Active infrared sensor for approach detection at industrial doors up to 1600 mm wide
Translation of original operating instructions for device version V.02.

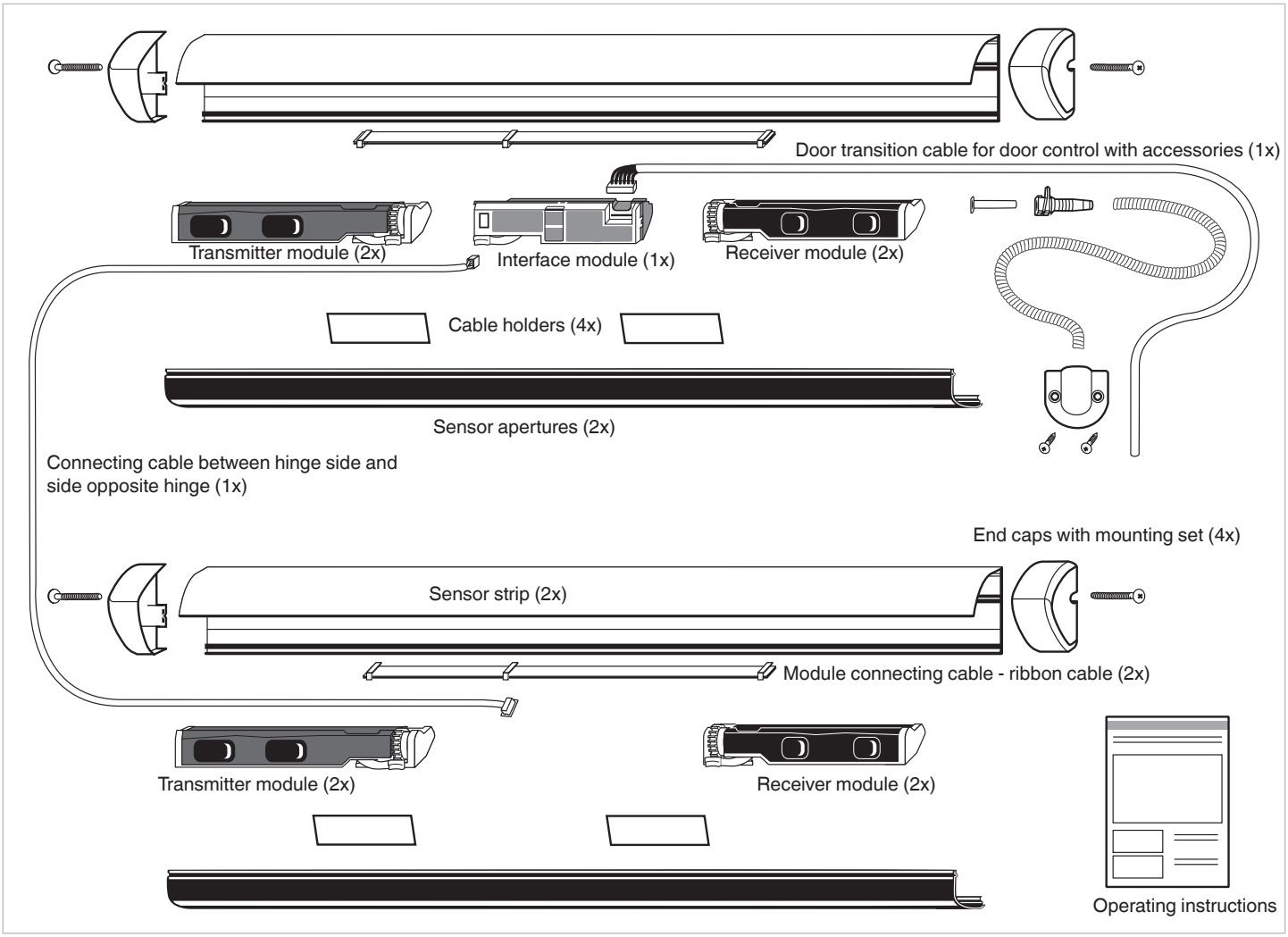
Safety Information

The device must only be operated with Safety Extra Low Voltage (SELV) which complies with the stipulations in the safety standards based on IEC 60950.

This device must be installed and maintained only by qualified, trained personnel.

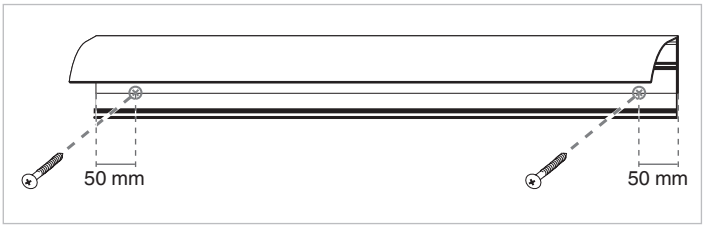
TÜV® TYPE TESTED

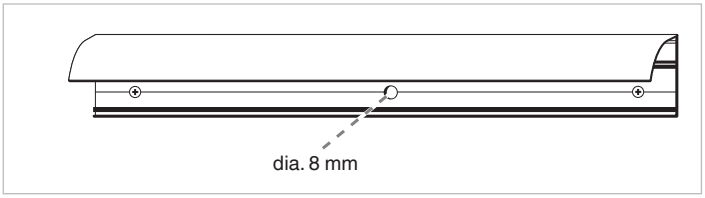
Delivery package



The number of parts may vary depending on the version

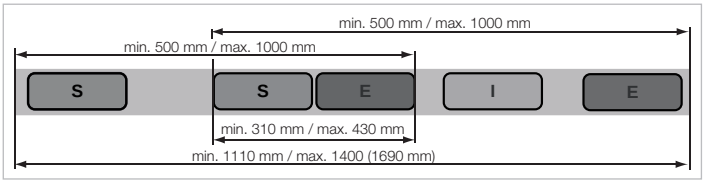
A) Mounting sensor strip





1. If necessary, cut the sensor strip to the required length (using saw).
2. Place the sensor strip in the required mounting position.
   Mounting height: 1500-3500 mm
3. Align the mounting holes with the groove in the sensor strip.
4. Screw on the sensor strip.
   Observe maximum screw head height: 3.5 mm.
5. Repeat steps 1-4 on the opposite side of the door.
6. Drill thru-hole for connecting the hinge side and side opposite hinge.
   Diameter: approx. 8 mm

