

CHAMBERLAIN

Professional Products

UL325 2010 Revision 5

- Commercial Door Installations -

UL325 - Scope

- Door, Drapery, Gate, Louver, and Window Operators and Systems –

- Covers electric operators for doors, draperies, gates, louvers, windows and other opening and closing appliances rated 600v or less to be employed in ordinary locations in accordance with the National Electric Code, NFPA 70

UL325 – General Information

- UL325 contains nationally recognized minimum safety requirements
 - Commercial compliance is voluntary, but may be site required
 - Declaring compliance requires testing, qualification and regular inspections
 - Compliance to UL325 required when the UL Mark is displayed
 - AHJ's (state and local) typically rely on compliance to standards through Certification such as the UL Mark
 - **ICC/IBC**
 - **NEC**
 - **State and Local Building Codes**

UL325 2010 Revision

Presentation Topics

- **New Guideline – Background**
- **Commercial vs. Residential Applications**
- **UL Definition of Commercial Door Operator**
- **Impacted Commercial Industry Applications**
- **External Entrapment Protection**
- **Miscellaneous Instructions & Documentation**

*****Compliance Effective Date – August 29, 2010*****

Adoption of UL325 2010 Revision

UL325 revisions were adopted using Standards Development Process

- UL325 Standard Technical Panel (STP)
 - DASMA (Door and Access Manufacturers Assoc.), producers, supply chains
 - UL, testing/standards organizations, Certifiers, CPSC
 - General academia
- Managed through the UL Collaborative Standards Development System (CSDS)
 - Comments to proposals – anyone can participate
 - Ballots – Registered STP voters only
- ANSI (American National Standards Institute) has been canvassed

UL325

Commercial vs. Residential

- Federal law (Consumer Products Safety Commission) states that no company shall manufacture an operator for sale for use in residential applications that does not meet UL 325 requirements for such applications
 - **UL 325 Residential**
 - **UL 325 Commercial / Industrial**
- Some US States have laws that impose criminal and/or monetary penalties when using a Commercial Door Operator on a Residential installation

Note: Residential installation defined as construction consisting of 1 to 4 single family units

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UL325 (Current) Commercial vs. Residential

Commercial Applications

- **A door or door operators shall be provided with:**
 - Constant Pressure to Close, or
 - Means for connecting a reversing edge switch, or equivalent that will reverse the door upon striking an object, or
 - A three-button control station, provided that the operator...
 1. Does not incorporate an automatic closing control
 2. Control station is located so that the door will be within sight of the person operating the control and that door is controlled by 3-button station only

Residential Applications

- **A door or door operators shall be provided with:**
 - Inherent Entrapment Protection as Primary Entrapment Protection
 - Secondary protection: external photo eyes or edges, inherent secondary, or equivalent
 - 30-second Maximum Run Timer, or acceptable position detector, Mandatory

UL 325

Definition of Commercial Door Operator

TWO COMMERCIAL CLASSIFICATIONS

1) COMMERCIAL/INDUSTRIAL DOOR OPERATOR (OR SYSTEM)

12 Cycles or More Per Hour*

- A door operator (or system) intended for vehicular traffic and/or securing entrances or exits to commercial or industrial buildings areas.
 - ...some examples include multi-family housing units (more than four single-family units), hotels, garages, retail stores, or loading docks including, but not limited to, sliding, swing, bi-fold, accordion, sectional, and rolling door
 - **Doors used to secure store fronts and intended for pedestrian use, but usually operated only at the start and end of the business day are included.**
 - **Doors used solely for pedestrian access and egress which open and close for each pedestrian or group of pedestrians are not covered by this definition.**

***Note: The statement “12 cycles or More Per Hour” used to define operators in this category has been established by LiftMaster, and not UL.**

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Definition of Commercial Door Operator

TWO COMMERCIAL CLASSIFICATIONS (cont.)

