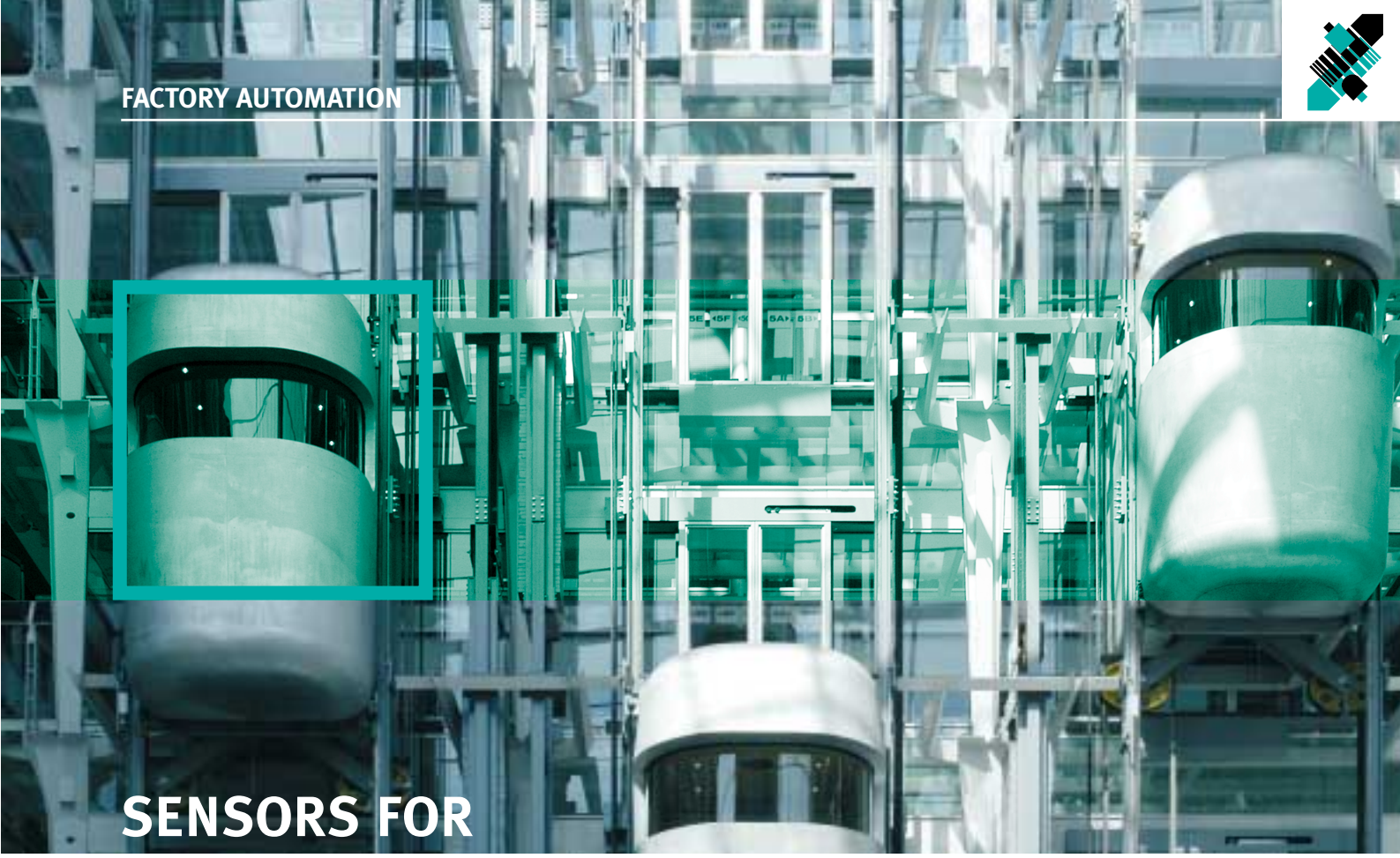
FACTORY AUTOMATION



# SENSORS FOR DOORS, GATES AND ELEVATORS

opening up possibilities

PEPPERL+FUCHS

opening up possibilities

DOORS GATES ELEVATORS

## PHOTOELECTRIC SENSORS

The secure and safe operation of doors and gates is the theme of these specialised sensors from Pepperl+Fuchs/Visolux, which cater for the opening pulse initiation of automatic doors, the monitoring and start-up control of escalators in public facilities, the monitoring of the entrance areas of industrial doors and gates and the safeguarding of the closing edges of doors in elevators.
With different sensor principles Pepperl+Fuchs/Visolux offers the broadest program of this special sensor technology to the manufacturer and user:

- Lift light grid for monitoring closing edges for a safe operation of elevator doors
- Light scanners for the detection of the presence of people and safeguarding closing edges on revolving and sliding doors – in buses and trains, too –
- Surface light scanners for monitoring the approach areas to door entry compartments and the areas surrounding doors – with optional counter function –
- Radar motion sensors of the latest generation for the door and gate area with direction detection, crossing traffic suppression and turtle mode
- Light barriers with increased range and water tight housing for gate and barrier installations
- Fire protection light barriers, certificated as safety devices for locking systems on fire protection enclosures and fire doors

## ROTARY ENCODERS

Today, the direct position of the elevator cabin is measured by means of a single incremental or absolute value rotary encoder. For this purpose, only an additional rope or a belt that is fastened to the elevator cabin is required. Time-consuming adjustments and settings are no longer necessary. During commissioning, the technician just runs past the individual stops and stores their position. This adds additional functions to the control:

- Soft braking
- Smooth driving with continuous monitoring of the acceleration
- Precise positioning of the elevator cabin depending on the load

## SLOTTED SENSORS

Pepperl+Fuchs offers a wide product range of inductive proximity switches. They reliably and safely fulfil their positioning and detecting tasks in the door, gate and elevator areas. Specially slotted sensors are used for final positioning of elevators.

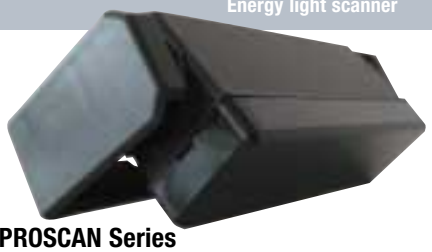
## POSITION ENCODING SYSTEM WCS

With the position encoding system WCS from Pepperl+Fuchs, a reliable and tried-and-tested positioning system is available for the user. The millimetre-accurate WCS – consisting of a code rail and a read head – combines two important functions: it detects the position in a contactless and absolute way.

