



**THE PEELLE COMPANY**  
FREIGHT DOORS | CAR GATES | CAR ENCLOSURES

# GUIDE 235



## **LIGHT CURTAIN #1 & LIGHT CURTAIN #2 (THE PROTECTOR™)**

## **INSTALLATION GUIDE 4804 / 4805 SERIES**

**VSD** | VERTICALLY  
SLIDING  
DOORS

04/15/2016-V5



# IMPORTANT INFORMATION

FOLLOW THE INSTRUCTIONS GIVEN IN THIS MANUAL CAREFULLY. FAILURE TO DO SO MAY CAUSE CUSTOMER COMPLAINTS, INJURY, OR CALL BACKS. KEEP INSTRUCTION MANUAL ON SITE.

FOR THE OPERATION OF LIGHT CURTAIN IN THE MODE "AUTO BLANKING", THE FOLLOWING POINTS MUST BE OBSERVED:

- THE DOOR CONTROLS MUST GENERATE THE TEST INPUT SIGNAL (WHERE USED) WITHOUT FAIL.
- THE LIGHT CURTAIN REMAINS INACTIVE UP UNTIL THE GATE IS COMPLETELY OPEN



DO NOT USE THIS PRODUCT IN EXPLOSIVE ATMOSPHERES, RADIOACTIVE ENVIRONMENTS OR FOR MEDICAL APPLICATIONS! USE ONLY SPECIFIC AND APPROVED DEVICES FOR SUCH APPLICATIONS OTHERWISE SERIOUS INJURY OR DAMAGE TO PROPERTY MAY OCCUR!

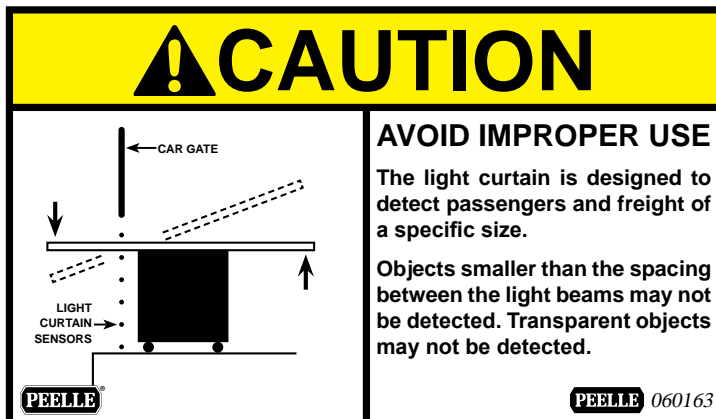
IT IS IN THE SOLE RESPONSIBILITY OF THE PLANNER AND/OR INSTALLER AND/OR BUYER THAT THIS PRODUCT IS USED ACCORDING TO ALL APPLICABLE CODES AND STANDARDS IN ORDER TO ENSURE SAFE OPERATION OF THE WHOLE APPLICATION.

ANY CHANGE OF THE DEVICE BY THE BUYER OR USER MAY RESULT IN AN UNSAFE CONDITION.

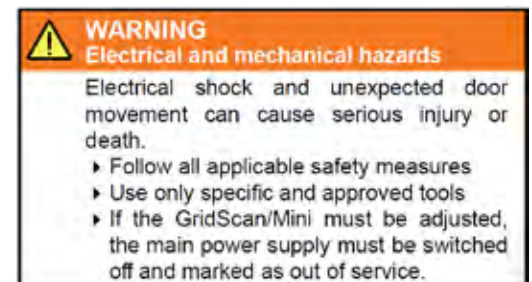
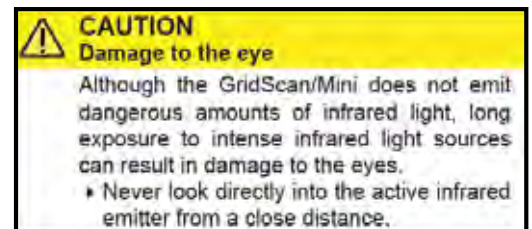
THE MANUFACTURER DENIES EVERY LIABILITY AS WELL AS WARRANTY CLAIMS WHICH RESULT FROM SUCH MANIPULATION.

OBJECTS THAT PASS THROUGH THE PROTECTED AREA FASTER THAN THE MAXIMUM RESPONSE TIME OF THE DEVICE MAY NOT BE DETECTED.

IT IS THE RESPONSIBILITY OF THE SPECIFIER, PURCHASER AND INSTALLER TO ENSURE THAT ON COMPLETION, THE INSTALLATION COMPLIES WITH ALL RELEVANT FEDERAL, STATE AND LOCAL CODES AND REGULATIONS THAT APPLY TO YOUR APPLICATION. PARTICULAR ATTENTION SHOULD BE GIVEN TO CLAUSE 2.13.3.4 POWER CLOSING OF VERTICALLY SLIDING HOISTWAY DOORS AND VERTICALLY SLIDING CAR DOORS OR GATES OUTLINED IN ASME A17.1a-2010 / CSA B44a-10 ADDENDA TO SAFETY CODE FOR ELEVATORS AND ESCALATORS. THESE LIGHT CURTAIN SYSTEMS MUST BE INSTALLED ONLY BY AUTHORIZED AND FULLY TRAINED PERSONNEL.



ENSURE THIS LABEL IS INSTALLED IN A VISIBLE LOCATION TO THE USER



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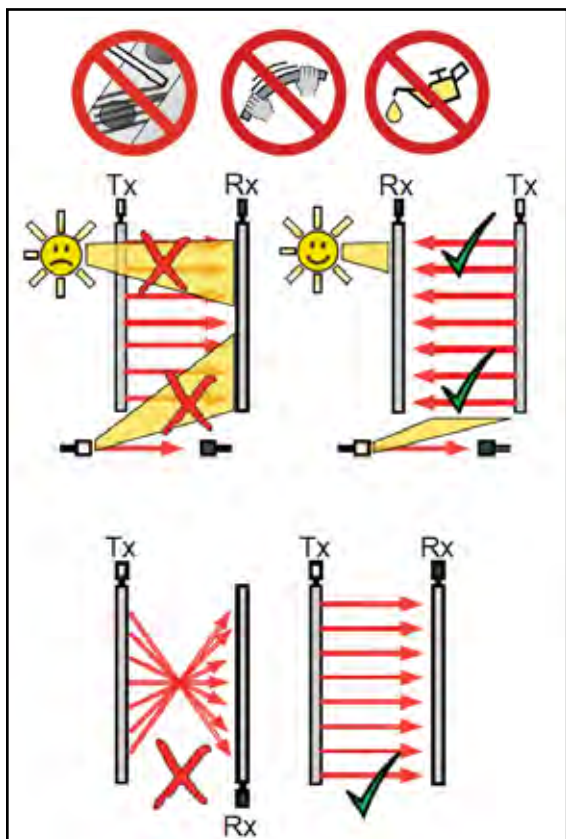
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# Overview and Precautions



## Overview

The emitter and receiver edges create a grid of infrared beams which offer 1.8 m (6 ft) in protection height. When the infrared beams are interrupted, the output sends a signal to the connected controller. As soon as the detection area is clear again, the output switches to indicate that the area is “clear”. The blanking system (The Protector™ configuration) is designed to mount directly into the guide rails. When the door closes, the GridScan/Mini recognizes the door as such and does not switch the output.

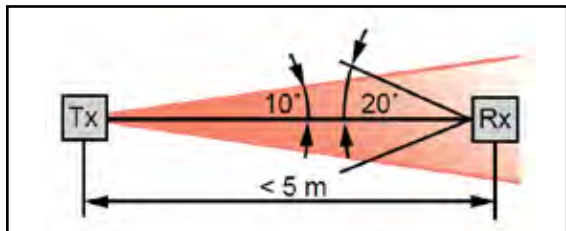


## General instruction and precaution

- Never scratch or paint the optical lenses because they form the light path!  
Do not drill additional holes into the profile. Unpack the profiles just before installation in order to avoid damage.
- Do not bend or twist the edges!
- Oil can damage the cables. Contamination must be avoided at all times!
- Although the GridScan/Mini is insensitive to direct sunlight avoid all unnecessary exposure if possible.
- Avoid interference from blinking lights or infrared light sources such as photo cells or other light curtains.
- Do not install the GridScan/Mini in places where the emitter and receiver edges are directly exposed to light sources such as fluorescent tubes or energy saving lamps.
- Make sure to place the connection plugs for both the emitter and receiver at the same end.