2) LIGHT DUTY (COMMERCIAL/INDUSTRIAL) DOOR OPERATOR (OR SYSTEM)

- A commercial/industrial door operator (or system) intended and marked for limited or restricted duty.
- **Doors used to secure store fronts and intended for pedestrian use, but usually operated only at the start and end of the business day are included.**
- **Doors used solely for pedestrian access and egress which open and close for each pedestrian or group of pedestrians are not covered**

Industry Application Classes Impacted by UL325 2010 Revision

All Commercial Operators bearing UL Mark

- Commercial Door Operators
 - » Standard and Heavy Duty Operators
 - » Medium Duty Operators
- Light Duty Operators
- Special Applications
 - » Fire Door Operators
 - » N4, N4X and Carwash Operators
 - » Sliding Door Operators

UL 325 – 2010 Revision Entrapment Protection

A commercial/industrial door operator shall comply with one of the following:

a) Shall be constructed so that:

- 1) The operator requires constant pressure on a control to close the door, and**
- 2) The operator stops or reverses direction of the door when constant pressure on a control is removed prior to the operator reaching its close limit, and
- 3) The operator limits a portable transmitter or automatic actuation device, when supplied, to function only to cause the operator to open the door; and
- 4) It is not possible to make simple modifications by adding, suppressing or changing the connection of wires in the internal control circuit(s) to allow any other method of operation that does not require constant pressure on a control to close the door without also complying

OR

b) Shall be constructed to comply with one of the following:

- 1) Shall require the connection of an external entrapment protection device**
- 2) Shall be provided with any other external device that provides entrapment protection equivalent to b.1

UL 325 – 2010 Revision Entrapment Protection

An external entrapment protection device provided with, or as an accessory to, a commercial/industrial door operator (or system) shall consist of:

- a) A contact type sensor (edge sensor or equivalent) installed on the leading edge of the door that when activated causes an operator closing a door to reverse direction of the door and prevents an operator from closing an open door, or

(Exception: During the process of closing a door in response to a fire condition, commercial/industrial door operators (i.e. fire door operator systems in alarm) are not required to comply with this provision)

- b) A non-contact type sensor (photoelectric sensor or equivalent) that when activated causes an operator closing a door to reverse direction of the door and prevents an operator from closing an open door, or

(Exception: During the process of closing a door in response to a fire condition, commercial/industrial door operators (i.e. fire door operator systems in alarm) are not required to comply with this provision)

- c) Any other device that provides entrapment protection equivalent to items (a) or (b).

UL 325 – 2010 Revision

External Entrapment Protection

- Classifications -

Primary (Mandatory) External Entrapment Devices:

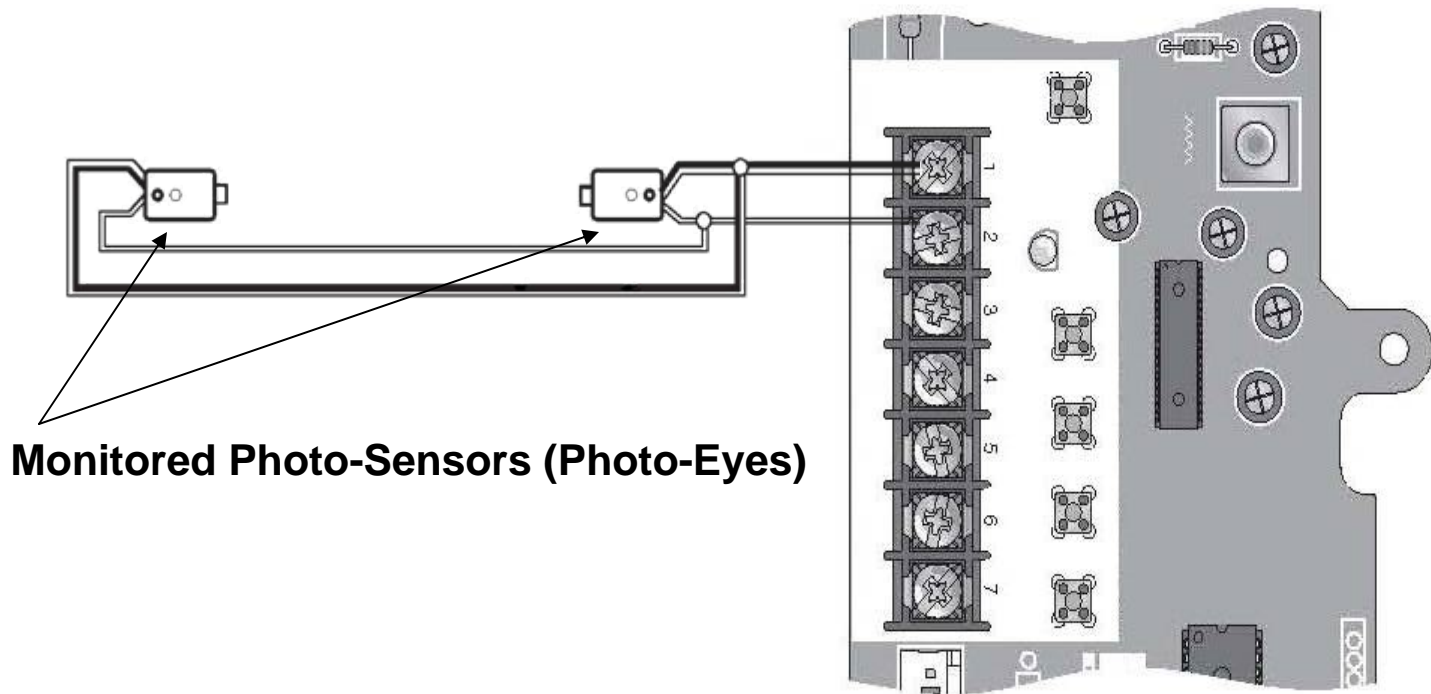
- a) A non-contact type sensor such as **Monitored** photo sensors (photo-eyes)
- b) A 2-wire or 4-wire **Monitored** electric sensing edge

