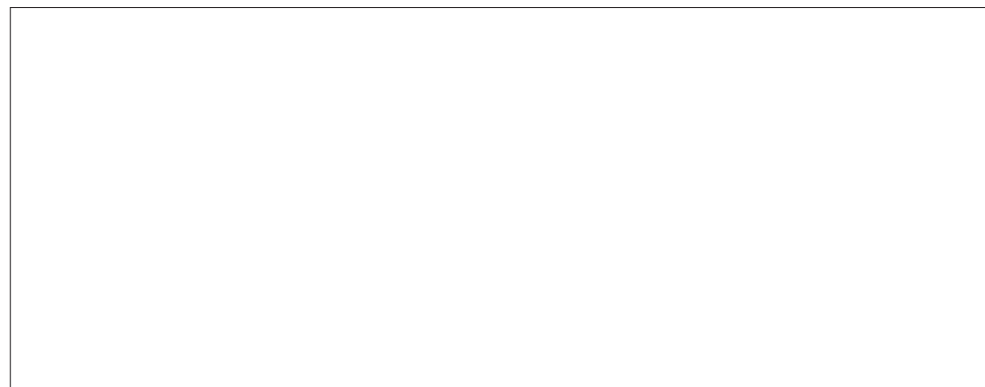


KYOSAN ELECTRIC MFG.CO.,LTD.



<https://www.kyosan.co.jp/>



Partial-Height Platform Screen Door Systems

Gap Fillers

Mat Switches

Space Lights

Thread Lines

TASC Vehicle Information Transmission Devices

Platform Safety Solutions

Lineup of Platform Safety Solutions

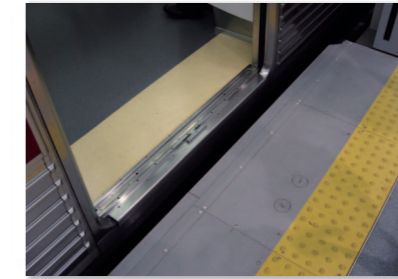
Lineup of Platform Safety Solutions

A large portion of railway accidents that relate to injury and death are associated with “fall off the platform” or “contact with a train on the platform.” Therefore, it is important to provide a barrier-free environment in the platform by installing safety equipment for passengers. The degree of emergency seems rather high and we shall cope with them quickly.

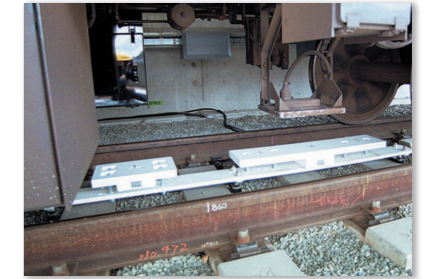
We, Kyosan Electric Manufacturing Co., Ltd., are providing a variety of equipment that is able to promote barrier-free platforms, as well as to enhance passengers’ safety.