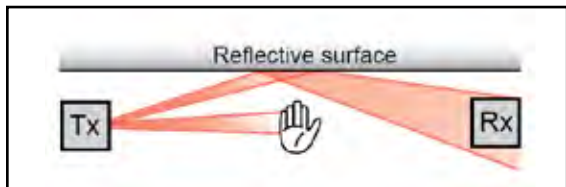
**NOTICE**  
**Mechanical damage to the GridScan/Mini**

- ▶ Do not drill additional holes into the light curtain
- ▶ Do not overtighten the mounting screws
- ▶ Mount the edges on a flat surface



## Alignment

The optical axis of the emitter (Tx) and the receiver edge (Rx) need to be aligned towards each other to ensure the light curtain functions reliably.



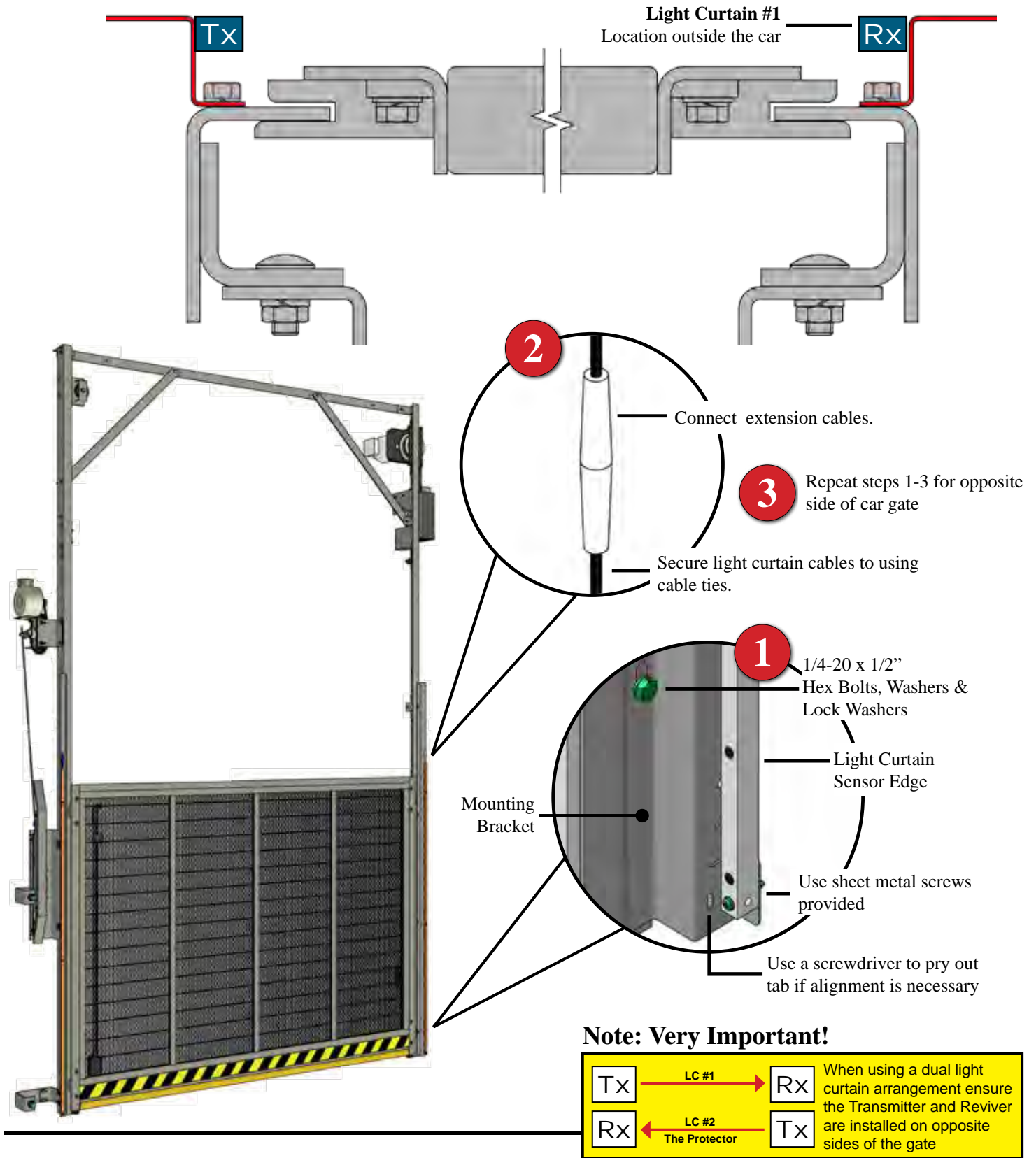
## Reflective Surfaces

Reflective surfaces near to or parallel to the surveillance area can cause reflections and interfere with the GridScan/Mini's functions. Keep a reasonable distance between the sensor edges and any reflective surface.



# Installation - Light Curtain #1

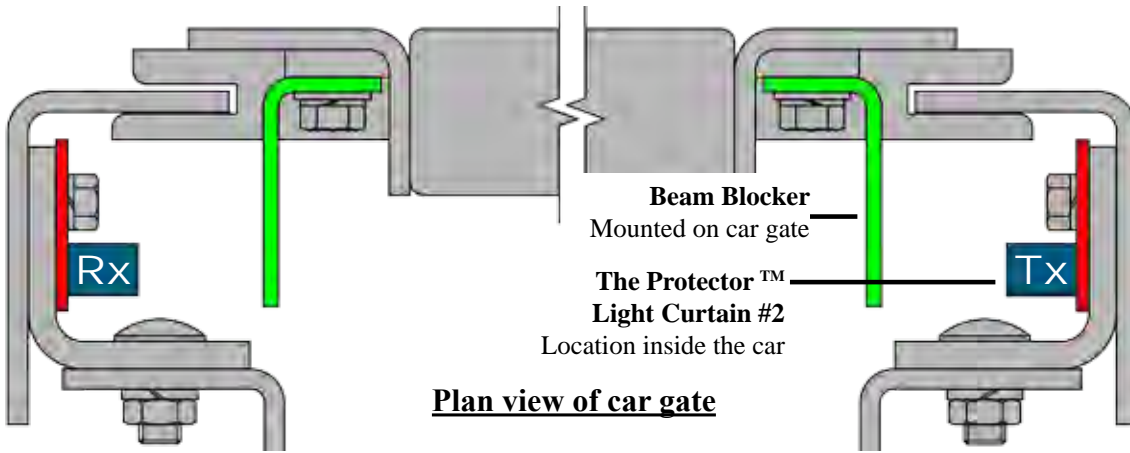
Refer to your job specific drawings package for clarification on the arrangement that has been provided to you.



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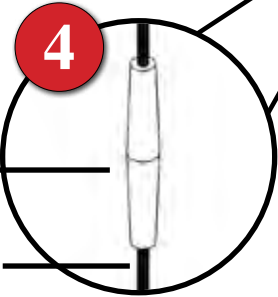
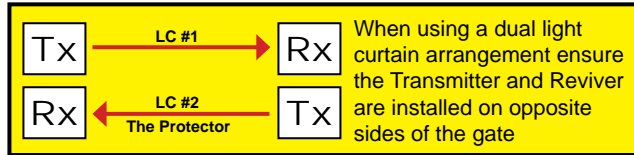
# Installation - Light Curtain #2 / The Protector™

Refer to your job specific drawings package for clarification on the arrangement that has been provided to you.