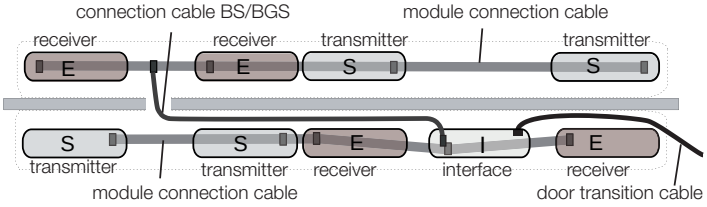
Note: Bore on left of interface facilitates cable routing.



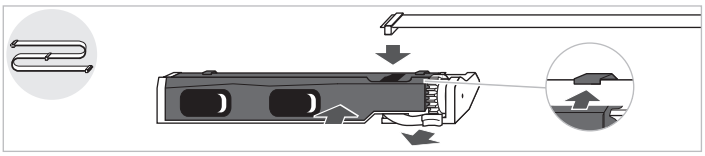
On both sides of the door, the transmitter (RED) must always be positioned on the **left** and the receiver (BLUE) always on the **right** in the sensor strip.

The interface (GREEN) can be freely positioned centrally between the two modules. The ideal placement is near the thru-hole for connecting the hinge side and side opposite the hinge.

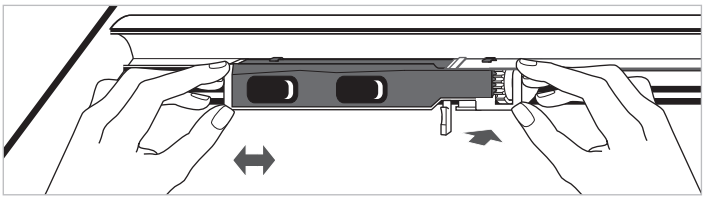
B) Inserting and replacing sensor modules



1. For the connection cable BS/BGS from the interface.
   Drill a hole (minimum diameter: 8 mm) in the door and profile for the connection cable BS/BGS from the interface to the sensor. Do not drill the hole near the end caps or behind the modules.
2. Always fit the emitter modules (RED) to the left and the receiver modules (BLUE) to the right in the profile.
3. The cable must be routed behind the modules.



1. Connect the module connecting cable (ribbon cable) to the top of the transmitter (RED) and fasten.
2. Open the lever on front of the transmitter.

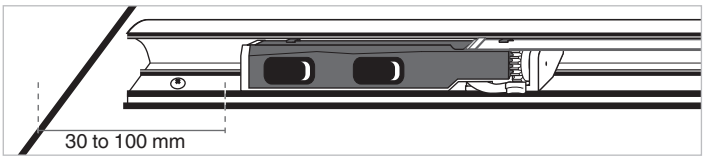


3. Insert the transmitter in the sensor strip and engage.
   Position of thumbwheel for right inclination angle: max. position 6

Only press sensor modules on the ribbed side surfaces when inserting. Do not exert any pressure on the black plastic body or lenses. Risk of damage.

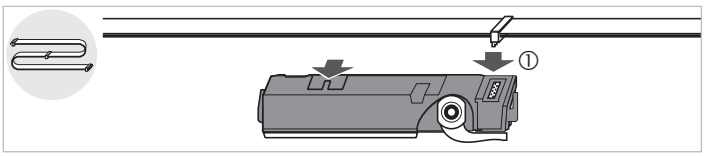
4. Position the transmitter near the door edge and close the lever.

When the transmitter module is correctly inserted, the module can be easily moved and the lever can be closed without exerting any force.

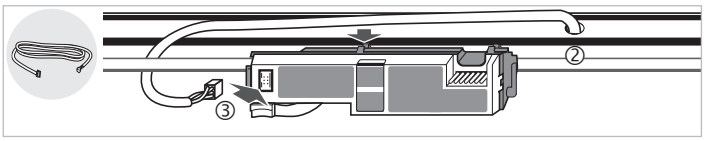


5. Repeat steps 1-4 for the receiver (BLUE) and the modules on the opposite side of the door.

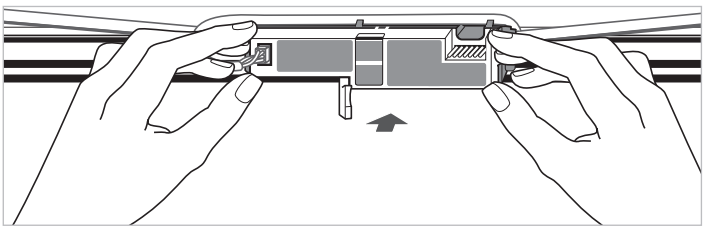
C) Connecting and inserting interface module



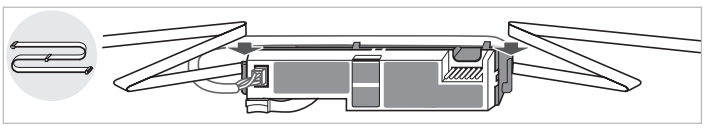
1. Connect and attach the connecting cable (ribbon cable) for connecting the modules on the rear of the interface.



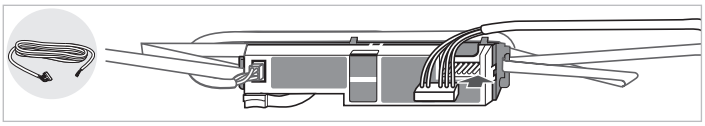
2. Guide the connecting cable for hinge side to side opposite hinge transition through the thru-hole.
3. Connect the connecting cable to the front of the interface and clamp on top.