Partial-Height Platform Screen Door Systems **P4-P6**



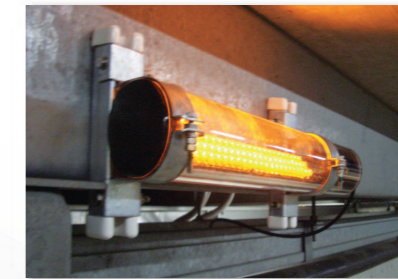
Gap Fillers **P7**



TASC Vehicle Information Transmission Devices **P11**



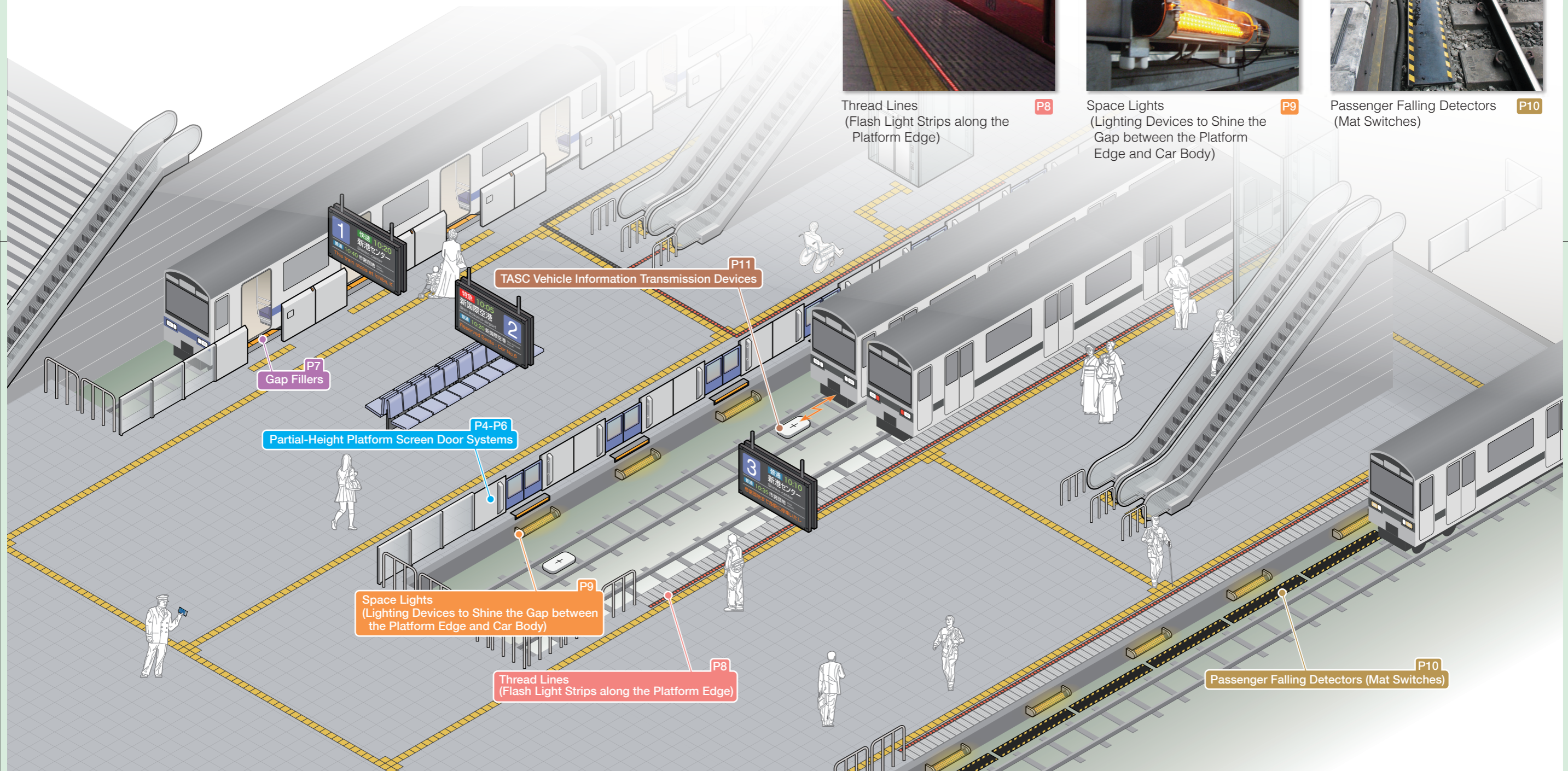
Thread Lines (Flash Light Strips along the Platform Edge) **P8**



Space Lights (Lighting Devices to Shine the Gap between the Platform Edge and Car Body) **P9**