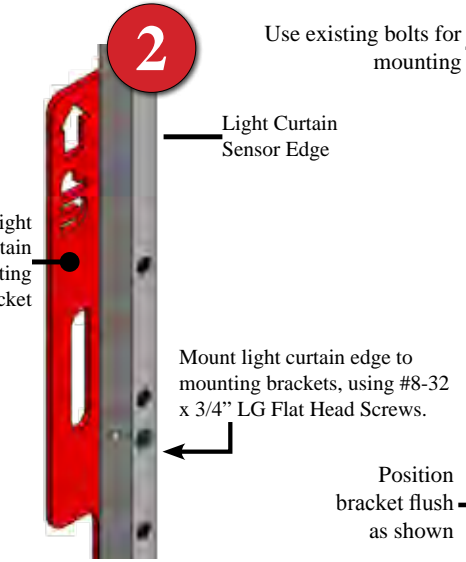


**1** Open the Car Gate to the full open position.

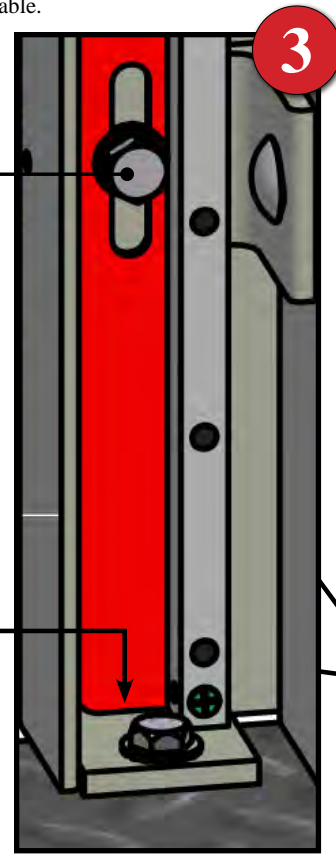
## Note: Very Important!



Install Beam Blockers as shown, ensure Beam Blockers cover the lowest sensor, when the Car Gate Panel is in the closed position.

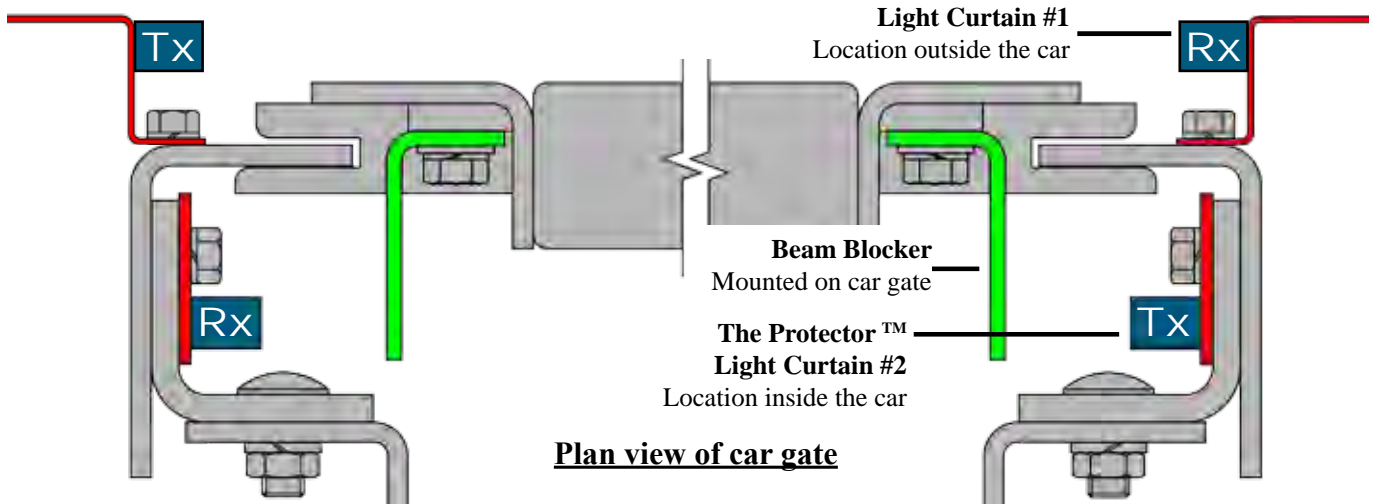


**6** Repeat steps 1-5 for opposite side of Car Gate

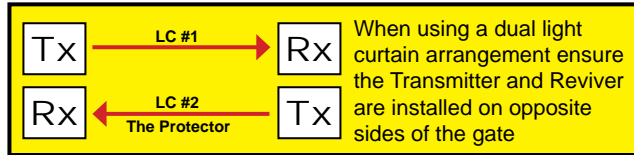


# Installation - Dual Light Curtain

When LC#1 and LC#2 (The Protector™) are installed on the same gate, this is called Dual Light Curtain Installation.



## Note: Very Important!



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# Wiring and Schematics

## **NEW INSTALLATION**

If this is a new car gate installation, you should have job specific electrical schematics. Please refer to these for all light curtain wiring connections.

## **RETROFIT**

If this is an after market purchase and you are installing the light curtains on an already existing car gate. Please refer to the following wiring pages for the light curtain wiring information.

You will have to determine what light curtain system and interface you will be using.

If your are unclear about which wiring diagram you need to follow please call our technical support line. 1-800-787-5020 x 275

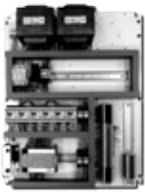


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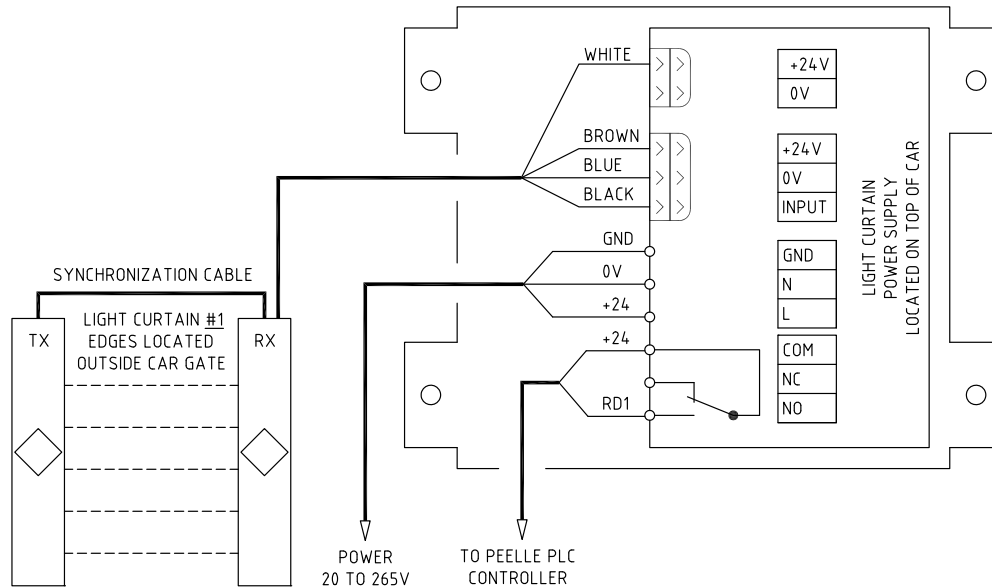
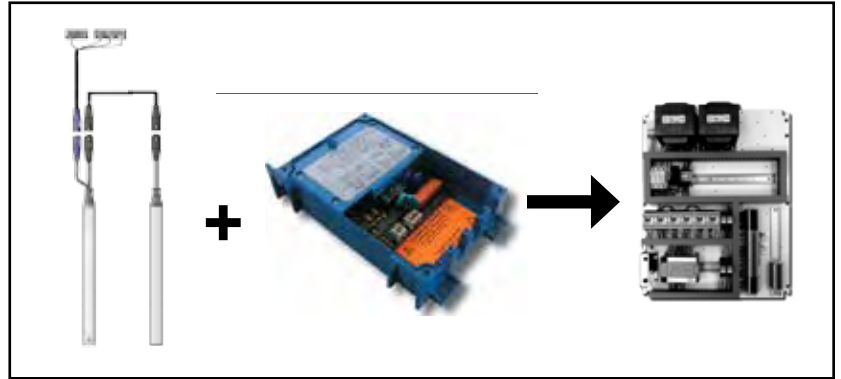
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# Wiring - Single Light Curtain

## Peelle PLC installation



### NOTICE

#### Moisture environment

If equipment in elevator hoistway will be subject to low pressure or strong jets of water, please use a silicone adhesive to seal the light curtain controller cover and cable entry points.