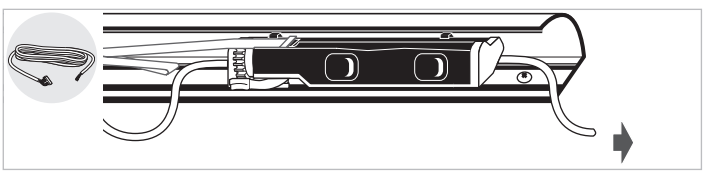
4. Open the lever on front of the interface.
5. Insert the interface centrally in the sensor strip and engage.
6. Position the interface and close the lever.
7. Connect the connecting cable to the ribbon cable on the opposite side of the door.



8. Fasten the ribbon cable on the interface sides and tension.

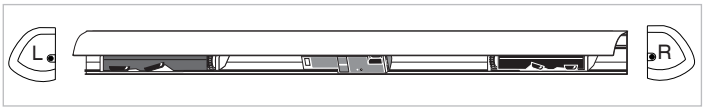


9. Connect the door transition cable at the front of the interface.



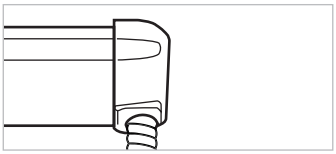
10. Push through the door transition cable behind the modules **in the direction of the door control** and tension.

D) Door control connection

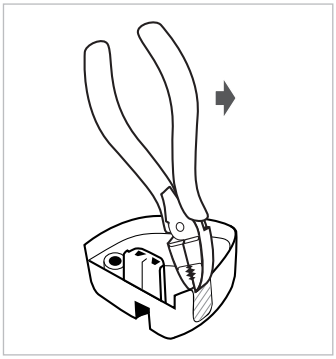


1. Depending on the position of the door control, select the appropriate end cap (right/left) for the cable exit in order to prepare the cable duct. Depending on the subsequent routing of the cable toward the door control, the end caps offer two cable routing options.

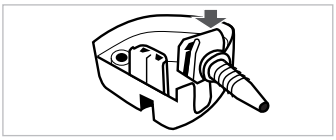
Option A: vertical



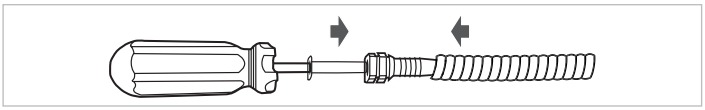
The door transition cable is routed downward through the end cap.

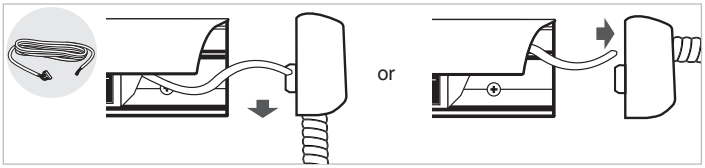


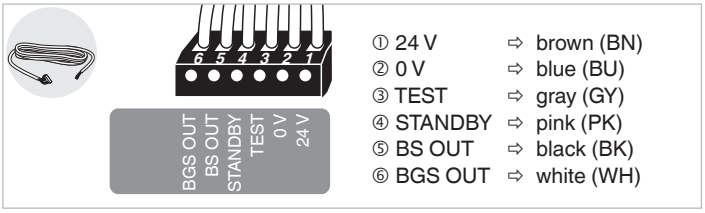
2. Break out the predetermined end-cap cut-out using pliers.



3. Insert the tension relief into the end cap cut-out.

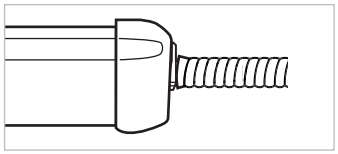




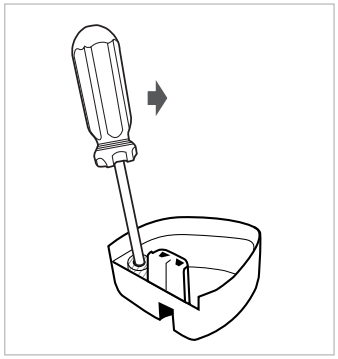


① 24 V	⇨	brown (BN)
② 0 V	⇨	blue (BU)
③ TEST	⇨	gray (GY)
④ STANDBY	⇨	pink (PK)
⑤ BS OUT	⇨	black (BK)
⑥ BGS OUT	⇨	white (WH)

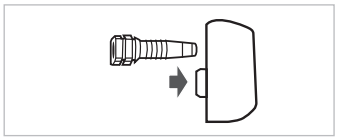
Option B: horizontal



The door transition cable is routed straight through the end cap.



2. Break out the internal dome using a suitable screwdriver.



3. Push the tension relief through the hole until it engages.

4. Push the cable sheathing onto the tension relief using a large Phillips screwdriver and push in the hollow rivet.

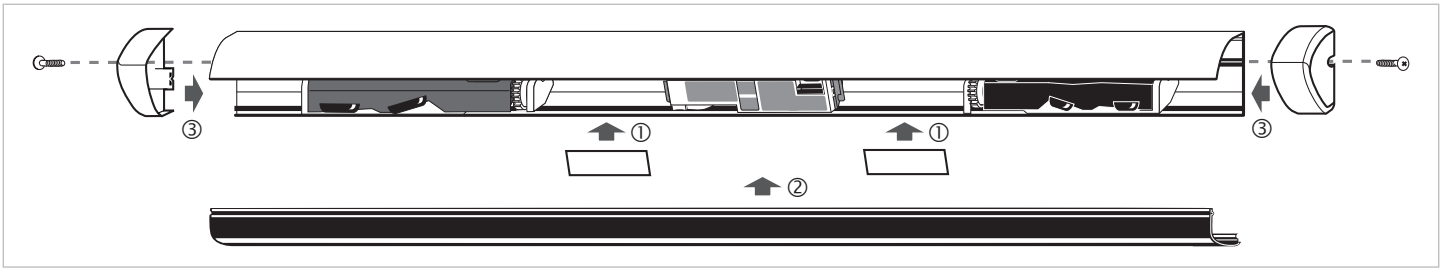
5. Fit the prepared end cap onto the sensor strip and feed through the door transition cable.