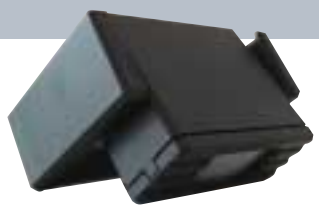
PEPPERL+FUCHS VISOLUX

PEPPERL+FUCHS

# PHOTOELECTRIC SENSORS FOR AUTOMATIC DOORS

| | Energetic area scanner | Radar motion detector | Energy light scanner |
|---|---|---|---|
| |  |  |  |
| | **Series FLT-D** | **Series RMS-D** | **PROSCAN Series** |
| **Highlights** | ■ Closing edge monitoring across the entire door width<br>■ Very simple programming of field sizes, teach-in time, sensitivity, switching type as well as master/slave operation<br>■ 20 programmable monitoring fields<br>■ Open time: mechanically adjustable time for automatic adaptation to a new background<br>■ Test input<br>■ Test body detection according to EN12650 | ■ Opening pulse generator of the latest generation with direction detection, crossing traffic suppression and "turtle mode"<br>■ For detection, only a movement is required<br>■ Easy to use by means of DIP switches and 16 factory-programmed basic settings<br>■ Reliable thanks to tested and micro processor controlled radar technology<br>■ Operating frequency 24.05 ... 24 GHz K band<br>■ Vandal-resistant design; immune to vibration, extraneous light, temperature influence | ■ Energy light scanner with fan-shaped detection field<br>■ Open time: mech. adjustable time for automatic adaptation to a new background<br>■ Compensation of long-term drifts<br>■ Switches for different sizes of detection field, light On/dark On operation and teach-in time<br>■ Optional test input<br>■ Revolving shackle and mounting bracket in delivery package<br>■ Also with certification in accordance with rail and automobile standards |
| **General technical data** | | | |
| **Operating voltage** | 12 V DC ... 31 V DC | 12 V DC ... 36 V DC<br>12 V AC ... 38 V AC | 12 V AC … 28 V AC/12 V DC … 38 V DC (relay)<br>or 12 V DC … 38 V DC (PNP output) |
| **No-load current at 30 VDC** | ≤ 100 mA | ≤ 50 mA | 100 mA |
| **Dimensions W x H x D** | 250 mm x 45.3 mm x 60 mm | 123 mm x 64,7 mm x 59,4 mm | 102 mm x 45 mm x 32 mm |
| **Type of connection** | Terminal strip, 8-pin | Terminal strip, 4-pin | Fixed cable 5 m |
| **Function indicator** | Red LED | LED red/green | Red LED |
| **Time function** | Open time | Open time programmable | |
| **Protection class** | IP54 | IP54 | IP52 |
| **Version 1** | | | |
| **Design** | **Standard** | **Dynamic version with direction detection, crossing-traffic suppression and turtle mode** | **with open time 10 s or 3 min, mech. changeover** |
| **Detection range/range** | max. mounting height: 2200 mm | max. mounting height: 4000 mm ... | max. 2500 mm |
| **Detection field size / field size** | programmable, full filed:<br>2200 mm x 1500 mm at<br>mounting height of 2200 mm | 3000 mm x 2500 mm at<br>mounting height of 2200 mm | Mechan. adjustable, with mounting height 2000 mm:<br>1) Full field, with 12 light beams: 2300 mm x 80 mm<br>2) Left/right field with 6 light beams:<br>1150 mm x 80 mm<br>3) Field centre with 6 light beams: 1000 mm x 80 mm |
| **Light spot diameter** | – | – | – |
| **Temperature response method** | | – | – |
| **Switching output** | Relay output, 1 changeover contact | Relay output, 1 changeover contact | Relay output, 1 changeover contact |
| **Switch type** | Light On/dark On, programmable | active/passive | Mechan. light On/dark On changeover |
| **Light type** | Infrared, 10 IRED, 950 nm | – | Infrared, 880 nm |
| **Order code** | **FLT-D/38a sw** | **RMS-D** | **PROSCAN/38a** |
| **Version 2** | | | |
| **Design** | | **Mono version without direction detection, crossing-traffic suppression and turtle mode** | **Traffic version certified according to rail and automobile standard with open time 10 s or 3 s** |
| **Detection range/range** | | max. mounting height: 4000 mm ... | max. 2500 mm |
| **Detection field size / field size** | | 3000 mm x 1500 mm at<br>mounting height of 2200 mm | Mechan. adjustable, with mounting height 2000 mm:<br>1) Full field, with 12 light beams: 2300 mm x 80 mm<br>2) Left/right field with 6 light beams:<br>1150 mm x 80 mm<br>3) Field centre with 6 light beams: 1000 mm x 80 mm |
| **Light spot diameter** | | | |
| **Switching output** | | – | 1 PNP output, short-circuit proof |
| **Switch type** | | active/passive | |
| **Light type** | | – | Infrared, 880 nm |
| **Order code** | | **RMS-M** | **PROSCAN-T/32/76a** |
| **Version 3** | | | |
| **Design** | | **Dynam. version with direction detection, crossing traffic suppression, turtle mode, programmable with additional remote control** | |
| **Detection field size / field size** | | max. mounting height: 4000 mm ... | |
| **Order code** | | **RMS-D-RC** | |