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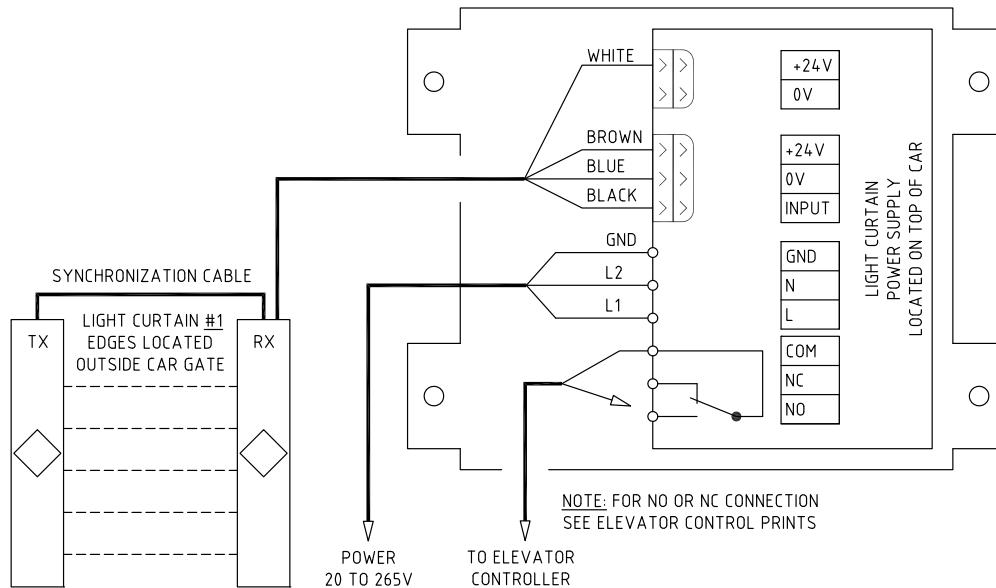
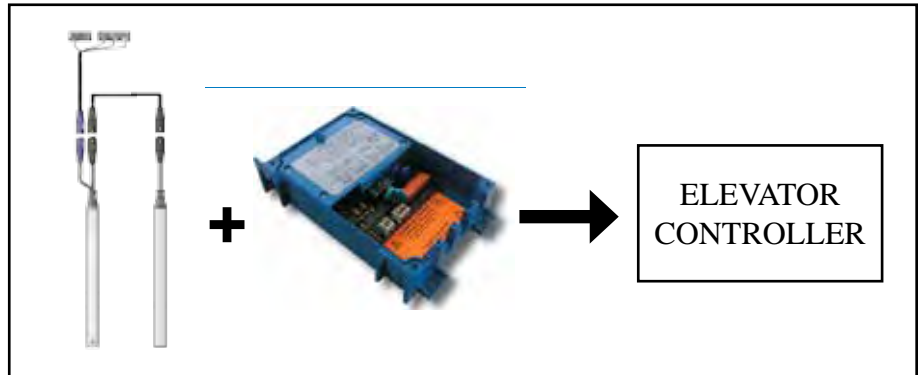
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# Wiring - Single Light Curtain

## Wireless installation



### NOTICE

#### Moisture environment

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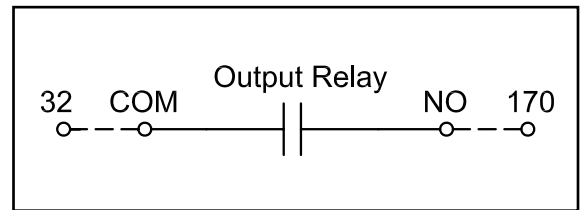
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# Wiring - Single Light Curtain

## Relay Logic installation

### WIRING FOR EXISTING PELLE GATES WITH SENSOR BEAM

When adding a light curtain to an existing gate, compliance with A17.1-2000 is required. If the pre-existing reversal device is a Peelle Sensor Beam, simply wire the Output Relay Contact between 32 and 170 of the Peelle Controller.



### WIRING FOR EXISTING PELLE GATES WITH OR WITHOUT REVERSING EDGE

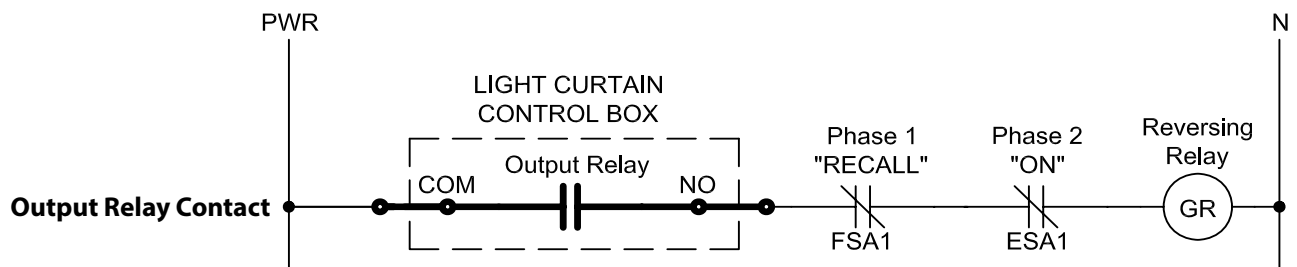
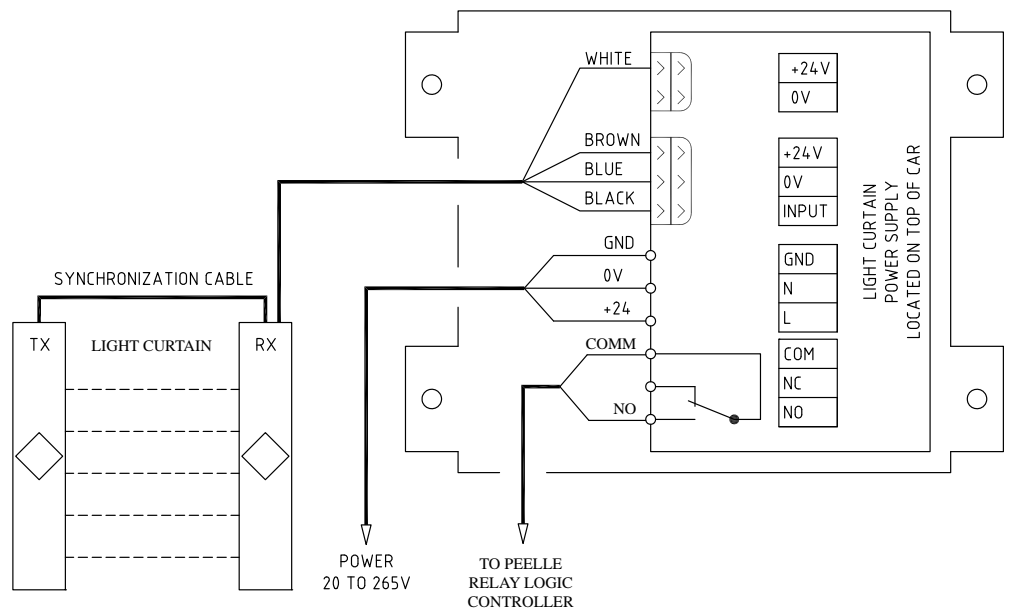
1. Wire the Output Relay Contact to the GR relay of the door control. Add Contacts from Fire Service relays (not included) to ignore detection during Fire Service.
2. Wire a gate Slow Speed Relay as shown in the diagram to ensure gate Slow Speed operation during Fire Service Phase 1 Recall.
3. Wire the gate Slow Speed Relay Contacts to the GH / GL contactor of the existing logic as shown.

**NOTES AND EXCEPTIONS:**

1. Code compliance is the responsibility of the installer.
2. For other control interfaces, please contact Peelle engineering for assistance.

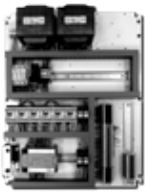
**NOTICE**  
Moisture environment

If equipment in elevator hoistway will be subject to low pressure or strong jets of water, please use a silicone adhesive to seal the light curtain controller cover and cable entry points.



