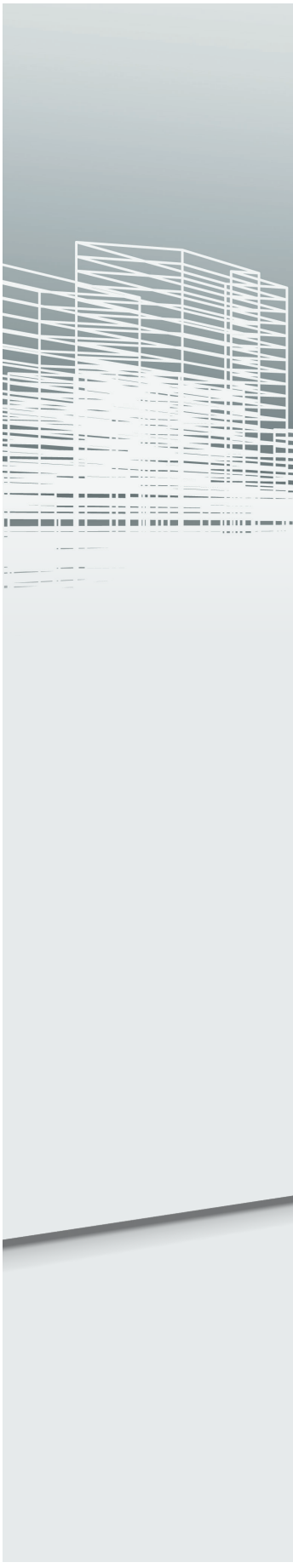
MAYSER®

PUBLIC TRANSPORT

MAYSER MAKES GETTING ON AND OFF SAFE.



Expertise

PASSENGER SAFETY IS OUR PASSION

The entry and exit area of buses and trains is a major danger zone in public transport. Safe, anti-pinch sensor systems are not just an important consideration for passengers and transport companies, but rather also for the manufacturers of vehicles and vehicle doors. That's why Mayser insists on products of the highest quality and is the leading provider of anti-pinch systems. Our systems are designed for all public transport vehicles and can be either fitted during production or retrofitted.

Our systems feature the following safety components:

- Sensors and sensor profiles
- MY Non-Touch Detection System
- Finger protection strips
- Safety steps