6. Connect the door transition cable to the door control and switch on the supply voltage.

E) Adjusting and teaching in sensor

See DoorScan settings on following double page.

F) Closing sensor



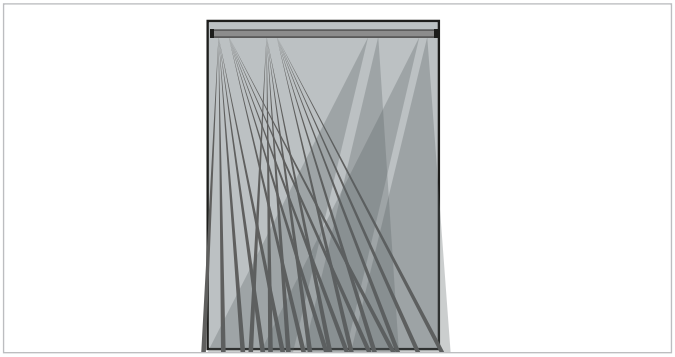
1. Fit cable holders.
2. Insert sensor aperture.
3. Screw on end caps.

DoorScan detection field

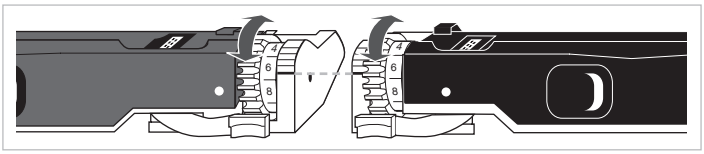
The sensor uses an active-infrared principle and forms a continuous rectangular detection field on each side of the door. If a person or object breaks one or more of the light beams, the sensor's output is triggered.

The detection field composed of 10 beams adapts automatically to the door width, whereby the sensor disables any superfluous beams. The slightly inclined position of the outer beams means that the main and secondary closing edges of the doors are more secure.

The sensor system is modular and can be adapted to a wide range of door widths and ambient conditions as follows:



Adjusting the inclination angle



0 ⇨ smallest angle

18 ⇨ largest angle

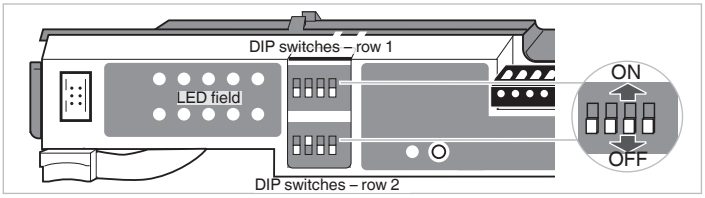
Turn the thumbwheel on the transmitter and then on the receiver until the appropriate setting is displayed at the line marking.

Recommended settings according to DIN 18650/EN 16005:

- Position 6 for 1900-2200 mm mounting height (default setting)
- Position 5 for 2500 mm mounting height
- Position 4 for 3000 mm mounting height
- Position 3 for 3500 mm mounting height

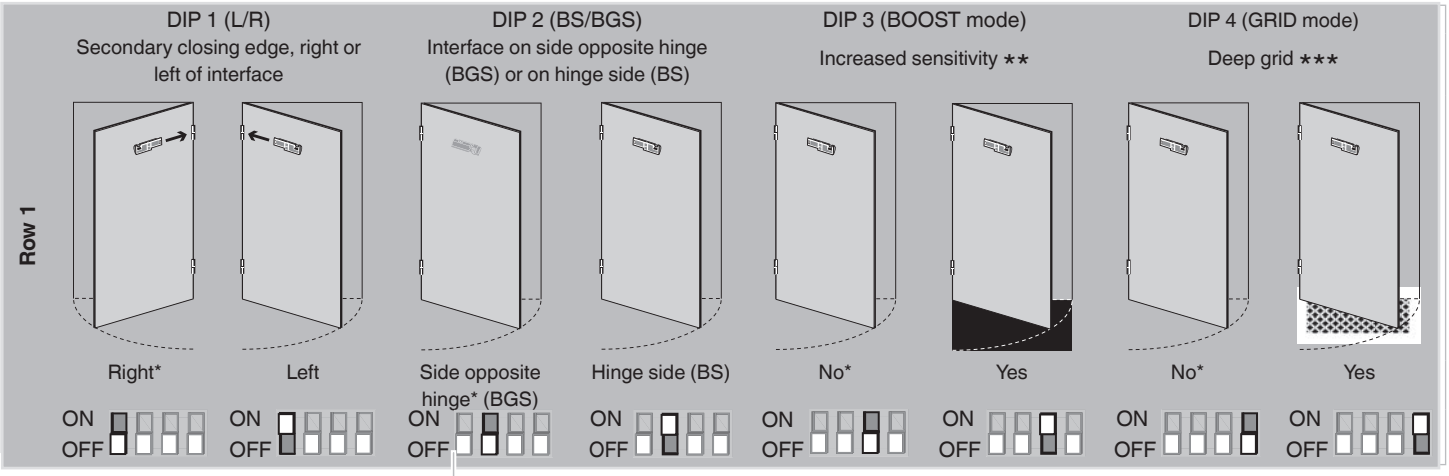
The transmitter and receiver must always be adjusted the same.

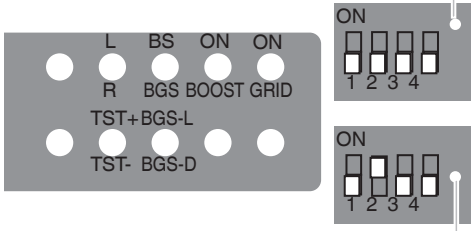
Setting DIP switch row 1 and row 2



1. Set DIP switch row 1 and row 2 on interface as described below. Combinations of the individual options may be used. When switching a DIP switch, the relevant LED flashes in the LED field. The changes are not saved while the LED is still flashing.
2. Press the Teach button (RED) 1x to save the settings.