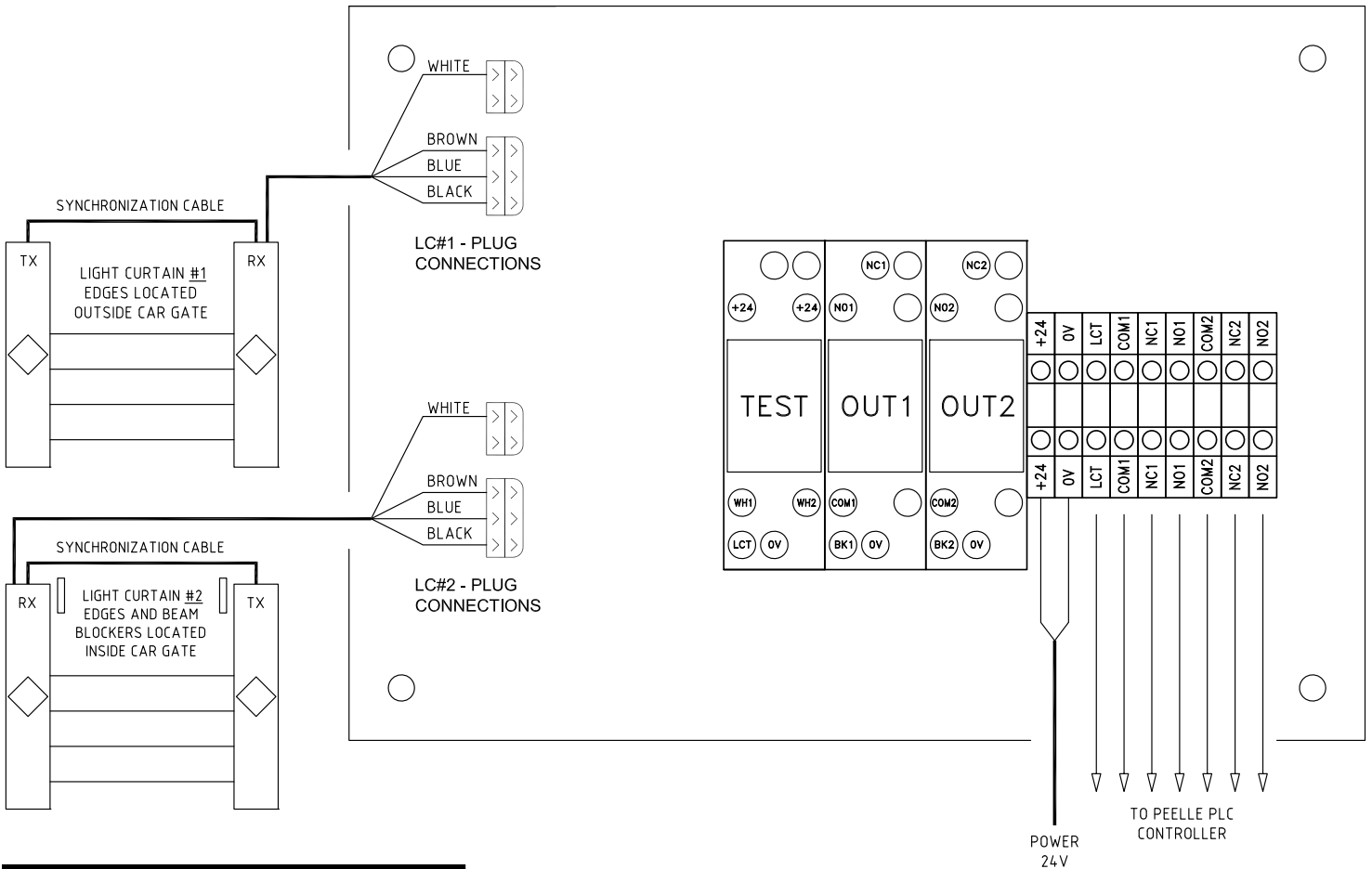
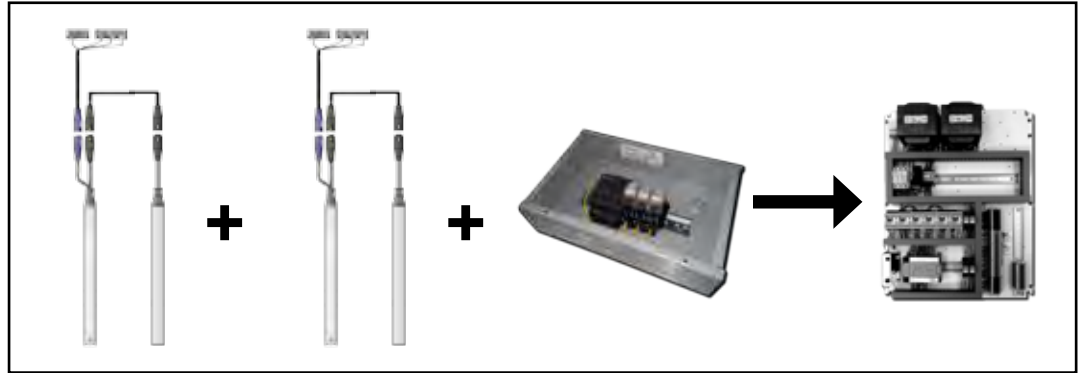
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# Wiring - Dual Light Curtain

## Peelle PLC installation



### NOTICE

#### Moisture environment

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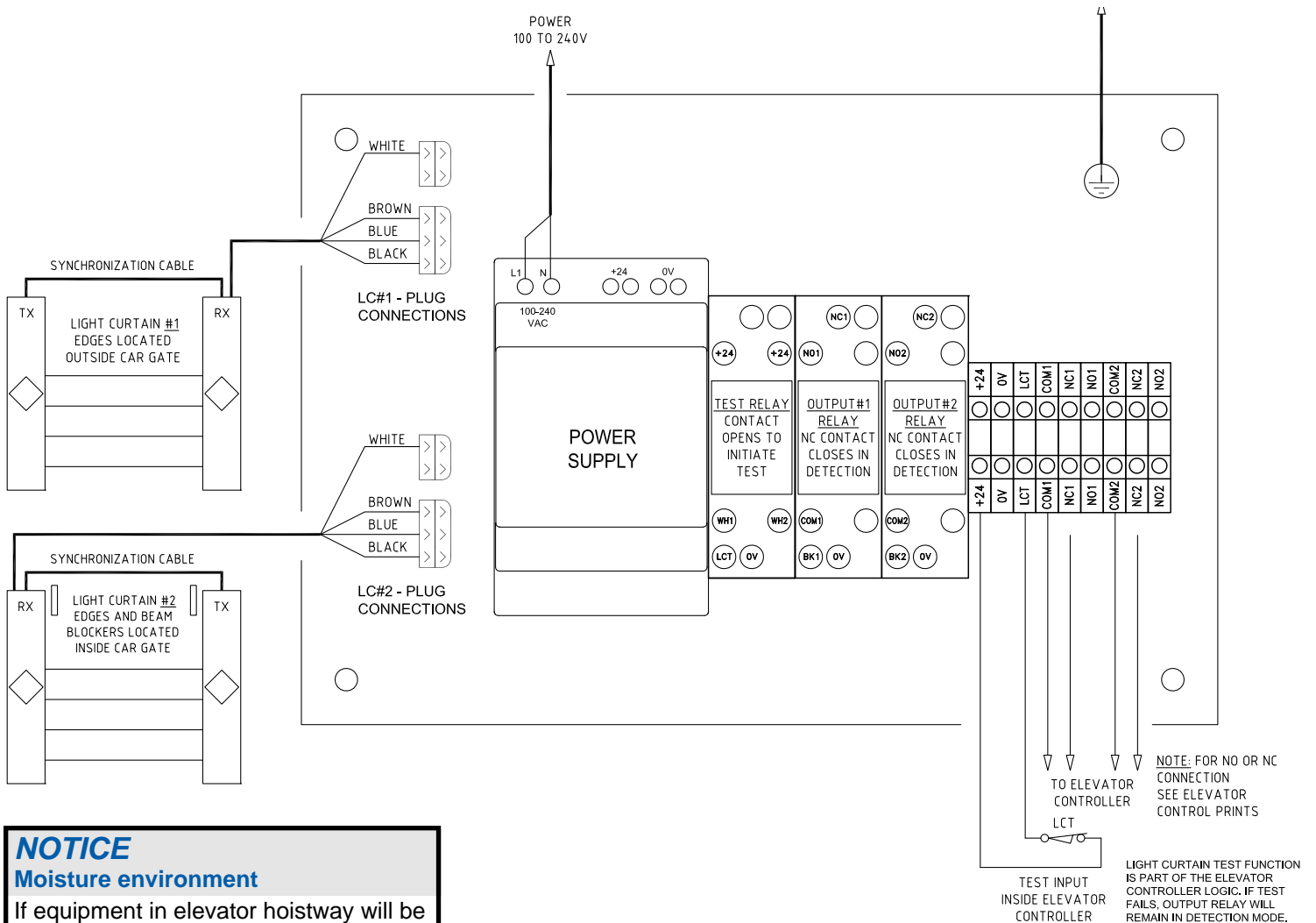
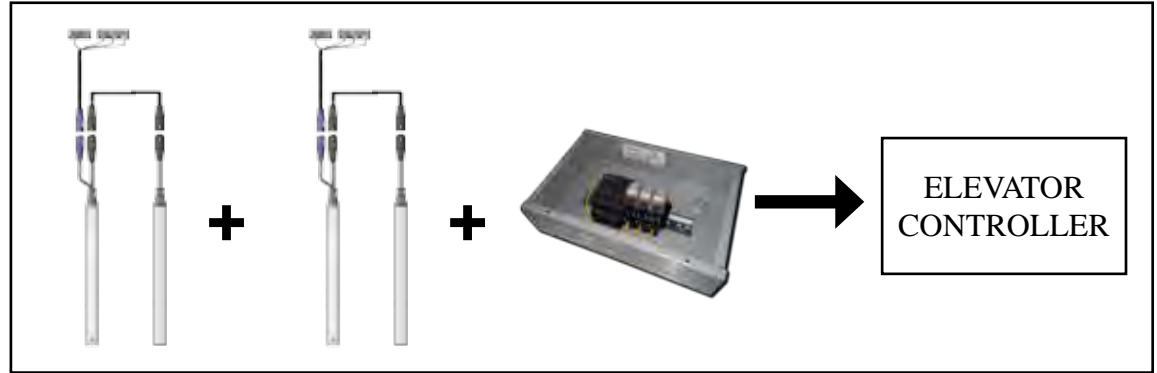
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# Wiring - Dual Light Curtain