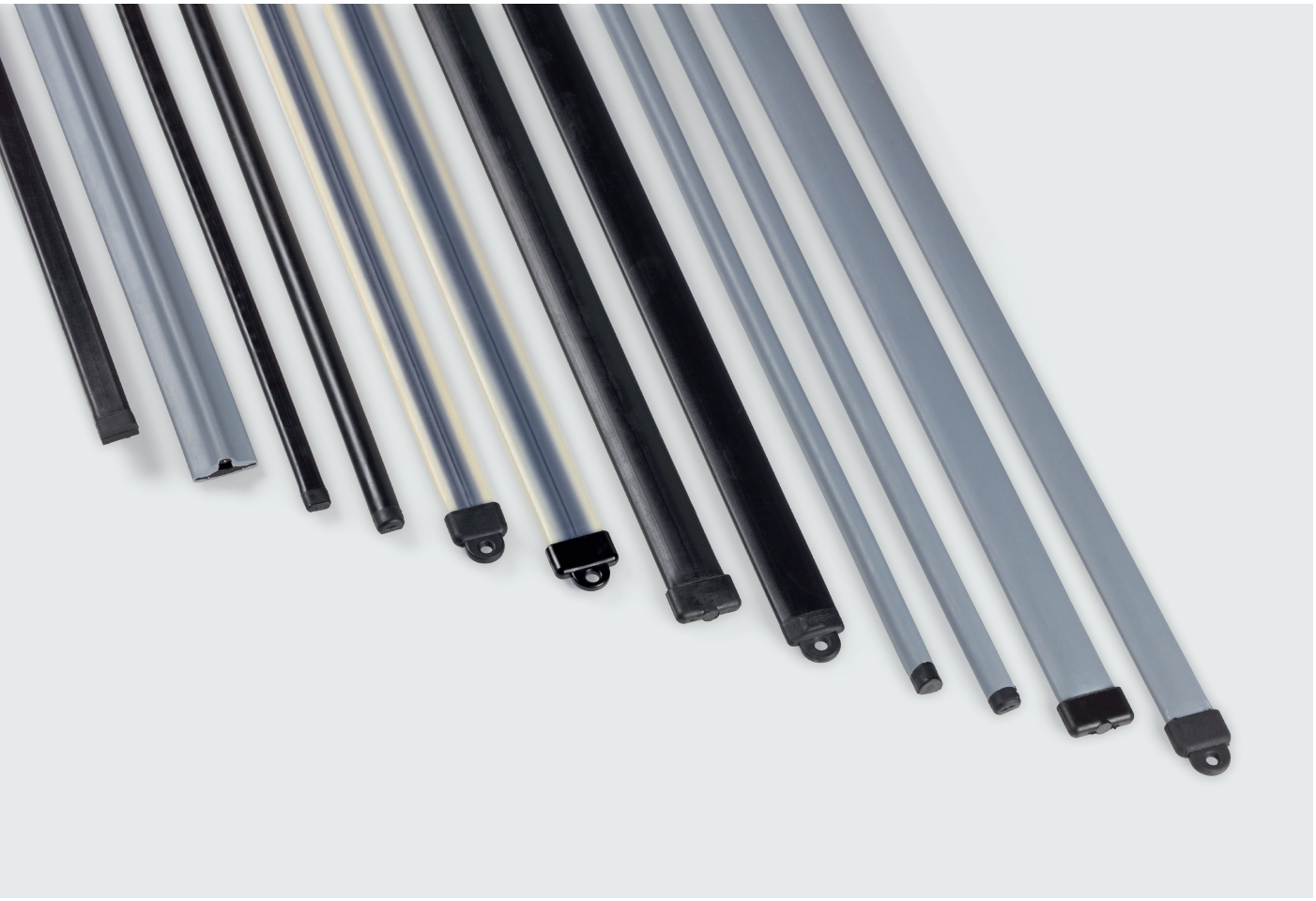
Our areas of expertise:

- Turn-key solutions
- Customer-specific designs
- High-level technical expertise for all vehicle types

1. Pressure-sensitive or non-touch detection in the direct danger zone to protect against bumping, trapping or dragging.

2. Finger protection strips integrated seamlessly into the doors as a complete door-protection solution.

3. Safety features in extending steps prevent impacts against waiting passengers when step is extending, and prevent retraction if anybody is still standing on the step.



HIGHLIGHTS

- ✓ Meets all statutory requirements
- ✓ Pressure-sensitive anti-pinch sensors for maximum safety
- ✓ Directional activation
- ✓ Drag detection
- ✓ Bump protection
- ✓ Flexible for customer-specific adaptations
- ✓ Monitoring via end resistor (cable break, activation,…)
- ✓ Easy assembly
- ✓ Resistant to many chemical substances

Sensors and sensor profiles

TINY DIMENSIONS, HUGE RELIABILITY

Anti-pinch sensors and drag detection are two important features of safe door systems in modern entry and exit areas. Mayser boasts an extensive portfolio of sensors for a huge variety of purposes and fulfils all normative public-transport requirements.