*** Default setting**





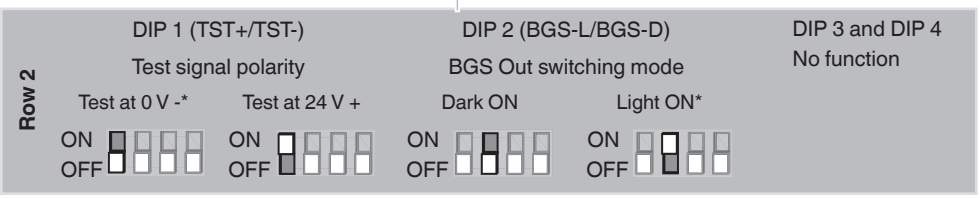
**** BOOST mode = increased sensitivity: optional setting**

Use e.g. for large mounting heights, dark floors or chromed doormats. The response time is increased to 200 ms.

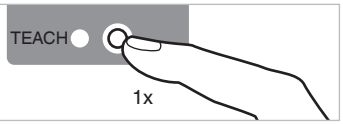
***** GRID mode = application for deep grid: optional setting**

Teach-in process: Cover the grid (cardboard/paper/carpet) so that at least two beams of the sensor module impinge on the cover. If more than one transmitter/receiver module is used on the relevant door side, the grid must be covered so that all the transmitter beams impinge on the cover during teach-in of the floor surface.

Note on GRID mode: When GRID mode is active, signal tracking is disabled and the detection height is set to approx. 200 mm. GRID mode should therefore be activated even in the case of ramps and steps located within the detection area.



*** Default setting**



After saving, press the Teach button once at any time to see the settings.

Display elements

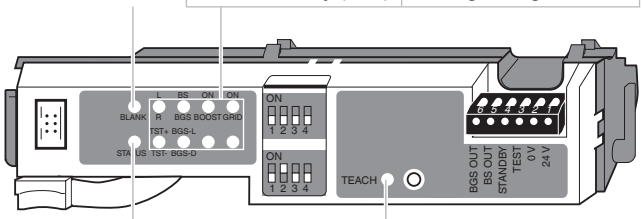
Interface

Blank LED (green)	Status
Lights up	Blanking active
Does not light up	Blanking inactive or only partly active

DIP LED (green)	Status
Lights up	DIP in ON position
Does not light up	DIP in OFF position
Flashes slowly (1Hz)	Setting changed

Receiver

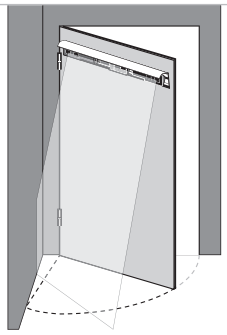
Status LED (red)	Status
Lights up	Detection
Flashes	Fault indication
Does not light up	No detection

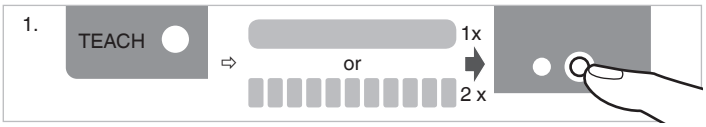


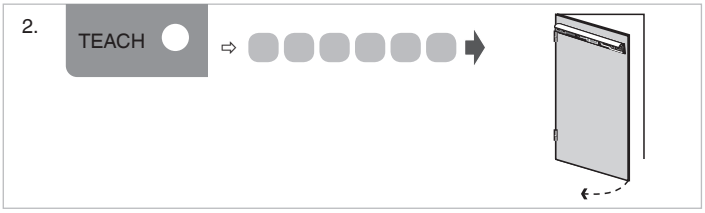
Status LED (red)	Status
Lights up	Detection or STANDBY mode active
Flashes	Fault indication
Does not light up	No detection

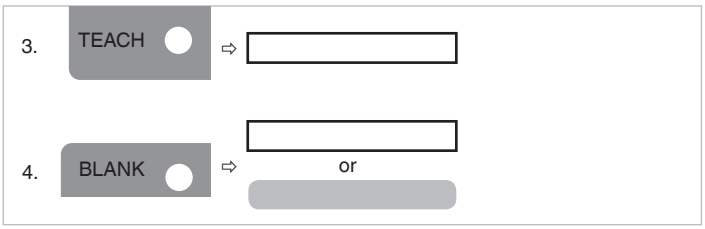
Teach LED (yellow)	Status
Lights up	Teach mode ready
Flashes slowly (1Hz)	Teach in floor surface
Flashes rapidly (2 Hz)	Teach-in blanking (door opening)
Flickers (8Hz)	Teach-in required
Does not light up	Sensor ready for operation

Commissioning (teaching and blanking)









If the LEDs flash after the teach-in process, the sensor is **not ready for operation**.

See Fault indication and Application Notes on the following pages.

During teach-in, the sensor first learns the floor surface and then, during a subsequent door opening run, the detection area.

If the sensor detects walls in the detection area during door opening, these are also taught into the sensor and suppressed (blanking), in order to enable full door opening during subsequent operation.

Following successful blanking, the sensor will operate correctly over the full door opening range If the wall contains elements that do not lend themselves to blanking, the sensor permits blanking until these elements are detected.

Before teach-in, remove all objects from the door area that are not part of the normal surroundings and leave the sensor detection area.

Teach-in process

Teach LED (YELLOW) on interface lights up or flickers:
Sensor is ready for teach-in.

1. Press Teach button (RED): 1x if LED is lit up / 2x if LED is flickering

   Teach LED flashes slowly: Floor surface is being taught in.