 Other options available on request

| Active infrared light scanner | Active infrared light scanner | Passive infrared light scanner | Single path light beam switch |
|---|---|---|---|
|  |  |  |  |
| **TOPSCAN2 Series** | **AIR30 Series** | **PIR20 Series** | **ML29 Series** |
| ■ Programming for background suppression and evaluation and light On/dark On, as standard<br>■ Configurable scanner in aluminium section with<br>1) 1 beam and 330 mm profile length<br>2) 2 beams and 750 mm profile length<br>3) 3 beams and 900 mm profile length<br>■ Mech. adjustable beam path for left or right embedded closure/edge monitoring<br>■ With background evaluation a scanning range = 0 m possible<br>■ Test input<br>■ Fast and straightforward replacement of system components due to innovative locking mechanism<br>■ Connection available for external initiating sensor | ■ Versions with background suppression and evaluation<br>■ Very small light spot diameter at scanning range of 2 m<br>■ With background evaluation a scanning range = 0 m possible<br>■ Test input<br>■ Certification in accordance with rail standard EN 50155 optional | ■ Very small passive infrared movement detection<br>■ Switches at a temperature difference of +/- 2 °C to the background and with a speed of movement of at least 10 cm/s<br>■ Precise field adjustment by means of 12 Fresnel lenses<br>■ Zoom control screw enables continuous adjustment of the detection angle | ■ Smallest size, ideal for integration into door frame<br>■ Available in two connection variants: fixed cable or M8 connector, 4-pin<br>■ Available in two output variants: 1 NPN output or 1 PNP output<br>■ Available in two switching types: light on or dark on |
| 18 V AC … 28 V AC/17 V DC … 30 V DC | 10 V DC … 48 V DC/<br>11 V AC … 36 V AC (relay)<br>or 10 V DC … 30 V DC (PNP output) | 12 V AC … 24 V AC/<br>12 V DC … 30 V DC | 11 V DC ... 30 V DC |
| 100 mA per beam/system component | 100 mA | 20 mA | Transmitter: 25 mA, receiver: 10 mA |
| 330 mm ... 900 mm according to profile length, height 42 mm, depth 37 mm | 102 mm x 45 mm x 32 mm | 56 mm x 23 mm x 45 mm | 11.6 mm x 85.2 mm x 9.2 mm |
| Terminal strips | Cable 5m | Terminal strip | Fixed cable 6 m |
| Red LED | Red LED | Red LED: detection,<br>LED green: ready for operation | LED red in receiver |
| | | GAB 0.5 s is available as standard | |
| IP52 | IP52 | IP52 | IP65 |
| **Single beam** | **Background suppression** | **Standard** | **NPN, light on, fixed cable** |
| 0 mm ... 2500 mm/500 mm ... 2500 mm | 100 mm ... 2500 mm | 12 m | 8.5 m |
| Profile length: 330 mm | | 200 mm x 300 mm ...<br>1500 mm x 3000 mm at a mounting height of 4000 mm | |
| 75 mm at 2000 mm | 50 mm at 2000 mm | | |
| – | – | Electrically adjustable<br>max. sensitivity +/- 0.5 °C up to<br>min. sensitivity +/- 6 °C | |
| Relay output, 1 changeover contact | Relay output, 1 changeover contact | Relay output, 1 changeover contact | 1 NPN output, short-circuit proof |
| Mechan. light On/dark On changeover | Mechan. light On/dark On changeover | Mechan. light On/dark On changeover | Light On |
| Infrared, 880 nm | Infrared, 880 nm | | Infrared, 880 nm |
| **TOPSCAN2-8-HS-2500-1/L330/38a** | **AIR30-8-H-2500/38a** | **PIR20/31 sw** | **ML29-P/25/102/115** |
| **Two-beam** | **Background evaluation** | | **PNP, light on, fixed cable** |
| 0 mm ... 2500 mm/500 mm ... 2500 mm | 0 mm ... 2500 mm | | 8.5 m |
| Profile length: 750 mm | | | |
| 75 mm at 2000 mm scanning range | 50 mm at 2000 mm | | |
| Relay output, 1 changeover contact | Relay output, 1 changeover contact | | 1 PNP output, short-circuit proof |
| Mechan. light On/dark On changeover | Mechan. light On/dark On changeover | | Light On |
| Infrared, 880 nm | Infrared, 880 nm | | Infrared, 880 nm |
| **TOPSCAN2-8-HS-2500-2/L750/38a** | **AIR30-8-HW-2500/38a** | | **ML29-P/25/103/115** |
| **Three-beam** | | | other versions:<br>dark on,<br>connector plug M8 4-pin" |
| Profile length: 900 mm | | | |
| **TOPSCAN2-8-HS-2500-3/L900/38a** | | | |

# PHOTOELECTRIC SENSORS FOR INDUSTRIAL GATES

Radar motion detector

## RMS-G-RC

Reflection light barrier

## Series RLK29

Photoelectric sensor

## LT2 Series

**Highlights**

**RMS-G-RC**

- Gate radar with remote control, direction detection and crossing traffic suppression for mounting heights up to 7 m
- Extra wide detection field up to 6 m
- Situation-dependent opening thanks to differentiated person and vehicle detection and two relays
- Wide temperature range -20 °C ... +60 °C
- For detection, only a movement is required
- Reliable thanks to tested and micro processor controlled radar technology
- Operating frequency 24.05 ... 24 GHz K band
- Easy to use by means of keys or additional RMS remote control
- Compact, vandal-resistant design; immune to vibration, extraneous light, temperature influence etc.

**Series RLK29**

- Range up to 14 m
- Multiple arrangement of devices is possible (no mutual interference)
- Insensitive to extraneous light, even with energy-saving lamps
- Wide temperature range -20 °C ... +60 °C
- No measurable interference emissions on all frequencies
- Particularly insensitive to interference in the industrial radio and mobile telephone range
- Highly visible, front panel LED for switching status and stability control
- 2500 V proof voltage between the relay and connection terminals and the device electronics

**LT2 Series**

- Programming for background suppression and evaluation, light On/dark On switching and time functions as standard
- Small housing for scanning ranges up to 6 m
- Time functions adjustable by means of potentiometer
- Range = 0 m possible
- Test input
- Operating voltage of up to 35 V DC
- More stringent requirements in use satisfied by IP65 and special functions
- Mechanical range indicator for easier commissioning

| | | | | |
|---|---|---|---|---|
| **General technical data** | **Operating voltage** | 12 V DC ... 36 V DC, 12 V AC ... 38 V AC | 24 V AC/DC ... 230 V AC/DC | 15 V DC ... 35 V DC |
| | **No-load current at 30 V DC** | ≤ 50 mA | 8.5 mA | 100 mA |
| | **Dimensions W x H x D** | 123 mm x 64,7 mm x 59.4 mm | 25.8 mm x 88 mm x 65.5 mm | 150 mm x 64 mm x 49 mm |
| | **Type of connection** | Terminal strips, 4-pin and 2-pin | Terminal compartment with 8 spring-loaded terminals | Plastic plug connector M12, 5-pin |
| | **Function indicator** | LED red/green | Red LED lights when the beam is unbroken, LED flashes on inadequate stability control, LED off: when beam is broken | Green LED: power on, LED yellow: Object detection |
| | **Time function** | Open time programmable | | Time functions programmable |
| | **Protection class** | IP54 | IP67 | IP65 |
| **Version 1** | **Design** | **Standard, programmable with additional remote control** | **Light-On switching** | **Range up to 2 m** |
| | **Detection range/range** | max. mounting height: 7000 mm | 14 m | 350 mm ... 2000 mm/0 mm ... 2000 mm |
| | **Detection field size / field size** | 3000 mm x 2500 mm at mounting height of 2200 mm | | |
| | **Switching output** | 2 relay outputs | Relay, 1 changeover contact | 2 PNP outputs, short-circuit proof, reverse polarity protected, antivalent |
| | **Switch type** | active/passive | Light-On | Mechan. light On/dark On changeover |
| | **Light type** | – | Red, pulsating light 640 nm | Infrared 880 nm |
| | **Light spot diameter** | – | Approx. 35 mm at 12 m | 50 mm at 2000 mm |
| | **Order code** | **RMS-G-RC** | **RLK29-55/25/116** | **LT2-8-HS-2000/47/105** |
| **Version 2** | **Design** | | **Dark-On switching** | **Range up to 6 m** |
| | **Detection range/range** | | 14 m | 200 mm ... 6000 mm/0 mm ... 6000 mm |
| | **Switching output** | | Relay, 1 changeover contact | 2 PNP outputs, short-circuit proof, antivalent |
| | **Switch type** | | Dark On switching | Mechan. light On/dark On changeover |
| | **Light type** | | Red, pulsating light 640 nm | Infrared 880 nm |
| | **Light spot diameter** | | Approx. 35 mm at 12 m | 150 mm at 6000 mm |
| | **Order code** | | **RLK29-55/59/116** | **LT2-8-HS-6000/47/105** |