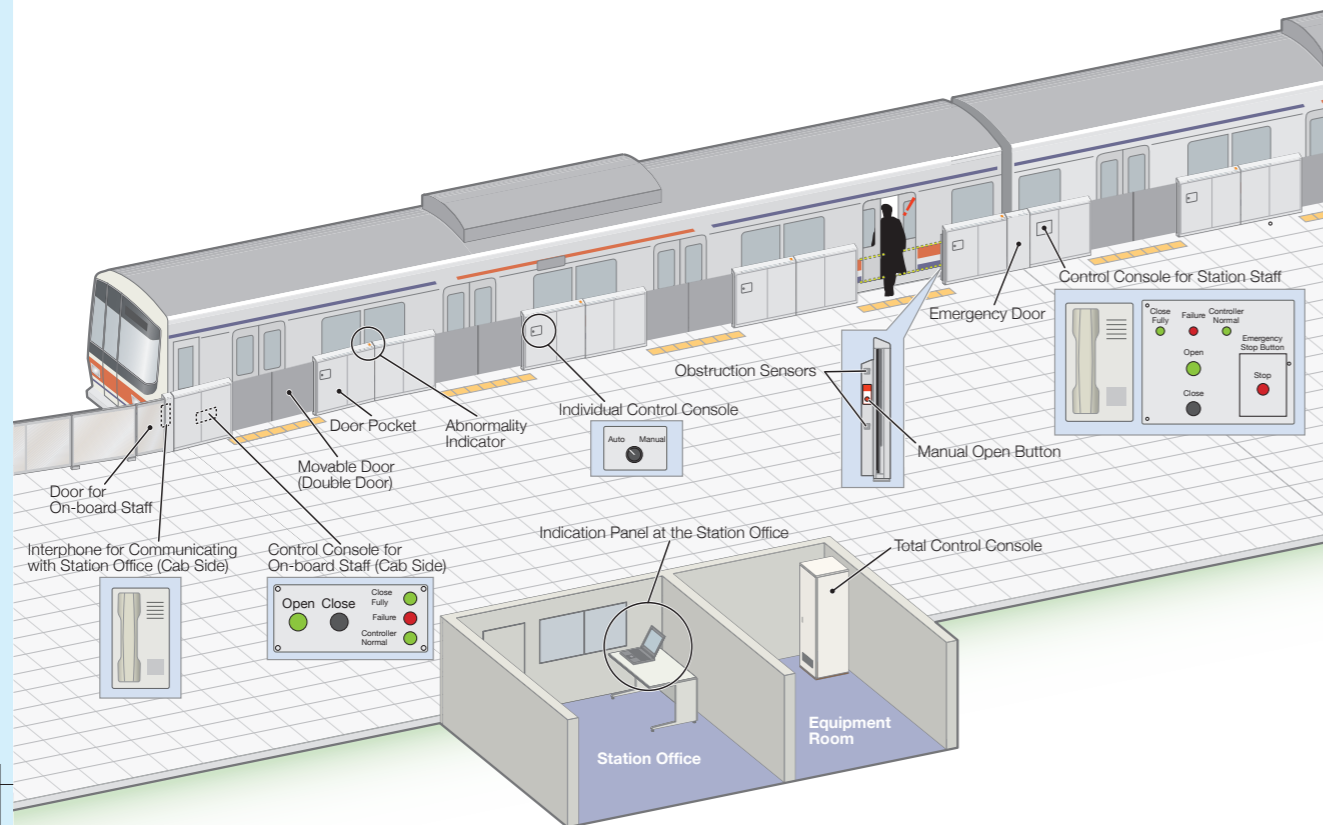
Passenger Falling Detectors (Mat Switches) **P10**



Partial-Height Platform Screen Door Systems

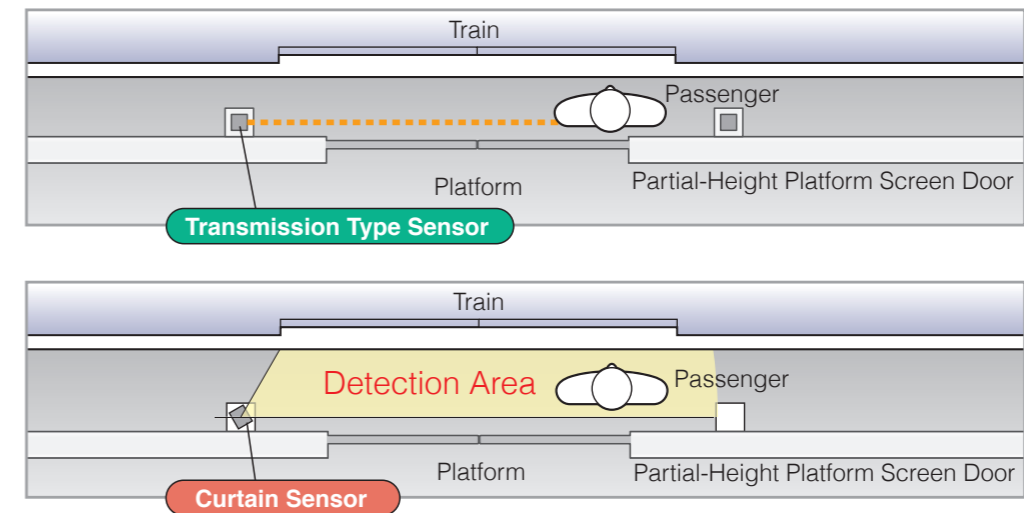
Partial-Height Platform Screen Door Systems

System Image



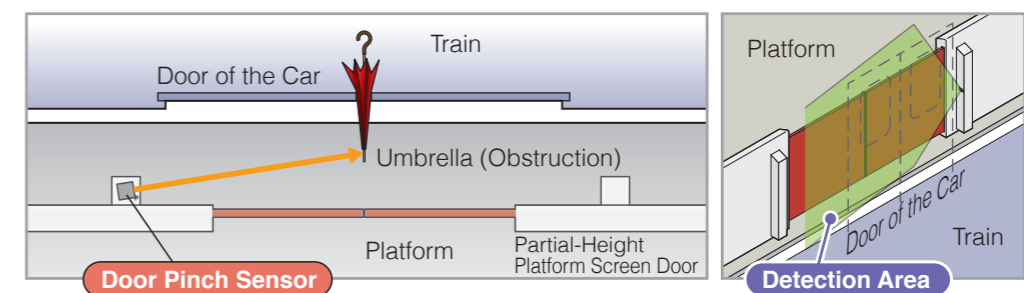
Obstruction Sensor

A "transmission type sensor" is used to detect obstructions in a line if the area to the edge of the platform is narrow. A "curtain sensor" is used to detect obstructions if the area to the edge of the platform is wide or when gap fillers are installed together.