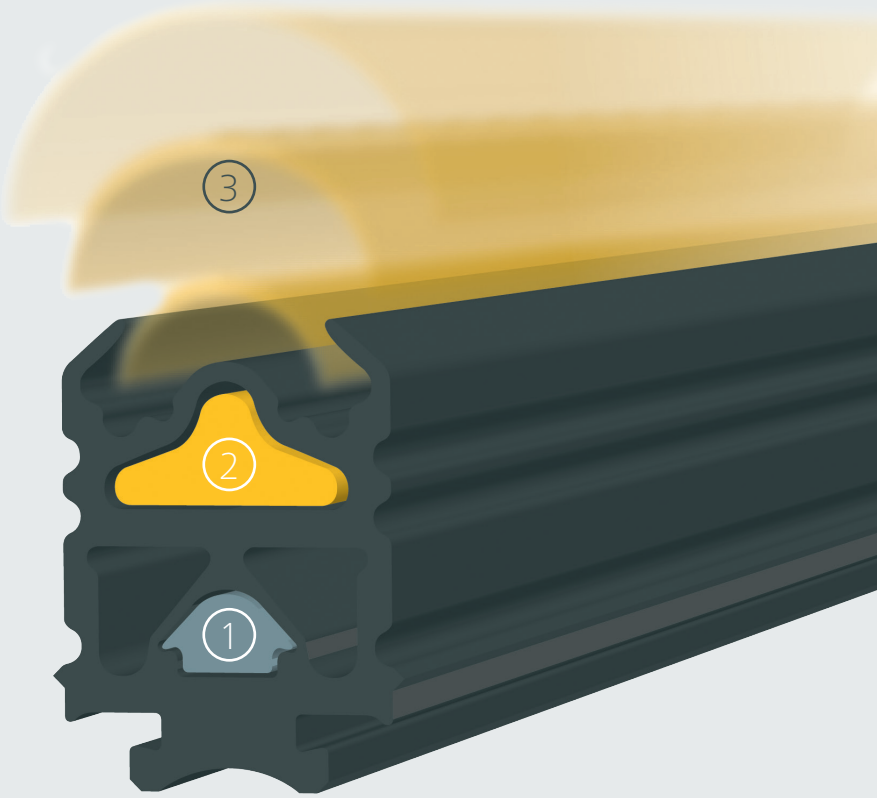
Anti-drag function
Drag detection detects thin objects such as backpack straps or dog leads, for example, and prevents people and/or animals from being dragged along.

Fire-resistant sensors
As well as standard sensors, the flexible range also features fire-resistant sensors for buses (RoadFR) and trains (RailFR). With impressively small dimensions, they boast outstanding switching properties in operating temperatures of –40° C to +80° C. Their durable and maintenance-free design results in low life-cycle costs.

TECHNICAL DATA

Operational principle	Pressure-sensitive
Areas to be secured	Main closing edge Secondary closing edge
Protection class	IP67
Applied standards	UNECE-R 107 EN 14752 VDV 157
Applied fire protection standard	EN 45545-2 UNECE-R 118
Customer-specific adaptations	Customer-specific profile design, development of switch elements as per customer requirements

1. Pressure-sensitive sensor
2. Capacitive sensor
3. Capacitive field



HIGHLIGHTS

- ✓ Non-touch detection directly on the main closing edge of straight or curved doors
- ✓ Prevents passengers from being bumped or knocked over
- ✓ Additional convenience function for pinch- and drag detection
- ✓ Easy integration into door profiles
- ✓ Impervious to water, dust, extraneous light, leaves, snow
- ✓ Reduces incidence of door reversing thanks to monitoring of immediate danger zone
- ✓ Self-monitoring: Automatic functional test after every opening

MY Non-Touch Detection System

SAFETY AND CONVENIENCE – IN A SINGLE SOLUTION

The MY-Non-Touch Detection System is a non-touch system consisting of a rubber cover strip, a pressure-sensitive sensor and a capacitive sensor, and can be installed on the spot as a plug-and-play solution. The predictive capacitive function prevents bus or train doors from bumping or knocking over passengers (applies to both straight and curved doors) without touching boarding or alighting passengers.