Other options available on request

| Photoelectric sensor | Fire protection light barrier – reflex | Single path fire protection light barrier – single path |
|---|---|---|
|  |  |  |
| **LTK2 Series** | **MLV12-54-2563** | **L30/LK30-1502/1503** |
| ■ Programming for background suppression and evaluation, light On/dark On switching and time functions as standard<br>■ Small housing for scanning ranges up to 6 m<br>■ Time functions adjustable by means of potentiometer<br>■ Range = 0 m possible<br>■ Test input<br>■ Operating voltage of up to 48 V DC<br>■ More stringent requirements in use satisfied by IP65 and special functions<br>■ Mechanical range indicator for easier commissioning | ■ Reflex light barrier in the miniature housing, with polarisation filter for safety devices on fire protection enclosures (fire doors)<br>■ Approval in accordance with VdS test report FSA and externally monitored manufacture (Ü symbol)<br>■ Housing with metal housing frame and IP67<br>■ Multiple arrangement of devices is possible (no mutual interference)<br>■ Light On/dark On changeover switch<br>■ 2 x high visibility, bright LED indicators for switching status and operating readiness. | ■ Single path light barrier series for safety devices on fire protection enclosures (fire doors)<br>■ Approval in accordance with VdS test report FSA 8902 and externally monitored manufacture (Ü symbol)<br>■ Very high range and stability control<br>■ Housing protection class IP 65<br>■ In the event of fire smoke is ignored, but persons in the smoke are safely detected |
| 12 V AC ... 24 V AC/11 V DC ... 48 V DC | 10 V DC ... 30 V DC | 230 V AC or 24 V DC |
| 100 mA | 200 mA | 3 VA or 40 mA |
| 150 mm x 64 mm x 49 mm | 49 mm x 41.5 mm x 15 mm | 97.5 mm x 40 mm x 58 mm |
| Plastic plug connector M12, 5-pin | M12 plug connector, 5-pin, 90° rotatable | Terminal compartment |
| Green LED: power on,<br>LED yellow: Object detection | 2 yellow LEDs, light when the light beam is unbroken, flash when stability control is inadequate | Red LED |
| Time functions programmable | – | |
| IP65 | IP67 | IP65 |
| **Range up to 2 m** | **Standard** | **Operating voltage 230 VAC/ No load current 3 VA** |
| 350 mm ... 2000 mm/0 mm ... 2000 mm | 0 mm ... 2.1 m | 0 ... 10 m |
| Relay output, 1 changeover contact | 1 NPN and 1 PNP output, direct current, short-circuit-proof, reverse polarity protected | Relay output, 1 changeover contact |
| Mechan. light On/dark On changeover | Mechan. light On/dark On changeover | Dark On switching |
| Infrared 880 nm | Red 660 nm | Infrared 880 nm |
| 50 mm at 2000 mm | 70 mm at 2100 mm | Beam angle: 1.2° |
| **LTK2-8-HS-2000/31/105** | **MLV12-54-2563/49/124** | **L30/LK30-1502** |
| **Range up to 6 m** | | **Operating voltage 24 VAC/ No load current 40 VA** |
| 200 mm ... 6000 mm/0 mm ... 6000 mm | | 0 m ... 10 m |
| Relay output, 1 changeover contact | | Relay output, 1 changeover contact |
| Mechan. light On/dark On changeover | | Light On |
| Infrared 880 nm | | Infrared 880 nm |
| 150 mm at 6000 mm | | Beam angle: 1.2° |
| **LTK2-8-HS-6000/31/105** | | **L30/LK30-1503/25** |



## Series AL2109

**Highlights**

- Detection field > 1800 mm (from 20 mm from the floor)
- Profile width only 9 mm for installation also in tight space conditions
- Object detection up to "zero distance"
- Fixed mounting or mounting on moving parts possible
- Automatic crossover of 21 beams:3-fold 61 beams, 5-fold 99 beams, 7-fold 135 beams
- Automatic beam muting for reliable operation also in rough operating conditions
- Extraneous light limit >100,000 lux
- Control and power unit integrated in the profile
- Error indicator using flashing function indicator
- Compliant with standards EN 81-70 and EN12016

**General technical data**

| | |
|---|---|
| **Operating voltage** | 11 V DC ... 30 V DC |
| **No-load current at 30 V DC** | ≤ 150 mA |
| **Dimensions W x H x D** | 2000 mm x 9 mm x 25 mm |
| **Type of connection** | M8 plastic plug connector, 4-pin |
| **Function indicator** | Green LED: power on<br>Yellow LED: object detection, flashes to indicate an error |
| **Protection class** | IP54 |

**Version 1**

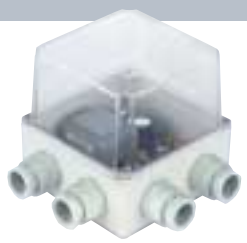
| | |
|---|---|
| **Design** | **Standard, profile width 9 mm** |
| **Detection range/range** | 4900 mm |
| **Detection field size / field size** | Field height: 1820 mm, number of beams: 61 ... 135 (dynamic) |
| **Beam spacing** | 90 mm |
| **Switching output** | 1 PNP and 1 NPN output, short-circuit proof |
| **Switch type** | Light On/dark On, programmable |
| **Light type** | Infrared, 950 nm |
| **Light spot diameter** | Beam angle: Transmitter >20°, Receiver >10° |
| **Order code** | **AL2109P-1820/40b/49/143** |

**Version 2**

| | |
|---|---|
| **Version 2** | |
| **Detection range/range** | |
| **Detection field size** | |
| **Switching output** | |
| **Switch type** | |
| **Light type** | |
| **Light spot diameter** | |
| **Order code** | |