   Teach LED flashes rapidly: Teach-in of the floor surface is completed. Teach-in of the surroundings begins.

   If the red status LED flashes, see Fault indication on the following page.

2. Start a door opening run at standard speed within 20 s (with button or remote control).

   During the door opening run, the surroundings, any walls present and the opposite door post are taught in.

3. Teach LED is off.
   If there is **no** wall located in the door area, the Blank LED is off.
   The sensor is ready for operation.

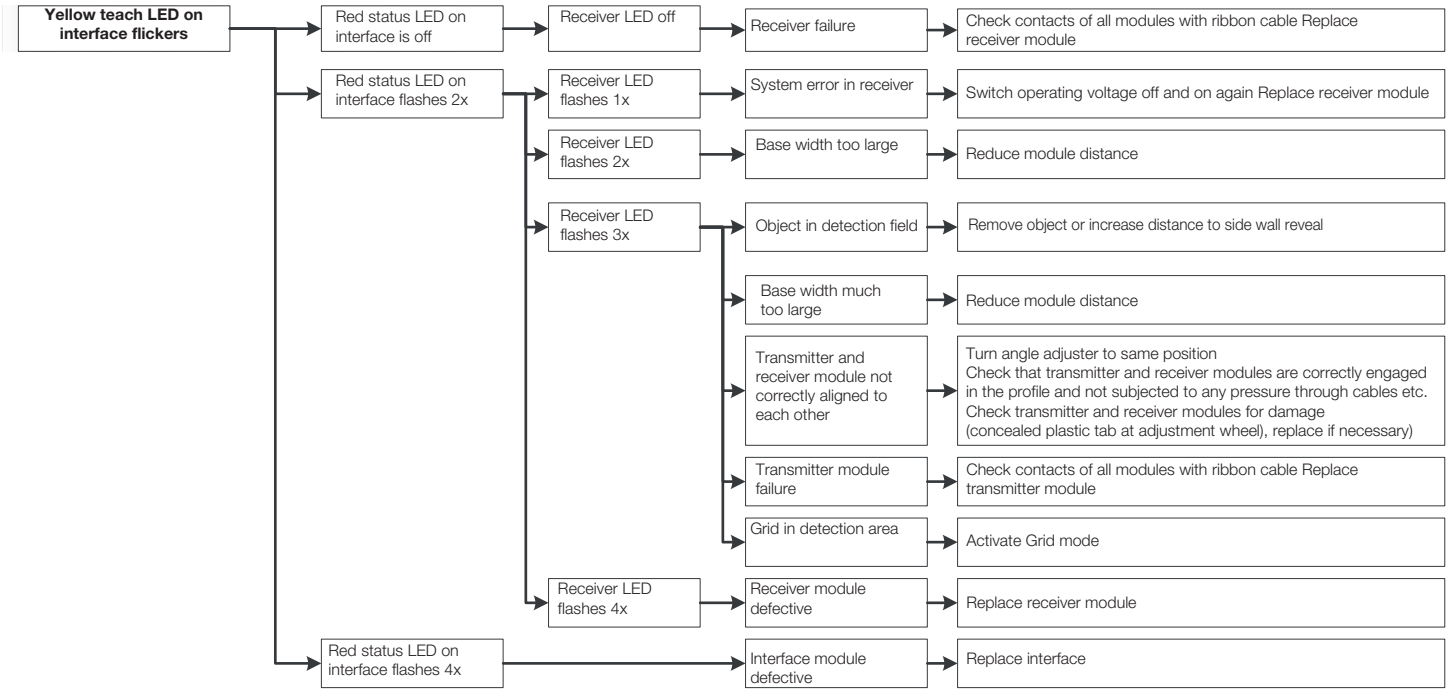
4. **If there is a wall present in the door area:**
   - The Blank LED lights up: Wall was fully taught in.
   - The Blank LED is off: The wall was not fully taught in. If the door does not open fully in this case, switch on wall suppression at the drive.

   The sensor is ready for operation.

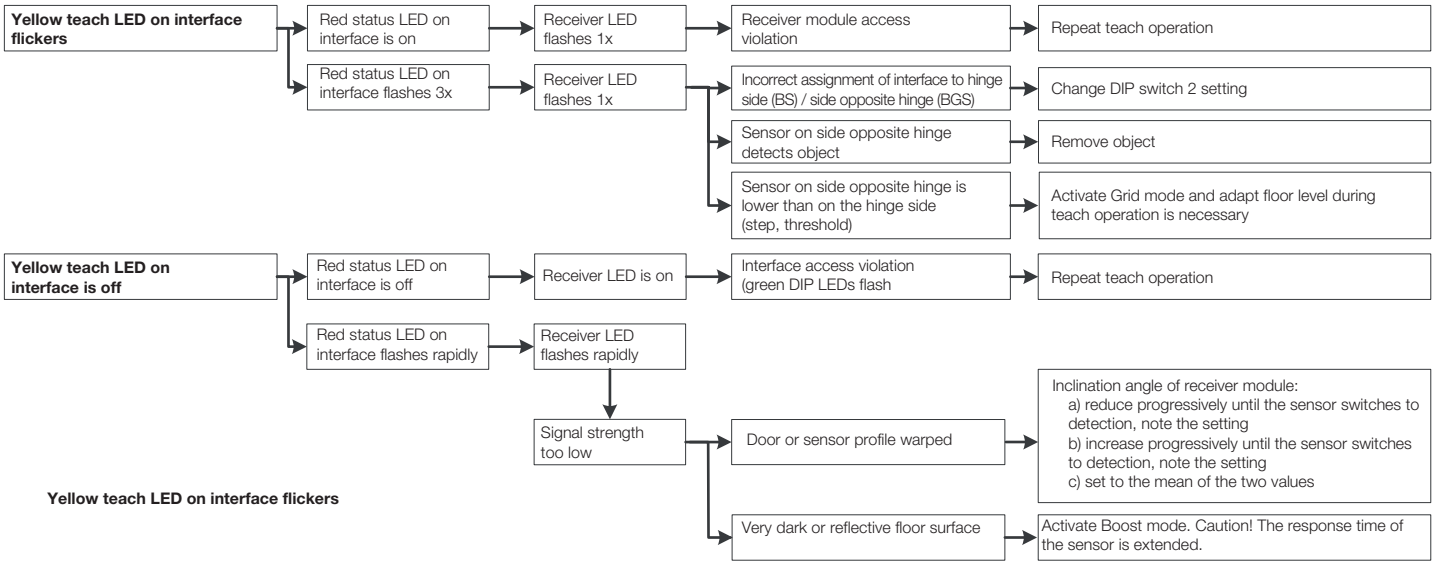
Check the effectiveness of the detection field before closing the sensor.