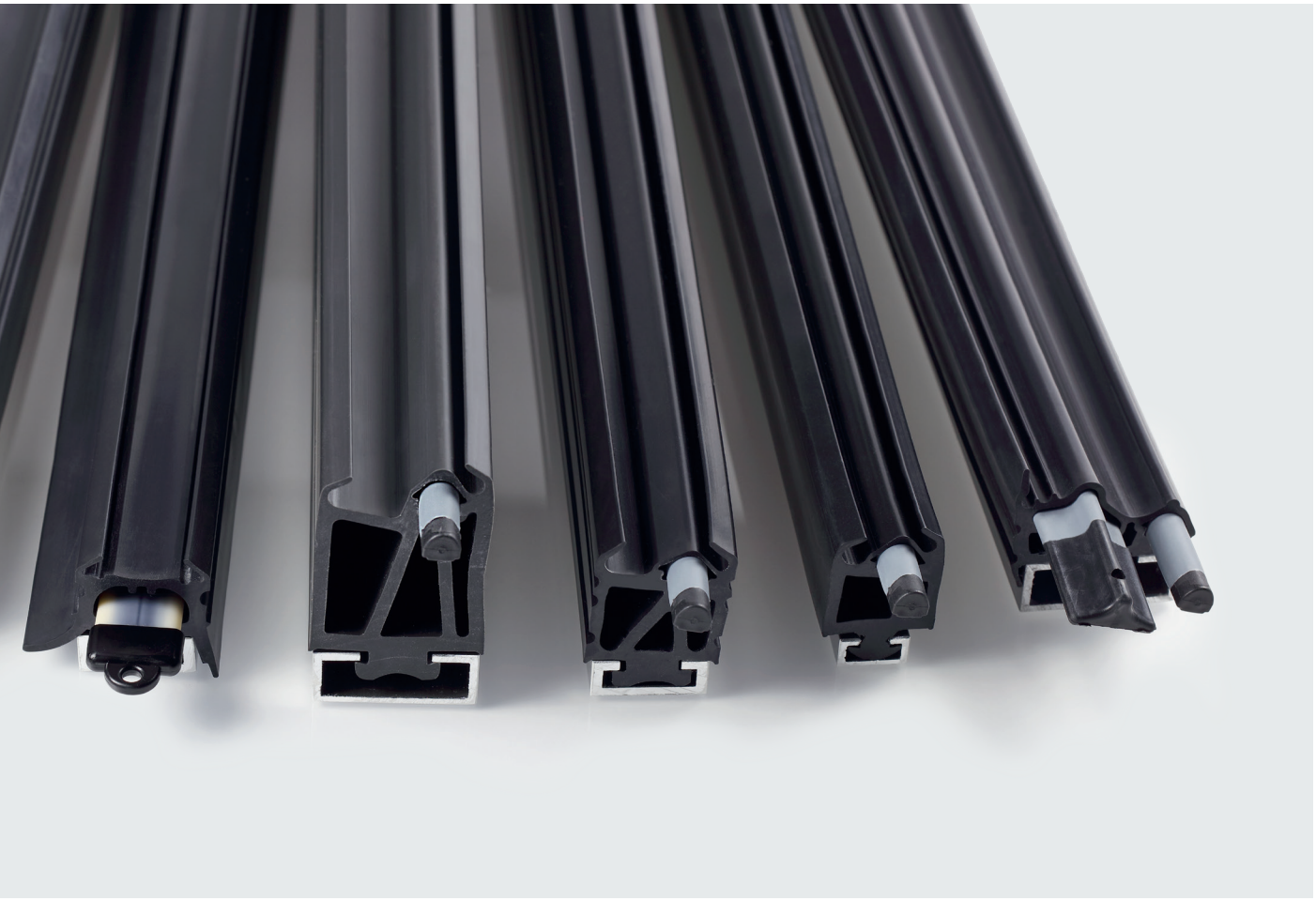
The optimised detection of possible hazards and the reduced incidence of door reversing results in a lower number of closing movements. This enables cycle times to be more closely adhered to. Environmental influences such as extreme sunlight exposure, rain, or snowfall are detected by the system and dismissed to prevent accidental activation.