Other options available on request

| Series AL20 | Series AL40 | Series RL(K)91 |
|---|---|---|
| ■ Dense monitoring field with 20 ... 94 beams<br>■ Automatic crossover and high resolution<br>■ 7 segment display for status and service functions<br>■ Profile width 12 mm or 16 mm<br>■ Autom. adjustment of operating modes, 1, 3 or 5 x crossover<br>■ Integrated control and power unit in the profile (12 V DC ... 30 V DC)<br>■ Test input<br>■ Protective measures against reflection<br>■ The most varied of mounting options (side or rear, over the whole length) | ■ Dense monitoring field with 40 ... 194 beams<br>■ Automatic crossover and high resolution<br>■ 7 segment display for status and service functions<br>■ Profile width 12 mm or 16 mm<br>■ Autom. adjustment of operating modes, 1, 3 or 5 x crossover<br>■ Integrated control and power unit in the profile (12 V DC ... 30 V DC)<br>■ Test input<br>■ Protective measures against reflection<br>■ The most varied of mounting options (side or rear, over the whole length) | ■ Reflex light barrier series in a very slim plastic housing<br>■ Robust and compact construction<br>■ Optimum price/performance ratio<br>■ Operating voltage up to 30 VDC and 28 VAC or up to 264 VAC<br>■ Various mounting options<br>■ Indicator LED, visible from the front and above<br>■ Also version with polarisation filter |
| 12 V DC ... 30 V DC | 12 V DC ... 30 V DC | 18 V AC ... 28 V AC/12 V DC ... 30 V DC |
| <150 mA | <150 mA | 100 mA |
| 2000 mm x 12 mm x 30 mm/2000 mm x 16 mm x 30 mm | 2000 mm x 12 mm x 30 mm/2000 mm x 16 mm x 30 mm | 85 mm x 19.5 mm x 50 mm |
| 5000 mm drag chain cable | 5000 mm drag chain cable | Fixed cable 5 m |
| 7 segment display, red in the receiver, with the selectable display functions: stability control, switching state and self test, which are presented one after the other | 7 segment display, red in the receiver, with the selectable display functions: stability control, switching state and self test, which are presented one after the other | Red LED |
| IP65 | IP65 | IP65 |
| **Profile width 12 mm** | **Profile width 12 mm** | **Infrared light** |
| 0 mm … 5600 mm | 0 mm … 5600 mm | 0 m ... 9 m |
| Field height: 1650 mm from 20 mm above the ground | Field height: 1650 mm from 20 mm above the ground | |
| Lowest 4 beams: 40 mm; upper range: 88 mm | Lowest 4 beams: 20 mm; upper range: 44 mm | |
| 1 PNP and 1 NPN output, short-circuit proof | 1 PNP and 1 NPN output, short-circuit proof | Relay output, 1 changeover contact |
| Light On/dark On, programmable | Light On/dark On, programmable | Dark On switching |
| IR 950 nm | IR 950 nm | Infrared 880 nm |
| Beam angle: Transmitter >20°, Receiver >10° | Beam angle: Transmitter >20°, Receiver >10° | Light spot diameter 230 mm at 6 m |
| **AL2012-P-1650/49/76a** | **AL4012-P-1650/49/76a** | **RL91-6-IR/38a/59/115** |
| **Profile width 16 mm** | **Profile width 16 mm** | **Visible red light and polarisation filter** |
| 0 mm … 5600 mm | 0 mm … 5600 mm | 0.2 m ... 7 m |
| Field height: 1650 mm from 20 mm above floor<br>lowest 4 beams: 40 mm; upper range: 88 mm | Field height: 1650 mm from 20 mm above floor<br>lowest 4 beams: 20 mm; upper range: 44 mm | |
| 1 PNP and 1 NPN output, short-circuit proof | 1 PNP and 1 NPN output, short-circuit proof | Relay output, 1 changeover contact |
| Light On/dark On, programmable | Light On/dark On, programmable | Dark On switching |
| IR 950 nm | IR 950 nm | Red 660 nm |
| Beam angle: Transmitter >20°, Receiver >10° | Beam angle: Transmitter >20°, Receiver >10° | Light spot diameter 160 mm at 4 m |
| **AL2016-P-1650/49/76a** | **AL4016-P-1650/49/76a** | **RL91-54-RT/38a/59/115** |

| | Surface light scanner | Surface light scanner | Power unit/power supply |
|---|---|---|---|
| |  |  |  |
| | **Series FLT-8-HW** | **Series FLT-8-H** | **PS1** |
| | ■ Surface light scanner with background evaluation, detection range = 0 m possible<br>■ Surface scanning in 3 detection field sizes<br>■ Operating voltage up to 48 V AC/DC<br>■ Alignment aid available as an accessory | ■ Surface light scanner with background suppression<br>■ Surface scanning in 3 detection field sizes<br>■ Operating voltage up to 48 V AC/DC<br>■ Alignment aid available as an accessory | ■ Power unit for simple electrical connection of the sensors<br>■ 10-way programming switch for time functions (GAN, GAB and time functions) and switching mode<br>■ Test input |
| | 15 V AC/DC ... 48 V AC/DC | 15 V AC/DC ... 48 VA C/DC | 115 V AC and 230 V AC |
| | 100 mA | 100 mA | 1 A |
| | 150 mm x 64 mm x 52 mm | 150 mm x 64 mm x 52 mm | 110 mm x112 mm x 110 mm |
| | M12 connector, 5-pin, cable 2 m included | M12 connector, 5-pin, cable 2 m included | 4x PG16 cable glands, cage spring terminals in terminal compartment |
| | Red LED | Red LED | Green LED: power on,<br>LED yellow: switching status, lights when relay is pulled in |
| | IP65 | IP65 | IP55 |
| | **Detection field size 50 mm x 500 mm** | **Detection field size 50 mm x 500 mm** | **Standard** |
| | 0 mm ... 2800 mm | 100 mm ... 2800 mm | Power consumption: 5 VA |
| | 50 mm x 500 mm with 3 beams | 50 mm x 500 mm with 3 beams | |
| | | | |
| | Relay output, 1 changeover contact | 2 PNP outputs, short-circuit proof, antivalent | Input type programmable for NPN or PNP signal output: Relay, 1 changeover contact |
| | Light-On | Dark On switching | Light On/dark On, programmable |
| | Infrared 880 nm | Infrared 880 nm | |
| | 50 mm at 2000 mm per beam | 50 mm at 2000 mm per beam | |
| | **FLT-8-HW-2800-50/25/31** | **FLT-8-H-2800-50/59/120a** | **PS1/31** |
| | **Detection field size 300 mm x 500 mm** | **Detection field size 300 mm x 500 mm** | |
| | 0 mm ... 2800 mm | 100 mm ... 2800 mm | |
| | 300 mm x 500 mm with 4 beams | 300 mm x 500 mm with 4 beams | |
| | Relay output, 1 changeover contact | 2 PNP outputs, short-circuit proof, antivalent | |
| | Light-On | Dark On switching | |
| | Infrared 880 nm | Infrared 880 nm | |
| | 50 mm at 2000 mm per beam | 50 mm at 2000 mm per beam | |
| | **FLT-8-HW-2800-300/25/31** | **FLT-8-H-2800-300/59/120a** | |
| Version 3 | **Version 3** | **Detection field size 500 mm x 500 mm** | **Detection field size 500 mm x 500 mm** |
| Version 3 | **Detection range/range** | 0 mm ... 2800 mm | 100 mm ... 2800 mm |
| Version 3 | **Detection field size** | 500 mm x 500 mm with 4 beams | 500 mm x 500 mm with 4 beams |
| Version 3 | **Switching output** | Relay output, 1 changeover contact | 2 PNP outputs, short-circuit proof, antivalent |
| Version 3 | **Switch type** | Light-On | Dark On switching |
| Version 3 | **Light type** | Infrared 880 nm | Infrared 880 nm |
| Version 3 | **Light spot diameter** | 50 mm at 2000 mm per beam | 50 mm at 2000 mm per beam |
| Version 3 | **Order code** | **FLT-8-HW-2800-500/25/31** | **FLT-8-H-2800-500/59/120a** |