## Wireless installation



### NOTICE

#### Moisture environment

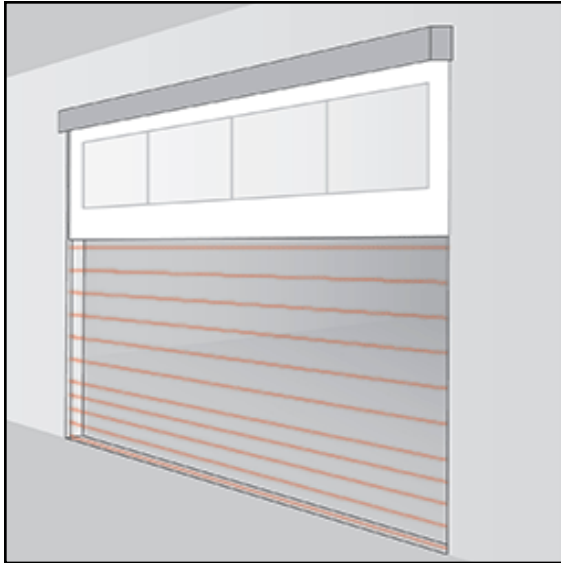
If equipment in elevator hoistway will be subject to low pressure or strong jets of water, please use a silicone adhesive to seal the light curtain controller cover and cable entry points.



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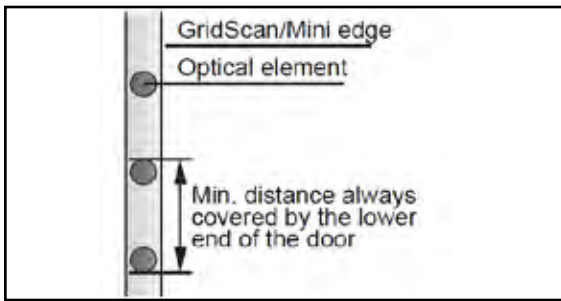
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# Operation



## Auto Blanking

The GridScan/Mini can differentiate between a light beam interruption caused by an object and a light beam interruption caused by the closing door. The GridScan/Mini does this by analyzing the different interruption patterns.



## Closing door interruption pattern:

The light beam interruption of a closing door starts at the topmost beam going downwards. The lower end of the door needs to cover always at least one beam during door closure

## Output

When an object enters the surveillance area (OBJECT DETECTED) the GridScan/Mini output changes after response time  $t_2$ . When the object leaves the surveillance area (NO OBJECT) the GridScan/Mini output switches back after release time  $t_3$

## Changing the Output logic

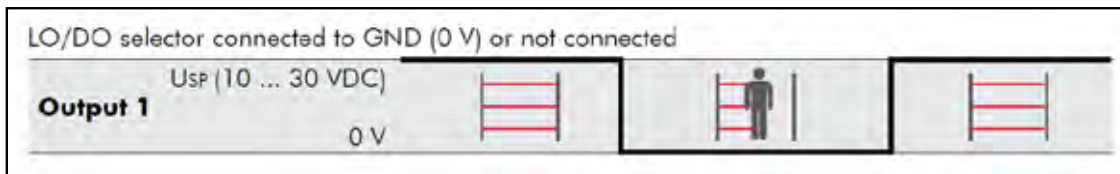
Output logic is set using the gray wire. The default logic is LO (light-on)

### Gray wire

Connected to GND (0 V) / Not connected  
Connected to 10 ... 30 VDC

### Output 1 logic

LO  
DO



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# Operation (Test Function)

## Interface with elevator controllers

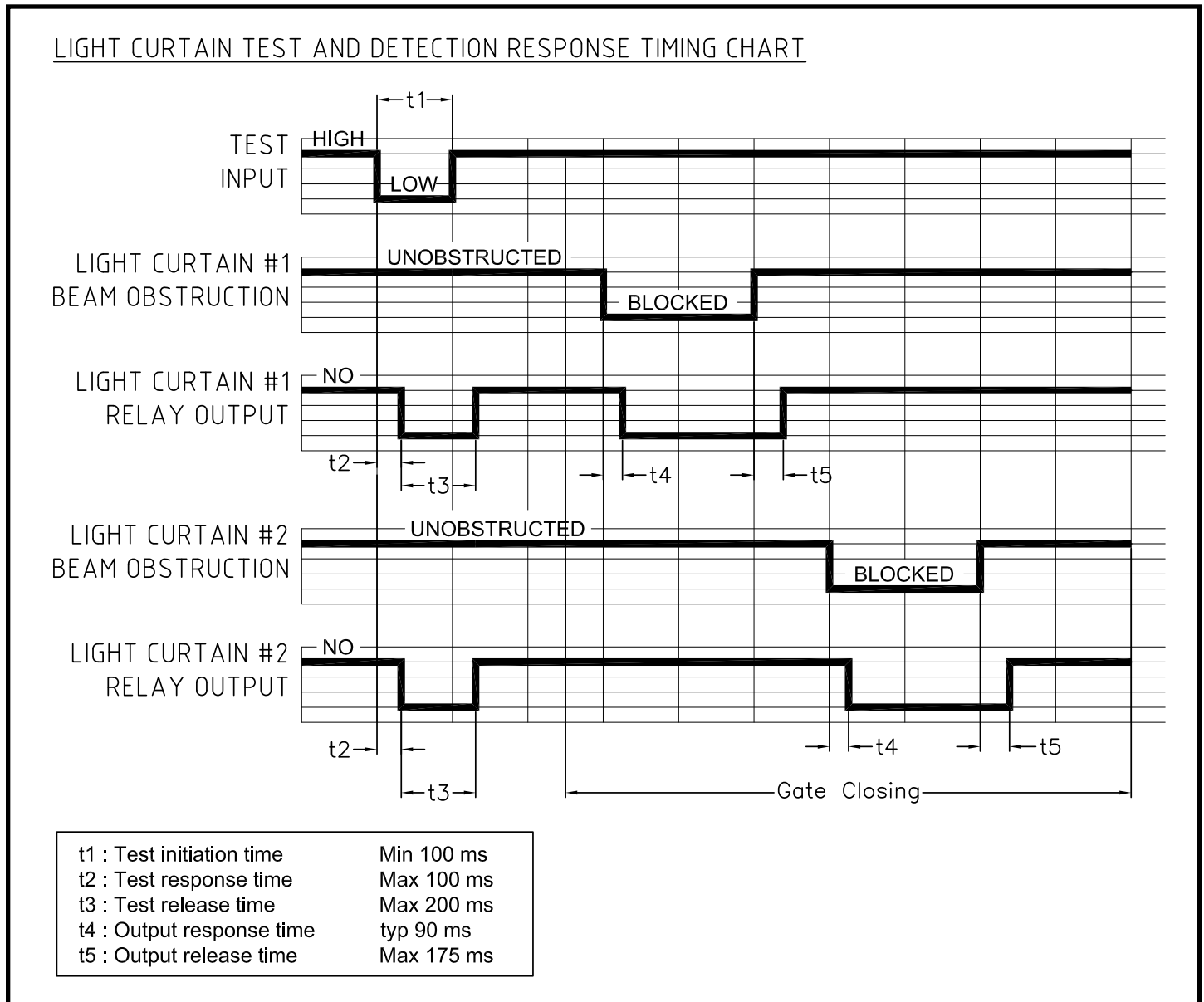
See elevator controller prints for light curtain test and output relay wiring. Signals to and from the light curtains are controlled by the elevator control.