Fault indications

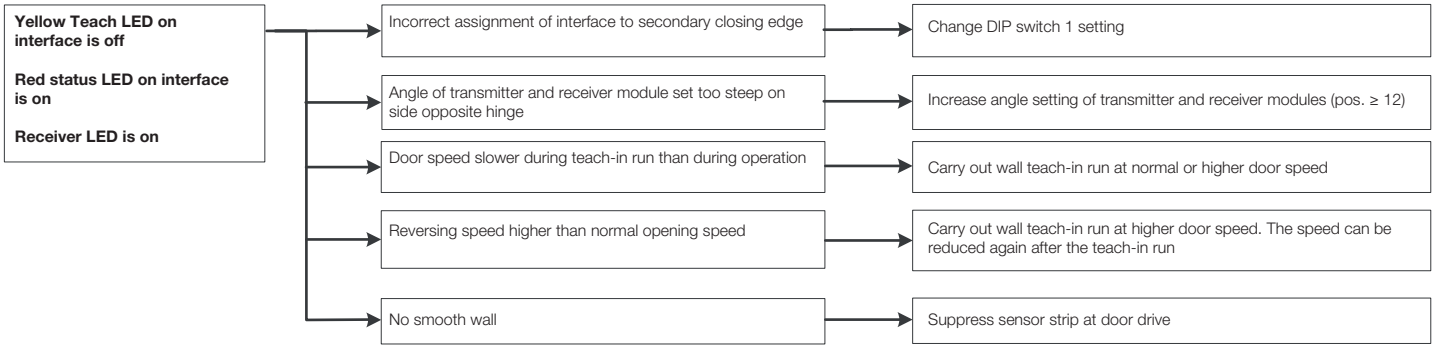
Error after floor teach-in



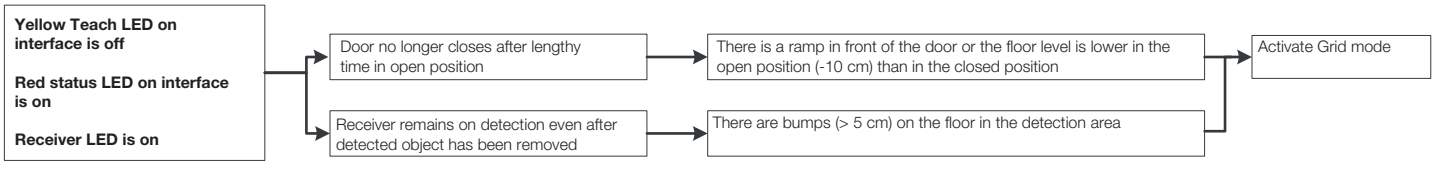
Error after wall teach-in



Wall is detected despite teach-in run



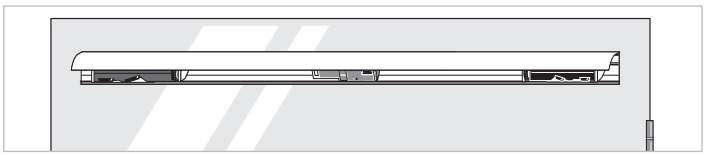
Fault during operation



Application Notes

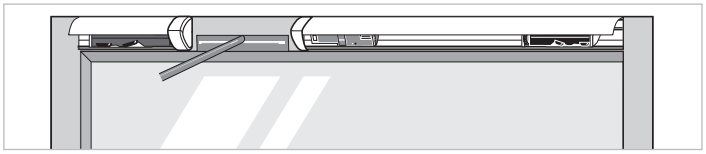
Faults due to multiple sensors interfering with one another

For swinging doors that converge, e.g., with adjacent doors, undesirable stop signals may occur due to mutual interference if the measuring spots overlap. Overlap of the measuring spots can be minimized by moving each of the sensors. On double swinging doors, the sensors on the two swinging doors will not interfere with one another. It is not possible for multiple sensor systems to cause any danger by interfering with one another.



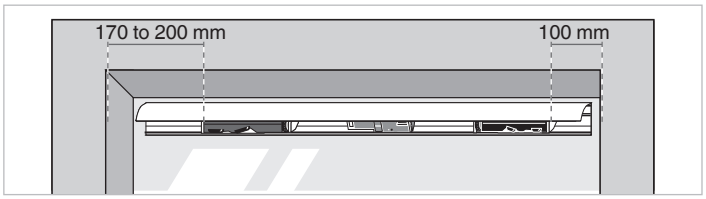
Special doors (e.g. glass doors)

If a cable cannot be routed through the door, install an interface on both door sides. For this purpose, an additional interface and an additional DoorScan Transfer Loop are required (see accessories).