# DATA LIGHT BARRIERS AND DISTANCE MEASURING DEVICES FOR ELEVATORS

**Data light barriers Series LS610-DA**

**Highlights**

- For data transmission in the lift shaft up to a height of 240 m
- Plug connector for fast mounting
- Easy parameterisation without opening the unit
- Usable from range 0
- Bar graph display for signal strength
- Light beam interruption no problem due to TVT (telegram verification technology)
- Innovative accessory range for quick and convenient mounting

**General technical data**

| | |
|---|---|
| **Range** | 0 m … 120 m/240 m |
| **Data rate** | 0 kbit/s ... 1500 kbit/s, adjustable |
| **Configuration** | via keypad |
| **Data flow display** | Transmitter: green LED, receiver: yellow LED |
| **Function indicator** | Bar graph for signal strength (8 LEDs: red, yellow, green), baud rate, operating modes |
| **Alignment aid** | Flashing LED at the front of the housing |
| **Operating voltage** | 18 V DC ... 30 V DC |
| **Operating temperature** | 10 °C … +50 °C |
| **Type of connection** | M12 connector |
| **Material** | Housing: ABS/PC, light exit: plastic |
| **Protection class** | IP65 |

**Distance measuring devices Series VDM80**

**Highlights**

- Suitable for precise positioning of the elevator cabin
- Extremely small temperature drift
- Can be used in many different applications due to 8 measuring modes
- Precise positioning due to high repeatability
- Universal quick clamp device as mounting accessory
- Easy alignment due to laser pointer and fine adjustment option

**General technical data**

| | |
|---|---|
| **Range** | 0,5 m ... 150 m |
| **Light transmitter** | Laser diode, infrared 880 nm +/- 30 nm |
| **Laser class** | 1 (EN60825) eye-safe |
| **Measuring system:** | Laser propagation time measurement |
| **Repeat accuracy:** | +/- 0.5 mm (1 Sigma) adjustable |
| **Absolute error** | +/- 5 mm (0.5 m ... ≤ 3.2 m) |
| **Max. process speed** | 10 m/s |
| **Alignment aid** | Laser pointer |
| **Operating voltage** | 24 V DC |
| **Operating temperature** | 10 °C … +40 °C |
| **Type of connection** | Screw terminals |
| **Material** | Housing: aluminium, bw anodised, light exit: glass |
| **Protection class** | IP65 |

# ROTARY ENCODERS FOR ELEVATORS AND AUTOMATIC DOORS

## Highlights

### TVI50 Series

- Incremental rotary encoder
- Robust and compact design
- Up to 1024 bars
- Metal disc that can bear high loads,
- Cost-effective Target line device

### RXI58 Series

- Incremental rotary encoder
- European industry standard
- Up to 10,000 bars

## General technical data

| | | | | |
|---|---|---|---|---|
| **Pulse count** | Up to 1,024 pulses | Up to 1,024 pulses | Up to 10,000 pulses | Up to 10,000 pulses |
| **Input** | | | | |
| **Output/Interface** | Push-pull, incremental | RS422 functionality, incremental | Push-pull, incremental | RS422, incremental |
| **Output code** | | | | |
| **Operating voltage** | 4.75 V DC ... 30 V DC | 5 V DC | 10 V DC ... 30 V DC | 5 V DC |
| **Switching current per channel** | 30 mA max. | 20 mA max. | 40 mA max. | 20 mA max. |
| **Output frequency** | 100 kHz max. | 100 kHz max. | 160 kHz max. | 160 kHz max. |
| **Max. rotational speed** | 6,000 $min^{-1}$ | 6,000 $min^{-1}$ | 12,000 $min^{-1}$ | 12,000 $min^{-1}$ |
| **Shaft load** | Axial: 20 N, radial: 40 N | Axial: 20 N, radial: 40 N | Axial: 40 N, radial: 60 N | Axial: 40 N, radial: 60 N |
| **Operating temperature** | -10 °C ... +70 °C | -10 °C ... +70 °C | -20 °C ... +80 °C | -20 °C ... +80 °C |
| **Max. dimensions diameter x length** | 50 mm x 40 mm | 50 mm x 40 mm | 58 mm x 52 mm | 58 mm x 52 mm |
| **Shaft type** | Solid shaft | Solid shaft | Solid shaft, blind hole shaft, hollow shaft | Solid shaft, blind hole shaft, hollow shaft |
| **Connection** | Cable | Cable | Connector or cable | Connector or cable |

## RHI90 Series

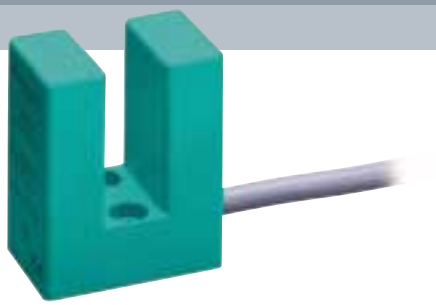
- Incremental rotary encoder
- Compact hollow shaft rotary encoder specifically for elevator construction
- Up to 2,500 bars
- Metal disc that can bear high loads