Door pinch sensor

This sensor detects any objects pinched between the vehicle doors (umbrella, bag, or stroller, etc.). Installing this sensor together with the obstruction sensor makes it possible to detect both any residuals or pinched objects.



Major Specifications of Partial-Height Platform Screen Door Systems

		Type KPG-1	Type KPG-3
Dimensions	Door (Height from the Platform Surface)	1200mm	
	Door Pocket (Height from the Platform Surface)	1300mm	
Main Material (External Board)	Door	Steel, Stainless Steel, or Aluminum*	
	Door Pocket	Steel or Stainless Steel	
Driving Unit	Driving Method	Ball Screw	Timing Belt
	Closed Door Holding Force	300N	
Loading Condition	Horizontal/Vertical Load	980N/m (Top)	
	Maximum Horizontal Instantaneous Load	2.45kN/m (Top)	
	Maximum Instantaneous Wind Speed	50m/s	
	Seismic Load	1 G for both vertical and horizontal. No collapse.	
Safety Equipment	Obstruction Detection	Transmission Type Sensor or Curtain Sensor	
	Door Contact/Retraction Detection	Overload Detection of the Motor / With Retry Control	
	Emergency Release	Manual operation is available.	
Insulation	Between the Basement and Door Pocket		

* Partial see-through types are also available.

Platform Screen Doors

This full wall type glass door provides passengers with a spacious feeling. At the same time, perfect separation between the platform and train provides not only an absolutely safe and secure space for preventing wind due to passing trains or wind and/or rain at elevated station buildings, but also a comfortable station area which is fully air-conditioned.



Installation Example of the Full-screen Doors

Type KPG-1/3 Partial-Height Platform Screen Door Systems

Type KPG-1/3 Partial-Height Platform Screen Door Systems

This kind of door physically provides a block between the platform and the rails, so as to prevent fall-offs from occurring, enhancing safety on the platform.

When compared to the full-screen type doors, these doors are lighter and easier to install into the ordinary platforms, making reduced construction work possible.

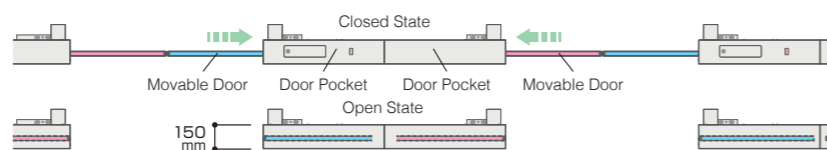
The combination of three types of steel-made door pockets and two types of drive systems provided for these doors allows you to accommodate various kinds of opening dimensions and car pitches.



Types of Door Pockets

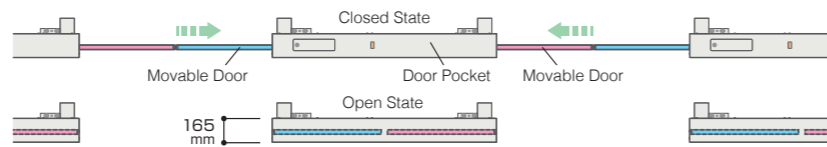
Separated Door Pocket (In-line Type)

These door pockets enable the shortening of the total length by separating them in cases where the opening dimension is approximately 2 m and the vehicle door pitch is long. These doors also offer easy installation.



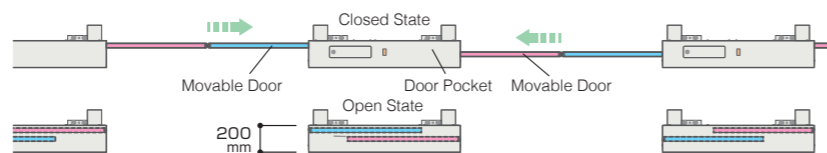
Integrated Door Pocket (In-line Type)

The integrated door pockets provide enough space for storing the movable doors in a case where the opening dimension is approximately 2.3 m which is relatively wide.