Plug-and-play solution

- Easy integration into door profiles
- Time- and space-saving installation thanks to control unit integrated into sensor profile
- Can be fitted during production or retrofitted in existing systems

TECHNICAL DATA

Operational principle		Non-touch system with pressure-sensitive anti-pinch sensor
Areas to be secured:		Main closing edge Secondary closing edge
Protection class	Evaluation unit Sensor	IP65 IP67
Applied standards		EN 50155 EN 45545-2 EN 50121-3-2 EN 14752 EN 50125-1 VDV 157
Electronic type		Semiconductor output (switching output)
Profile geometry		Adjustable to door kinematics
Applications		Protection of doors for bus and rail industries
Operating temperature		–25 °C to +70 °C



HIGHLIGHTS

- ✓ In-house expertise for design, development, production
- ✓ Execution of customer-specific requirements
- ✓ Specialist knowledge of all door systems
- ✓ Provision of turn-key system solutions
- ✓ Rubber profiles with integrated safety sensors
- ✓ Wide range of sensors for various purposes
- ✓ Pressure-sensitive and capacitive sensors
- ✓ Fire-resistant sensors for buses and trains
- ✓ Rubber profiles can be fitted in numerous ways
- ✓ Rubber compounds such as EPDM, TPE, silicone, and more

Finger protection strips

SECURITY FOR DOOR SYSTEMS COMPACT AND COMPLETE

Finger protection strips perform a variety of tasks when it comes to protecting the vast array of door systems in public transportation. Consisting of rubber profiles with integrated anti-pinch sensors, the finger protection strips safely protect the main and secondary closing edges. In addition, the tactile and capacitive safety sensors reliably prevent the trapping or dragging of people or animals.

Safety meets convenience

In addition to the pressure-sensitive protection, the extremely convenient facial recognition with the MY Non-Touch Detection System ensures the non-touch detection of people, animals, wheelchairs etc. in order to prevent door movements.

Here, in addition to the standard versions, there are also fire-resistant sensors for buses and trains.

Mayser as a system partner

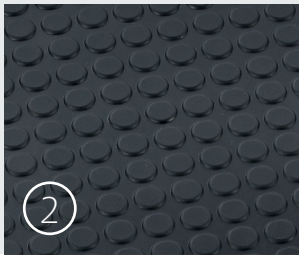
Mayser can draw on exceptional project expertise to develop and produce specific finger protection strips, and even entire frames in collaboration with its customers. These can be reliably used for a range of applications, be it for a retrofit or a new project, including:

- Buses
- LRVs (Light Rail Vehicles)
- Metros
- Standard gauge railways

TECHNICAL DATA

Operational principle	Pressure-sensitive and capacitive
Areas to be secured:	Main closing edge Secondary closing edge
Protection class	As per customer specification
Applied standards	Standards and factory standards (customer)
Customer-specific adaptations	Profile design of rubber profile, material selection EPDM, TPE, silicone

1. Surface finish with R11 anti-slip covering
2. Surface finish with R10 covering with circular studs



HIGHLIGHTS

- ✓ Customisable surface geometry
- ✓ Insert safety step for easy self assembly
- ✓ Maintenance-free safety step
- ✓ Low life-cycle costs
- ✓ Resistant to environmental influences and common chemical influences
- ✓ Ultra slim design

Safety steps

GET ON AND OFF SAFELY – A STEP YOU CAN RELY ON

Safety steps can be used as pressure-sensitive surfaces sensors

- for sliding steps
- for steps
- for wheelchair ramps
- to bridge height differences or gaps

Safety steps reliably detect people and objects such as prams and wheelchairs in the direct danger zone during door closing. This ensures safe, accessible entry and exit.

Perfect for daily use

The non-slip covering has proven to be suitable for daily use, even under extreme weather conditions.

The low overall height, custom dimensions, and additional customer-specific adaptations enable optimal integration into sliding steps and wheelchair ramps, even where space is tight.

TECHNICAL DATA

Operational principle		Automatic monitoring of function using closed-circuit principle
Overall height		7 – 8 mm
ISO 13856-1	Actuation force B_{10D}	< 150 N > 4 x 10^6
Covering		Circular stud structure, 2K coating, textured surface
Anti-slip function		R10, R11
Degree of protection: IEC 60529		IP67
ISO 4649: abrasion resistance		< 100 mg
Operating temperature		–25 °C to +70 °C
Applied standards		VDV 157

MAYSER®

FOAM TECHNOLOGY, MOULDED PARTS,
SAFETY TECHNOLOGY AND HEADWEAR

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