## CXX58 Series (CANopen)

- Absolute encoder with CANopen interface (V4.01)
- Standardised application profile for elevators DSP417 (lift profile)
- Addressing via DIP switch in removable housing cover
- 16 bit single-turn/30 bit multi-turn

| | | |
|---|---|---|
| Up to 2,500 pulses | Up to 2,500 pulses | |
| | | |
| Push-pull, incremental | RS422 functionality, incremental | CANopen, transfer rate: 1 Mbaud max. |
| | | Binary |
| 10 V DC ... 30 V DC | 5 V DC | 10 V DC ... 30 V DC |
| 40 mA max. | 20 mA max. | |
| 120 kHz max. | 120 kHz max. | |
| 3,500 $min^{-1}$ | 3,500 $min^{-1}$ | max. 6,000 $min^{-1}$ |
| Axial: 40 N, radial: 60 N | Axial: 40 N, radial: 60 N | Axial: 40 N, radial: 60 N |
| 20 °C ... +70 °C | 20 °C ... +70 °C | -40 °C ... +85 °C |
| 90 mm x 40 mm | 90 mm x 40 mm | 58 mm x 92 mm |
| Hollow shaft | Hollow shaft | Solid shaft, blind hole shaft |
| Connector or cable | Connector or cable | Terminal compartment |

# SLOTTED SENSORS FOR ELEVATORS



**SJ15 Series**

**SJ30 Series**

**Highlights**

- Comfort series with 15 mm slot width
- Comfort series with 30 mm slot width

**General technical data**

| Order code | SJ15-E2 | SJ15-A2 | SJ15-WS | SJ15-WÖ | SJ30-A2 | SJ30-WS | SJ30-WÖ |
|---|---|---|---|---|---|---|---|
| **Switch element function** | PNP normally open | PNP antivalent | AC normally open | AC normally closed | PNP antivalent | AC normally open | AC normally closed |
| **Engaged length (lateral)** | 17 mm ... 20 mm | | 18.5 mm ... 20.5 mm | | 27 mm ... 31 mm | 27 mm ... 31 mm | |
| **Operating voltage** | 10 V DC ... 30 V DC | | 20 V DC ... 250 V AC | | 10 V DC ... 30 V DC | 20 V DC ... 253 V AC | |
| **Switching frequency** | 500 Hz | | 25 Hz | | 150 Hz | 25 Hz | |
| **Voltage drop** | <3V | | <3V | | <3V | <3V | |
| **Operational current** | 200 mA | | 10 mA ... 500 mA | | 200 mA | 10 mA ... 500 mA | |
| **No load current** | <20 mA | | Residual current: 2.5 mA | | <20 mA | Residual current: 2.5 mA | |
| **Ambient temperature** | -25 °C ... +70 °C | | -25 °C ... +70 °C | | -25 °C ... +70 °C | -25 °C ... +70 °C | |
| **Connection** | 2 m PVC cable | | 2 m PVC cable | | 2 m PVC cable | 2 m PVC cable | |
| **Housing material** | PBT | | PBT | | ABS | ABS | |
| **Max. dimensions W x H x D** | 60 mm x 48 mm x 30 mm | | 60 mm x 48 mm x 30 mm | | 110 mm x 84 mm x 51 mm | 110 mm x 84 mm x 51 mm | |
| **Protection class** | IP67 | | IP67 | | IP67 | IP67 | |

# POSITION ENCODING SYSTEM WCS FOR ELEVATORS


**Highlights**

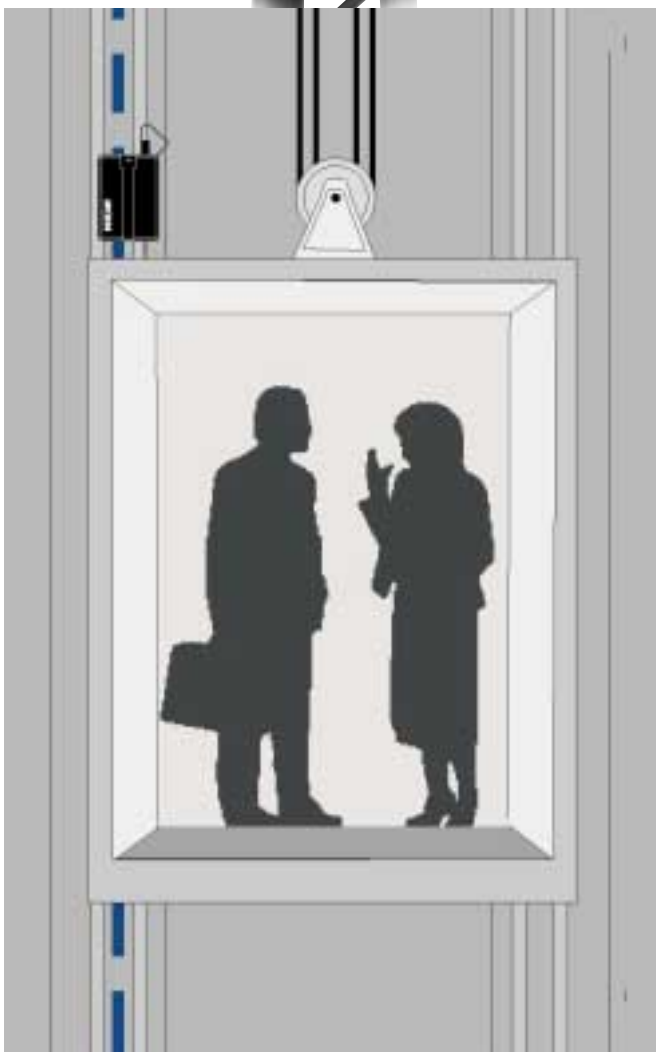
- Absolute position measuring system
- Contactless and thus noiseless and wear-free position detection
- Precise repeatability
- Speed up to 12 m/s
- Resolution = ± 0.4 mm
- Easy mounting
- Easy to maintain

**Code rail**

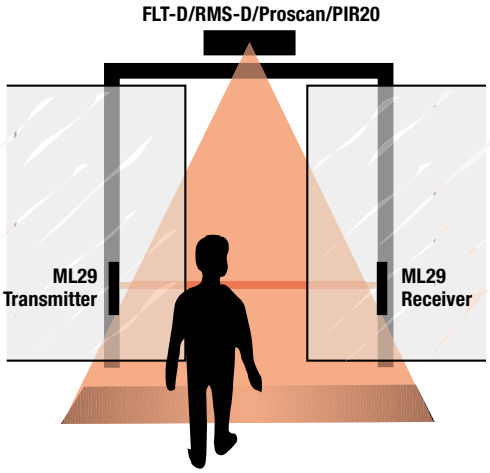
The code rail carries the absolute position information and assigns a unique position, which can be exactly reproduced, to each point of the track. Thus, teach-in of reference points is not necessary even if the voltage supply is switched off or fails. Mounting brackets allow for a quick installation of the code rail in the lift shaft.