Integrated Door Pocket (Offset Type)

These door pockets enable the shortening of the total length by overwrapping both the left and right doors in the door pocket when storing in cases where a wide opening dimension of approximately 2.5 m is required. These doors are optimal for wide openings but short door pitches.



Drive Systems for Movable Doors

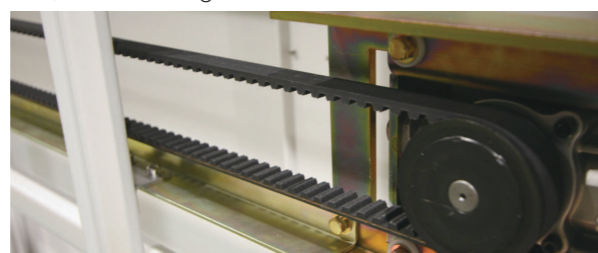
Ball-screw Type (KPG-1)

Highly precise ball screws offer superior reliability and longer durability.



Timing Belt Type (KPG-3)

This type provides quiet operation and simpler driving unit, and is also lighter.



Gap Fillers

Gap Fillers

Platform Gap Fillers are mounted within curved platforms to reduce the gap between the platform and the train, ensuring passengers are able to enter and exit safely.



Features and Performance

Aiming for Zero Fall-offs Using Fail-safe Micro-computers

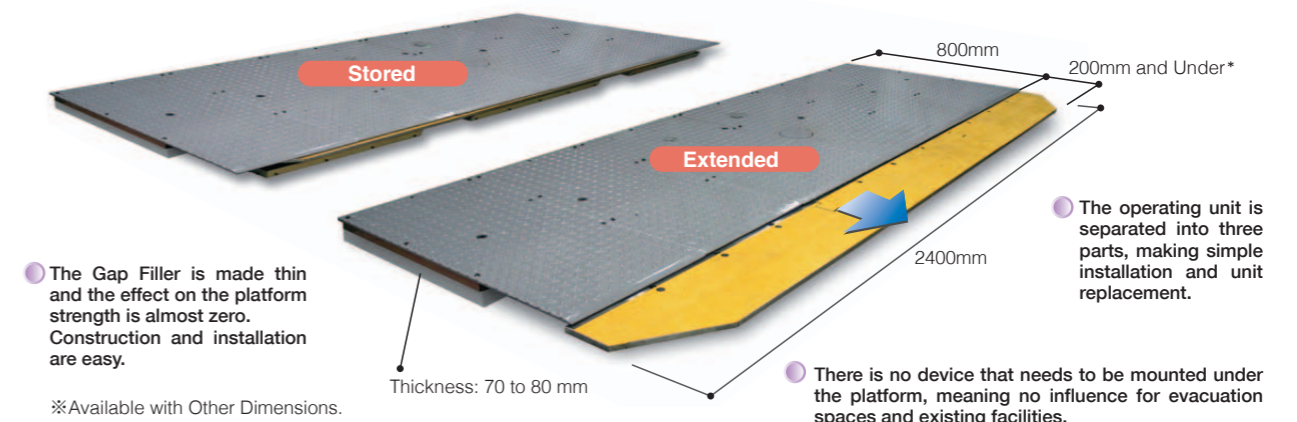
This is the world's-first, automatically controlled equipment that exceeds the structure gauge when operating, and delivers high reliability. The controller, that uses high performance and reliability, fail-safe micro-computers which incorporate the technologies of the electronic interlocking equipment and ATP equipment, controls this.

Securely Guards the Passengers Together with the Partial-Height Platform Screen Door Systems

There are a variety of people that pass by on the platform, such as small children, elders, and disabled persons. The integration of both Gap Fillers and the Partial-Height Platform Screen Door Systems securely prevents all passengers from falling off, expanding safer areas. The Gap Fillers are extended/stored only when the Partial-Height Platform Screen Doors are closed.

● The maintenance of the equipment is available from the platform.

● The equipment can be stored into the platform.



● The Gap Filler is made thin and the effect on the platform strength is almost zero. Construction and installation are easy.

● The operating unit is separated into three parts, making simple installation and unit replacement.

*Available with Other Dimensions.

● There is no device that needs to be mounted under the platform, meaning no influence for evacuation spaces and existing facilities.

* It can be adjusted by 10 mm.

Equipment Design with Consideration to Maintenance and Operation

- The equipment mass is approximately 550 kg (for 2.4 m in width) per one set of doors. The mass of 80 kg (excluding covers) per component unit allows easier installation.
- It can be exchanged in units.
- Easy maintenance. It is available from the platform.
- The equipment is driven electrically, leading to easy maintenance, installation, and operation.
- It can be operated manually with a handle in the event of power failure or malfunction.

