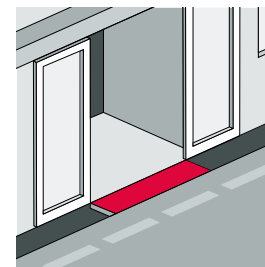
External swing door



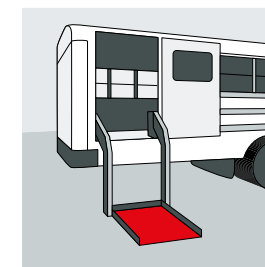
Bi-fold Doors



Plug door



Safety step



Wheel Chair Ramps

2 Our Solutions



APS: Anti-pinch sensor

With this safety element Mayser developed highly sensitive anti-pinching sensors with short reaction times for buses and trains. The detection of the smallest objects, such as fingers or feet, prevents major injury. In particular, protection against dragging can prevent fatal accidents. In the interest of sustainability, Mayser sensors can be retrofitted onto existing door systems with only a change in the extruded door seal.



Safety edges with safety elements

The pressure-sensitive finger protection profiles on the doors have integrated safety elements. They react to even very small objects by stopping the closing movements of doors.



Sensor profiles

The SP (Sensor Profile) series is a custom designed solution around your application. This is a single extrusion that includes both the sensitive edge and the extruded profile as one unit. This offers a lower cost solution for some applications.

The SP series has a protection class of IP67 for exterior door use.

3 APS: Anti-pinch sensor

These sensors are installed in extruded profiles and offer obstacle protection at pinch and shear edges. If the safety edge encounters an obstacle, the dangerous movement is stopped immediately. Due to their high flexibility, they can be retrofitted or easily modified to individual customer requirements. Our sensors can work in very low installation height application.

They are furthermore extremely resistant to heat and fire.



Your benefits

- ✓ Fire resistant
- ✓ Easily fit to various radii and angles
- ✓ Insensitive to temperature
- ✓ Accreditation: Automotive ISO/TS 16949 and ISO/TS 14001
- ✓ Compliant according to APTA-PR-CS-S-012-02
- ✓ Specialized in custom solutions



Technical data

Overall height	• 7 – 8 mm
ISO 13856-1	
Actuation force	• < 150 N
B10D	• > 4x 10 ⁶
Covering	• 2K coating structure surface
Degree of protection: IEC 60529	• IP67
Operating temperature	• – 25 °C to + 70 °C
Customized mod. options	• Form
	• Color
	• Variable cable exit configurations

4 Safety edges with safety elements

Safety edges with safety elements as well as sensor profiles react to very small objects to stop the closing motion of the door. The movement of the door is stopped before an injury can occur. These sensors also offer monitoring to let the operator know it is working properly at all times. Mayser also offers specially developed fire-resistant elements.

Technical data

Operating principle	<ul style="list-style-type: none"> • Pressure-sensitive
Areas to be protected	<ul style="list-style-type: none"> • Main closing edge • Secondary closing edge
Degree of protection	<ul style="list-style-type: none"> • IP67
Applied standards	<ul style="list-style-type: none"> • UNECE-R 107 • EN 14752 • VDV 111 • VDV 157
Fire protection standard	<ul style="list-style-type: none"> • EN 45545-2 • UNECE-R 118
Electronic version	<ul style="list-style-type: none"> • Switch principle • Closed-circuit current principle
Customized modification options	<ul style="list-style-type: none"> • Customized profile design • Development of safety elements according to customer requirements



Safety edges with retracted safety element

Your benefits

- ✓ Monitoring of the safety elements according to the closed circuit current principle
- ✓ Meets all legal requirements
- ✓ Professional competence / industry expertise
- ✓ Broad range of sensors
- ✓ Very flexible for customized adjustments



The Mayser brands RailFR® and RoadFR are fire-resistant sensors and cables which comply with the standards EN 455 45-2 R26 Level HL3 and UNECE-R 118 even without rubber profile.

5 Sensor profiles

The SP sensor profile series is specially designed for the requirements of buses and trains. The design allows convenience of handling and offers a high degree of flexibility including drag protection.

Technical data

Operating principle	<ul style="list-style-type: none">• Pressure-sensitive N/O switch principle
Standard Overall height	<ul style="list-style-type: none">• 20 – 70 mm
Actuation angle	<ul style="list-style-type: none">• $\pm 45^\circ$
Applied standards	<ul style="list-style-type: none">• EN 12978• ISO 13849-1• ISO 13856-2
Degree of protection	<ul style="list-style-type: none">• IP67
Actuating distance	<ul style="list-style-type: none">• 6 – 8 mm
Custom adaptation	<ul style="list-style-type: none">• Drag Protection• Color• Actuation Distance• Switching Force• Multiple sensors per profile• Lips on leading edge• and more
Switching forces at room temperature	< 150 N (test bar $\varnothing = 80$ mm)



Your benefits

- ✓ User-friendly design
- ✓ High degree of protection (IP67)
- ✓ Fast switching behavior
- ✓ Testing basis: EN 12978, ISO 13849-1, ISO 13856-2
- ✓ Different mounting variants based on customer requirements



We offer complete in-house services from development to design all the way to series delivery.

6 Supplementary products

Control units

Control units are a component of the pressure-sensitive protection system. They analyze the output signals from the sensors and immediately trigger the required safety measures. They are available in different versions and safety categories for different areas of application.



Safety steps

Mayser safety steps are horizontal surface protection devices for the entry and exit area of buses and rail vehicles. The surface sensors form pressure-sensitive surfaces to protect entry aids like ramps and power steps.

Your benefits

- ✓ Individually adjusted surface geometry
- ✓ Minimal quantities
- ✓ Complete solution provider
- ✓ Automatic monitoring of the function according to the closed-circuit current principle
- ✓ Maintenance-free
- ✓ Resistant to environmental influences and normal chemical influences

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