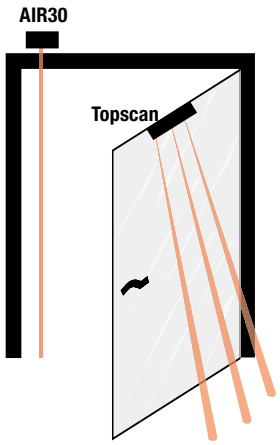
**The read head**

The U-shaped read head scans the code rail photoelectrically. At a possible speed of significantly more than 8m/s, the read head detects the individual position values at a distance of < 1 mm. Thus, the WCS more than meets the technical requirements for lifts. Due to the continuous position detection, acceleration and braking ramps can be optimised. The detected position values can be reproduced exactly regardless of temperature fluctuations. This ensures that the lift is level with the floor when it stops.
The read head for the position encoding system is available with different interfaces for connection to a control of a bus system: SSI interface, RS485, PROFIBUS-DP, Interbus-S, DeviceNet, CANopen

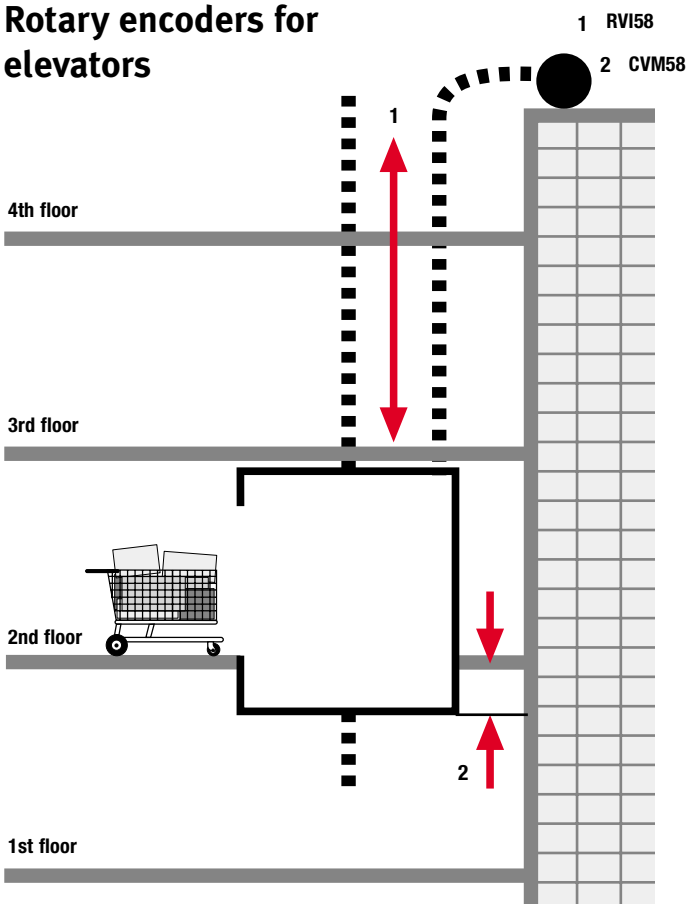


## Sensors for Automatic Doors

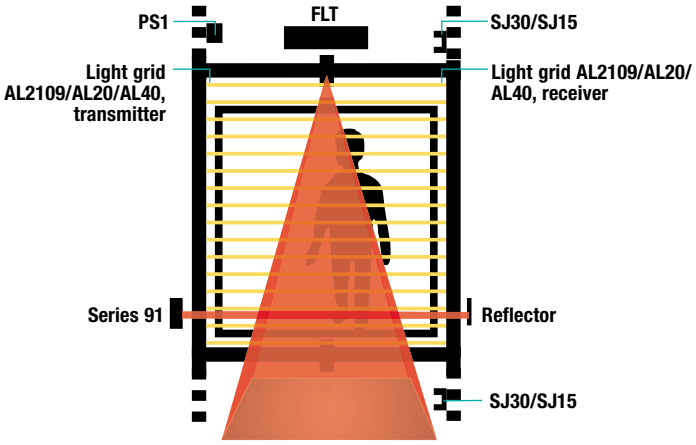


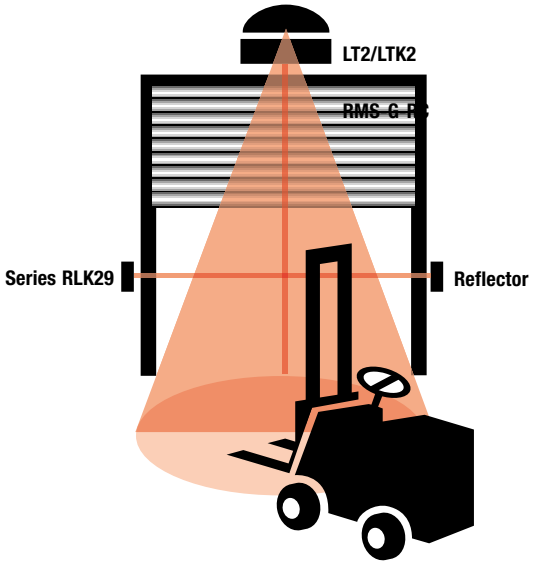

## Rotary encoders for elevators



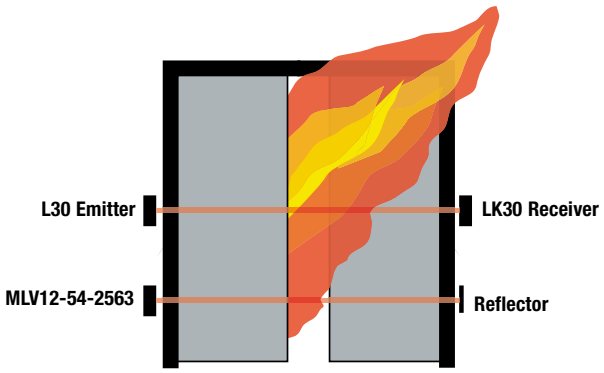

## Sensors for elevators




## Sensors for Industrial gates




## Sensors for industrial gates (fire protection)

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