Superior Construction

- The thinner design allows the storing of the whole equipment in the platform.
- There is no device that needs to be installed under the platform, meaning there is almost no effect on the evacuation spaces, or, the intensity of the platform structure due to installation work.

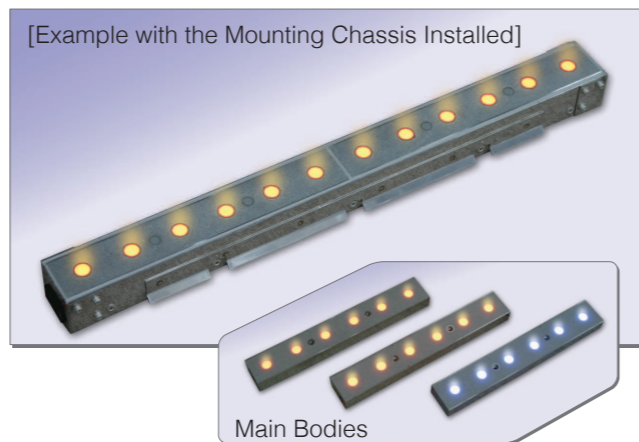
Major Specifications

Mass	550kg
Load Condition	6kN/m ²
Operating Speed	1 sec/200 mm

Thread Lines

Thread Lines (Flash Light Strips along the Platform Edge)

This indicator is used by embedding it in parallel to the tactile pavings on the platform. The LEDs in it light up when a train approaches, providing notice to the passengers on the platform.

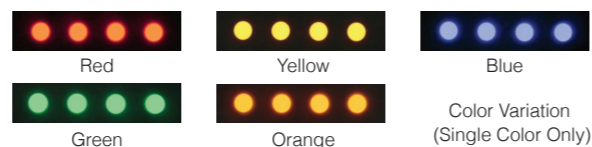


Features

Changing Illumination Pattern according to the Movement of Trains

The illumination pattern changes along with the movement of a train such as approaching, stopped, departing, and passing.

Approaching and Passing	Flowing Illumination
Stopped	Illumination
Departing	Blink



Superior Strength and Wear Resistance

The flash light strip has sufficient strength and wear resistance as the floor material, and can withstand even if a trolley passes on it.

Easy Replacement

This equipment adopts a structure in which the main body of the flash light strips are screwed on the chassis already embedded in the platform, allowing simpler removal/installation.

Reduced Construction Cost

The thinner structure compared to conventional products offers cheaper installation costs.

Major Specifications

Materials	Case	Stainless Steel
	Resin Part	Epoxy Resin Mortar
Consumption Current	0.06A	
Dimensions	35×300×21.5 (mm)	
Mass	Approximately 1 kg or less (Single Piece)	



Platform on the Down-bound Side at Oyama Station of Tobu Railway



Sakurashukugawa Station of JR West Japan



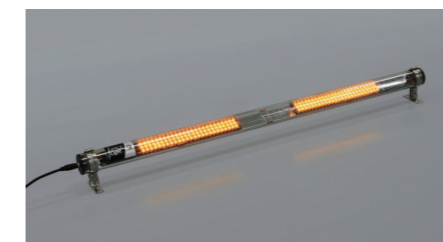
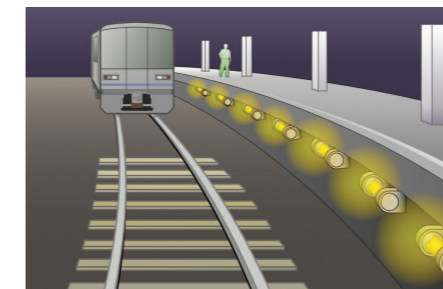
Yokohama Station of Sotetsu Train

Space Lights

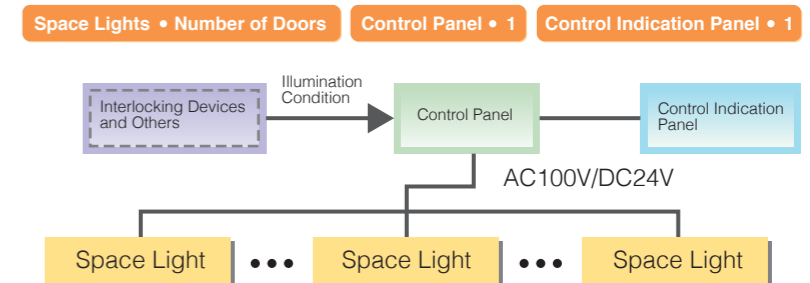
Space Lights

(Lighting Devices to Shine the Gap between the Platform Edge and Car Body)

This device (LED warning light) is installed under the platform. It blinks to cast light to the arrived car in order to give notice to the passengers so as not to fall into the gap between the platform and train.