## Test function

Asme a17.1-2010/Csa b44-10 rule 2.13.3.4.9 Requires that test function of the light curtain be performed before the car gate can close.

The following sequence needs to take place:

1. Beams unobstructed and closing required
2. Test input goes from high to low
3. Relay output of light curtain #1 and #2 will change state from unobstructed to blocked (detection)
4. Relay output of light curtain #1 and #2 will change to unobstructed provided test passes and no beams are blocked
5. Car gate closes.



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# Troubleshooting

Emitter edge (Tx)	Receiver edge (Rx)	Action
LED off	LED off	<ul style="list-style-type: none"> <li>• Check electrical connections.</li> </ul>
LED off	LED red	<ul style="list-style-type: none"> <li>• Check the connection of the synchronization cable.</li> </ul>
LED on	LED always red	<ul style="list-style-type: none"> <li>• Make sure the protective field is clear of interruption.</li> <li>• Check the alignment of the light curtain.</li> <li>• Check that the test input is connected to the test output signal of the door control unit and that the signal level and logic (HIGH/LOW) are correct.</li> <li>• If the test input is not used, connect it permanently to +24 VDC</li> <li>• Check emitter and receiver edge alignment.</li> </ul>
LED on	LED always green (also when interrupted)	<ul style="list-style-type: none"> <li>• Make sure the sensor edges are not mounted close to any shiny or reflective surface.</li> </ul>
LED on	LED switching between red (interrupted) and green (free) without any interruption	<ul style="list-style-type: none"> <li>• Make sure that the cables and edges are located away from sources of electromagnetic interference.</li> <li>• Ensure that the emitter and receiver are correctly aligned and remain so during door closure (e.g. that vibrations do not cause edges to become misaligned).</li> </ul>

## LED status description

### Receiver Edge

green LED	red LED	Sensor status
●	○	Light curtain free
○	●	Light curtain interrupted
⦿	⦿	Internal Malfunction

Table 4: LED status description receiver edge

● = LED on    ○ = LED off    ⦿ = LED blinking

### Emitter Edge

green LED	Sensor status
●	Power OK
○	No Power or not within the limits

Table 5: LED status description emitter edge

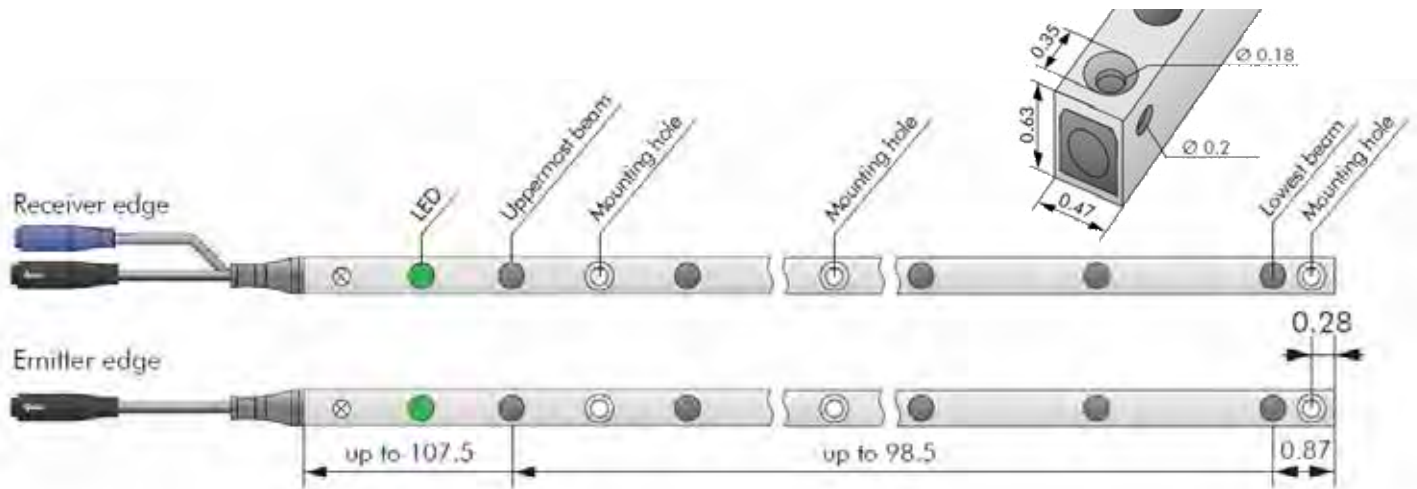


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# Technical Information - Cables & Edges (Tx/Rx)



## Optical

Max. operating range	4804 1 - 4.5m (3 - 14 ft)
	4805 4.5 - 10m (14 - 33ft)
Number of elements	32
Max. ambient light	100,000 Lux
Aperture angle at 3 m (10 ft)	Tx: ±10° and Rx: ±20°

## Mechanical

Cross section	12 mm × 16 mm (0.47 in × 0.63 in)
Max. Protection height	2,500 mm (98.5 in)
Housing material	Natural anodized aluminum
Enclosure rating	IP67
Temperature range	-40 °C ... +60 °C (-40 °F ... +140 °F)

## Electrical

Supply voltage USP	10 ... 30 VDC
Current consumption at 24 VDC	100 mA
Output	PNP/NPN (push-pull)
Output load	100 mA
response time with 32 elements	90 ms
Max. door speed	3 m/s (10 ft/s)
Status LED Rx Object detected	red
Status LED Rx No object detected	green

## Power LED Tx Power OK

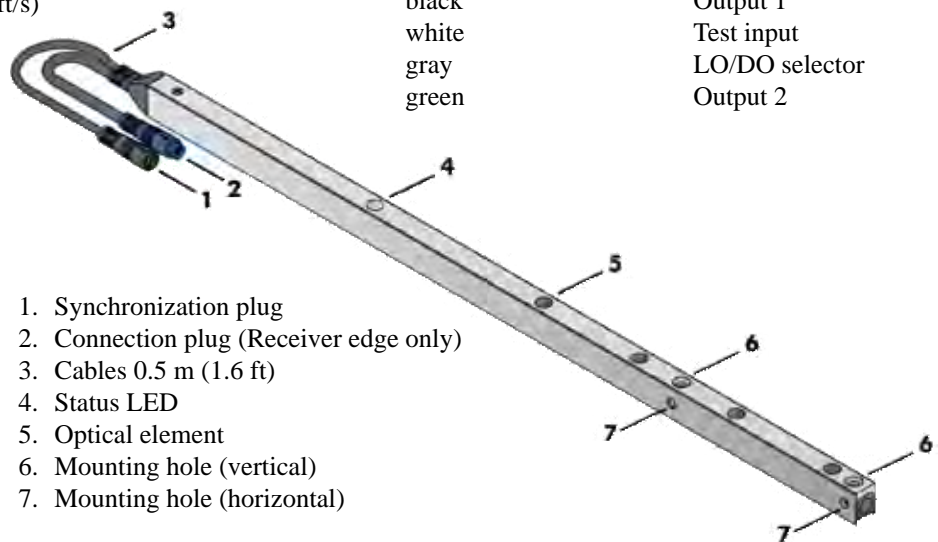
green

## Synchronization cable

Length	10 m (33 ft)
Diameter	Ø 3.5 mm (Ø 0.14 in)
Material	PVC, black
Plug color	Black
Wires	AWG26
brown	USP (10 ... 30 VDC)
blue	GND (0 V)
black	Communication
white	Test signal