Narrow door frames with normal and rack-and-pinion door closers

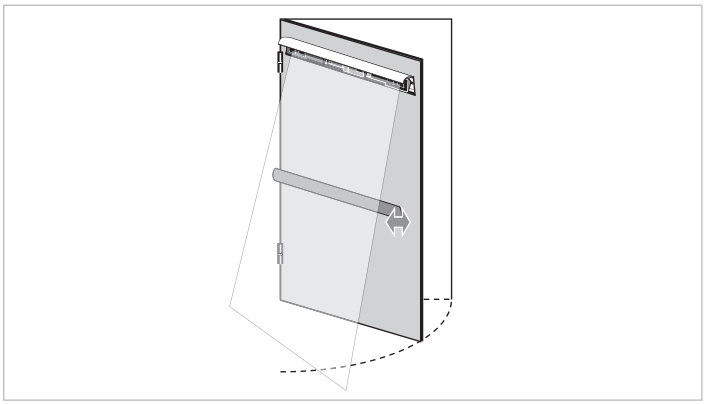
In the case of narrow door frames with normal and rack-and-pinion door closers, transmitters and receivers can be operated in separate sensing strips.



Doors with door reveals

On doors with wide door reveals, the transmitter requires a sufficient clearance from the door reveals. At the standard mounting height of 1900-2100 mm, this clearance is approx. 170 mm. At greater mounting heights, the clearance increases to approx. 200 mm.

The receiver can usually be positioned at a distance of 100 mm from the closing edge.



Horizontal handles

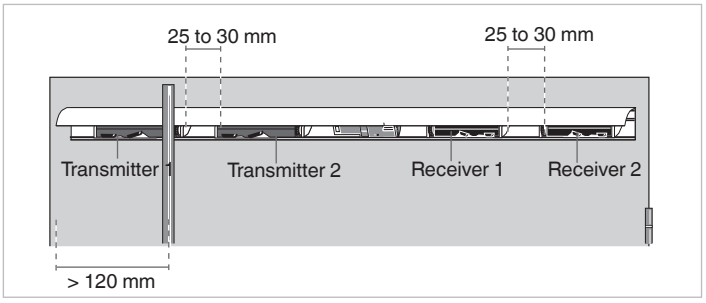
1. Position the transmitter and receiver as described in the mounting instructions.
2. Set the inclination angle so that the detection field is located in front of the handle.

Vertical handles

Sensor strip fits behind handle.

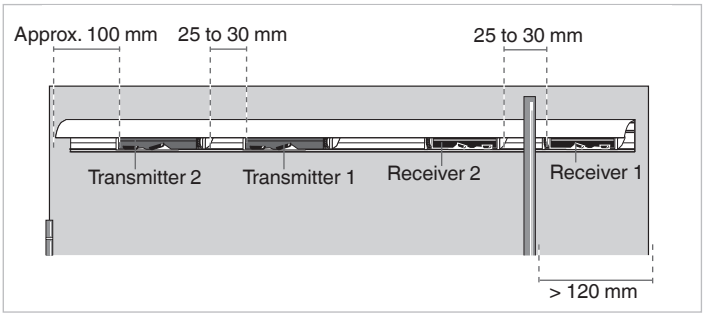
The handle is positioned at a distance of less than 300 mm from the main closing edge.

For standard-compliant protection according to DIN 18650/EN 16005 you additionally need 1 transmitter module, 1 receiver module and 1 connecting cable module (ribbon cable) for each door side --> (see Accessories).



Left handle

1. Position the transmitter 1 as far to the left as possible.
2. Position transmitter 2 approx. 25–30 mm to the right of transmitter 1 or 10 mm to the right of the handle. Transmitter 2 must not be behind the handle.
3. Position receiver 2 approx. 100 mm from the secondary closing edge. Position receiver 1 approx. 25 - 30 mm to the left of receiver 2.



Right handle

4. Position receiver 1 as far to the right as possible.
5. Position receiver 2 approx. 25–30 mm to the left of receiver 1 or 10 mm to the left of the handle. Receiver 2 must not be behind the handle.
6. Position transmitter 2 approx. 100 mm from the secondary closing edge.
7. Position transmitter 1 approx. 25 - 30 mm to the right of transmitter 2.

If teach-in is not possible in either case, increase the inclination angle or move the first transmitter. The door may, however, no longer be protected in accordance with DIN 18650/ EN 16005.

For further tips and tricks regarding application-related settings, please visit www.pepperl-fuchs.com

Technical data

Functional principle	Active infrared scanner with background evaluation
Mounting height	min 1500 mm; max 3500 mm for vertical CA reference bodies
Light source	IRED, 850 nm
Operating voltage	24 VDC +/-20%
Switching mode	Hinge side (BS) light on / side opposite hinge (BGS) can be switched to light on/ dark on
Switching voltage/current	npn / 30 V DC / max. 100 mA
Current consumption	max 200 mA
Response time	52 ms / 200 ms in BOOST mode
Ambient temperature	-30 ... 60°C
Relative humidity	25% .. 95%, non-condensing
Degree of protection	IP54 in accordance with EN60529
Connection	Connector strip with connecting cable, 6-wire
Material	Sensing strip: aluminum / End cap: PA / Sensor aperture: PC

Functional safety related parameters

Safety Integrity Level	SIL2
Performance level (at 40°C)	PL d
Category	Cat. 2
$MTTF_d$	112.7 a
Mission Times (T_M)	10 a

Default settings

Function	Setting
DIP switches	Row 1: Switch 1-4 down (OFF) Row 2: Switch 1 down (OFF). Switch 2 up (ON)
Thumbwheel	Position 0

Accessories

Weather caps for protection against climatic conditions (can be cut to required length)

DoorScan Weather Cap L1200	Length: 1200 mm
DoorScan Weather Cap L1600	Length: 1600 mm

End cap sets

DoorScan End Caps	Standard end cap set (left/right)

Additional sensor modules for customized configurations

DoorScan-I/30	Interface module
DoorScan-R	Receiver module
DoorScan-T	Transmitter module

Connecting cable

DoorScan Connection Cable 5p	Module connecting cable - ribbon cable with 5 connectors
DoorScan Transfer Loop	Door transition cable to door control
DoorScan Cable BS/BGS	Connecting cable between hinge side and side opposite hinge

Contact

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Note:
The operating instructions in the languages French, Italian and Spanish are available for downloading on the Internet www.pepperl-fuchs.com

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