System Configuration



Major Specifications

Rated Voltage: 100 V AC (50/60 Hz)

Types	SE60-550	SE60-1210
Power consumption*	6W	8W
Dimensions (mm)	φ60×550	φ60×1210
Mass	1 kg or less	2 kg or less

Features and Functions

Long Life Cycle

LEDs have a long life cycle.

Low Power Consumption

Its low power consumption offers an environmentally friendly feature.

Wide Visibility Angle

Due to the effective arrangement of 75 ultra-bright LEDs (25 x three rows) and the implementation of the indicators in the transparent cylindrical case, the lights are able to provide illumination in a wide area.

※SE60-1210 uses 150 LEDs.

Angle Adjustment

The angle can be adjusted easily with the fixing brackets.

Ultra-bright LEDs

The ultra-bright LEDs provide sufficient visibility even in daytime.

Control

The control panel provides power to the Space Lights and controls their illuminating by receiving the track occupancy conditions from the interlocking devices.

Illumination

Two types of Space Lights are available: illuminating type and blinking type.

Shock Resistance

We adopted polycarbonate cases which show superior shock resistance.

Water Resistance

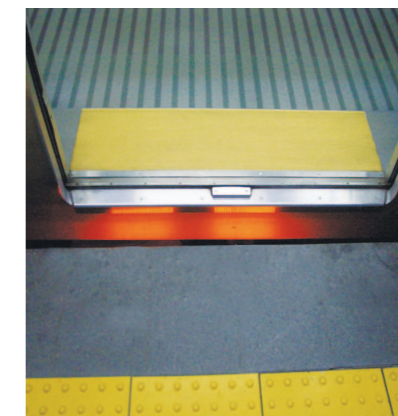
It complies with IP54.

Connection

Up to 20 Space Lights can be connected to the three-core power supply line.



Izumi Station of the Kyushu Shinkansen Line



Akihabara Station of the Tsukuba Express Line



Ikebukuro Station of the Tobu Railway

Mat Switches

Passenger Falling Detectors (Mat Switches)

This equipment detects if a passenger has fallen off the platform with the sensor (mat switch) installed under the platform and outputs a control command to the signaling systems in order to prevent further accidents. It also informs the occurrence of the accident to the on-board staff and station staff.

Features of the System

Detection Conditions (Measures for Erroneous Detection)

A fall off is detected when the following two conditions are met in order to prevent erroneous detections.

- 1 The switch is pressed at least 100 ms with the prescribed force (5 to 20 kgf/50 mm ϕ) to exclude sensor activations due to lighter objects such as a soft drink can or bag.
- 2 A pressure of more than the prescribed value is applied to at least two contacts in the mat switch simultaneously to distinguish an animal on a walk (cat, etc.).

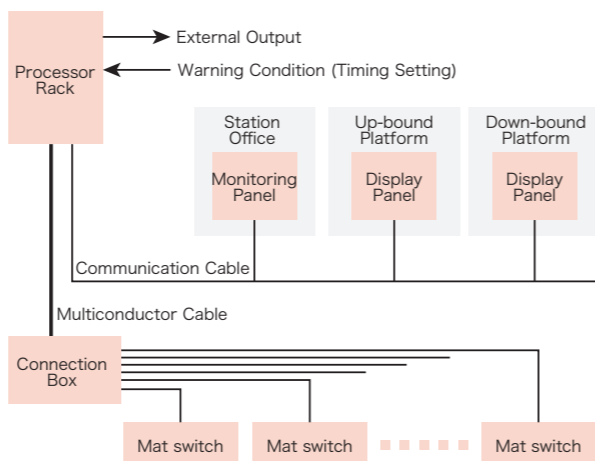
Fall-off Detection per Block

The mat installed positions are separated in blocks in order to detect an object per block and display a warning so that station staff can immediately go to the area where a fall-off has occurred (Usually, 2 cars per block).



Freely Adjustable Fall-off Detection Timing

The timing to detect a fall-off can be set in accordance with the instruction by each customer. Thereby, individual warning conditions can be set. For example, 24-hour continuous detection, only when a train stopped at a station, or from the approach of a train to when it passes through the platform. In addition, the fall-off detection can be deactivated per block for maintenance purposes at night or if an abnormality of a device has occurred.