## Connection cable

Length	5 m (16.5 ft)
Diameter	Ø 3.5 mm (Ø 0.14 in)
Material	PVC, black
Plug color	Blue
Wires	AWG26
brown	USP (10 ... 30 VDC)
blue	GND (0 V)
black	Output 1
white	Test input
gray	LO/DO selector
green	Output 2



1. Synchronization plug
2. Connection plug (Receiver edge only)
3. Cables 0.5 m (1.6 ft)
4. Status LED
5. Optical element
6. Mounting hole (vertical)
7. Mounting hole (horizontal)

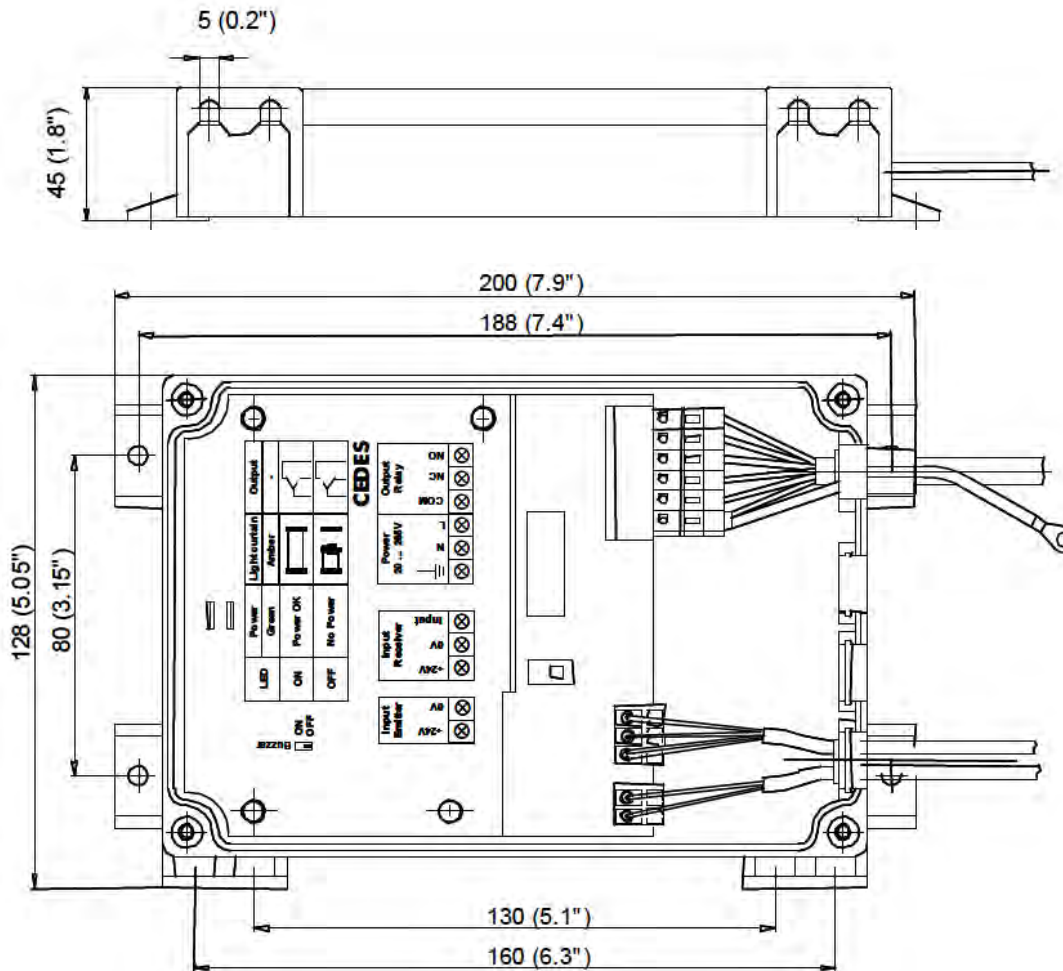


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# Technical Information - Universal Power Supply (UPS)

Power supply	20 ... 265 VAC / DC (For the USA + Canada use "Greenfield Fittings" with voltage above 42 volts)
Ripple voltage	10 % on Usp
Current Consumption	< 200 mA @ 24 VDC (MiniMax connected) < 60 mA @ 240 VAC (MiniMax connected)
Relay output <b>⚠ Important ⚠</b> If switching high voltage DC, use pilot relay (not included)	AC: 250 VAC / 8 A DC: 125 VDC / 0.5 A 30 VDC / 8 A, min. 5 VDC / 10 mA
Relay Output	NC and NO, selectable
Connections	WAGO, 6 x 5.08 for power supply and output WAGO, 3 x 3.81 for MiniMax or cegard/Mini Rx-edge WAGO, 2 x 3.81 for MiniMax or cegard/Mini Tx-edge
DC output voltage	24 VDC ± 10%
Output rated current	200 mA
Temperature range	
- Operation	-5° to 132° F (-20 ... +55°C)
- Storage and transport	-20° to 220° F (-30 ... +85°C)
Enclosure rating	Type 3 (IP54)
Vibration and shock resistance	IEC 68-2-6 / IEC 68-2-29
EMC	IEC / EN 50081-1,-2 IEC / EN 50082-1,-2 EN 12015 EN 12016



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# Maintenance and Inspection

1. Doors and gates shall be maintained in accordance with Peelle Detail Installation and Maintenance Guide 215 Section 19.
2. Maintenance and inspection of the light curtains system shall be performed on a monthly basis. More frequent maintenance may be necessary where car gates are subject to demanding environments of dust, corrosion, moisture, grease, chemical or other conditions.
3. Where necessary, the elevator should be taken out of service for maintenance following proper procedures by trained maintenance personnel.
4. Refer to Guide 215 Section 19 for gate rail, panel and operating component maintenance.
5. Ensure that each light curtain edge is properly secured to the gate rail according to the installation instructions.
6. Ensure that the beam blockers are securely fastened to the gate panel.
7. Ensure there is no debris affixed to the car gate panel or rails, for example plastic bags or other rubbish.
8. Check and clean the plastic lens filters on the edges to keep the system in optimum working condition.
9. Where provided, check the gate leading edge rubber astragal for wear or damage and replace if necessary. Make sure the astragal is properly seated in the holding extrusion.
10. Where pull straps have been provided for manual operation of power operated car gates, the pull strap should be removed to avoid interfering with the light curtain. If it is desirable to retain the pull strap, the strap shall be held in position above the leading edge of the car gate. An electric contact shall be provided that will break the contact, and prevent power operation of the car gate when the strap is removed from the held position for use. The contact shall be wired according to the car gate controller manual and wiring diagram.

## Note to Maintenance:

The light curtain system represents an important safety device of the elevator and relies on integrity of all components. Should any part or function of the system be observed not to be in proper order, the elevator should be taken out of service until such time as the system is repaired.

### NOTES AND EXCEPTIONS:

1. Code compliance is the responsibility of the installer.
2. For other control interfaces, please contact Peelle engineering for assistance.

#### NOTICE

##### Damage to the optical elements

- ▶ Never use any solvents, cleaners or mechanically abrasive towels or high-pressure water to clean the sensor.
- ▶ Avoid scratching the optical elements while cleaning



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