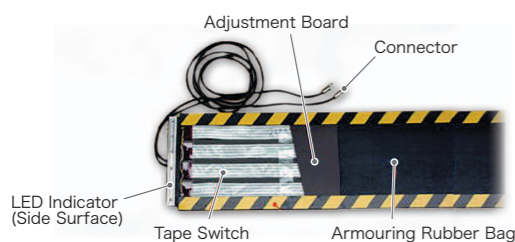
System Configuration

The status of the mat switches is always monitored by the processor rack and the information collected in there will be sent to each panel. In the event of a fall-off, control over signaling equipment, warning indication, and alarm buzzer, are emitted as external output, and along with that, command to display the warning is emitted to the monitoring panel in the station office to let the station staff know the location where an abnormality has occurred so that the staff can rush there, confirm the accident, and take measures to resolve it. After the staff has taken necessary measures, then the state that someone has fallen is released with the display panel installed on the platform.

Performance

Environmentally-resistant Enclosed Sensor

The detection sensor is sealed in a rubber bag so that it can be used in harsh environments under the platform.



Wide Range of Application

It can be utilized in various applications due to its high durability.

Major Applications

- Intrusion detection into the areas around the hazardous machinery
- Entry detection into the off-limits areas
- Alerts for preventing various kinds of dangers before they happen

TASC Vehicle Information Transmission Devices

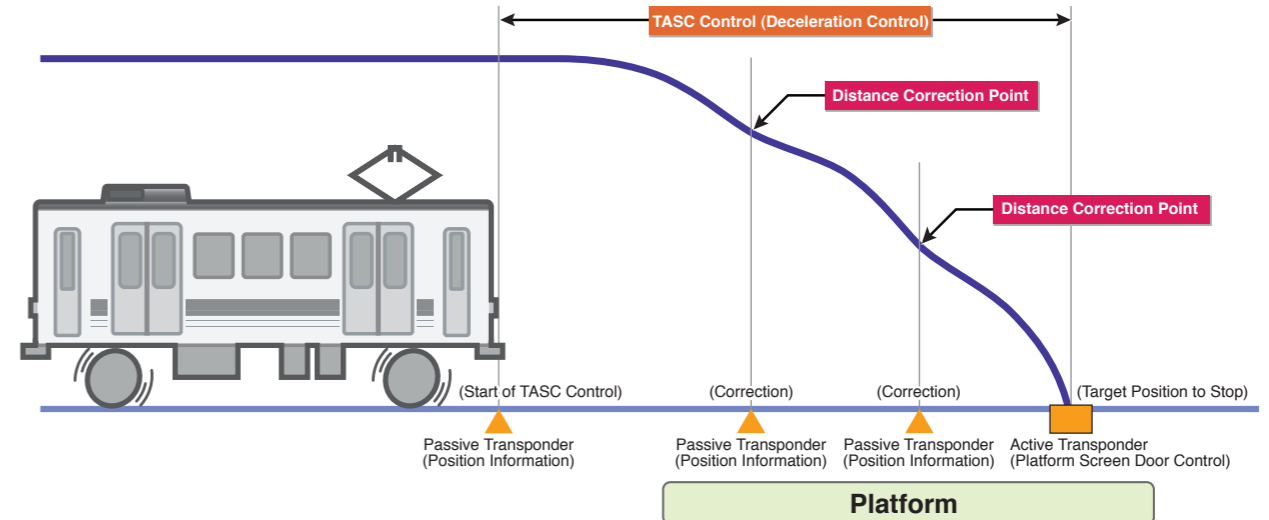
TASC Vehicle Information Transmission Devices

This device transmits a variety of information between wayside and on-board regarding Train Automatic Stop Control (TASC) and the platform screen doors.

Features and Performance

Transmission of TASC Control Information

TASC (abbreviation for Train Automatic Stop Control) is the control to stop a train at the fixed position of a platform by applying a brake automatically when a train is about to stop at a station. The brake of the train is controlled so that the actual car speed follows the speed profile generated after the on-board antenna receives information regarding the distance from the "passive transponder" installed before the station to the stop position where the "active transponder" is installed.



Transmission of Platform Screen Door Control Information

- Stop Position Determination: detects the area (fixed position) where the doors of the train and the positions of the platform screen doors match to prohibit the operation of the platform screen doors if the car door positions do not come to the predetermined positions.
- Transmission of Platform Screen Door Control Information: communicates the information between wayside and on-board regarding the operations of on-board staff and the open/close status of the platform screen doors in order to perform interlocking control of the doors of the car and the platform screen doors.
- Prevention of Erroneous Door Open: prevents the doors from being operated erroneously, such as the opening of doors in a position other than those predetermined or the opening of the doors on the opposite side, by sending the information regarding the determined stop position and platform direction.