Secondary (Optional) External Entrapment Devices:

- a) A 2-wire non-monitored electric sensing edge
- b) A pneumatic safety edge

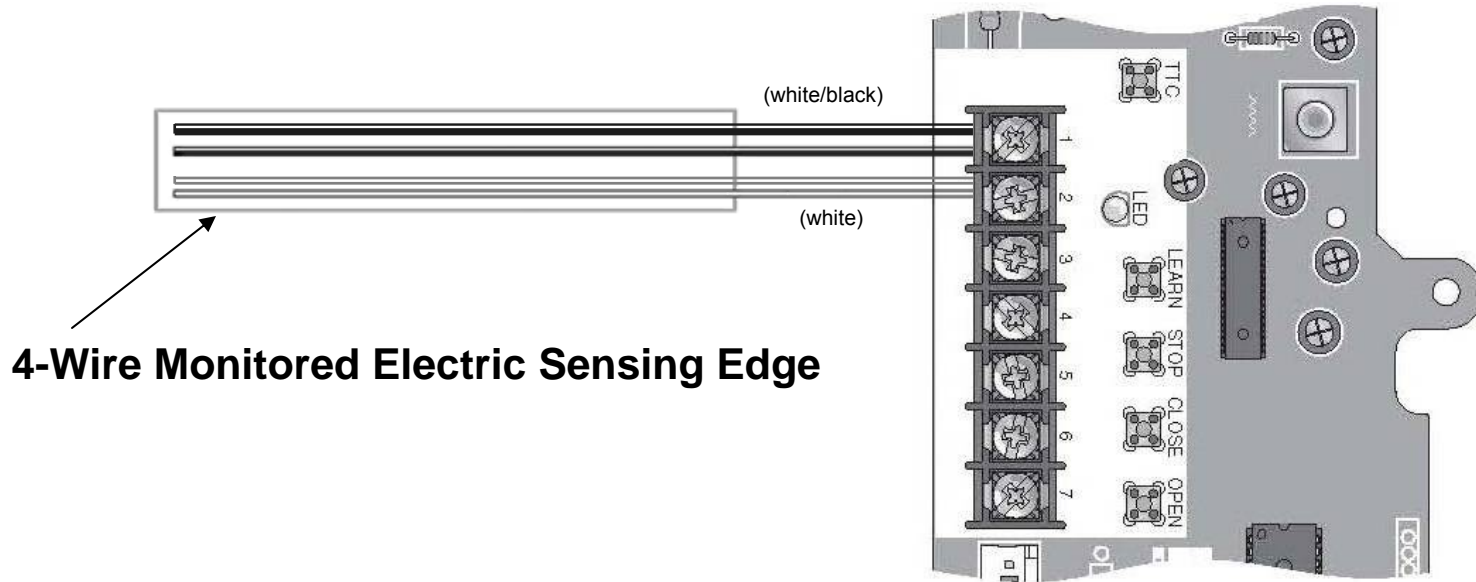
Note: Primary external entrapment devices are mandatory for wiring types other than constant pressure to close and may be supplemented by secondary external entrapment devices. Secondary external entrapment devices cannot be used in lieu of primary devices

Monitored Photo-Sensors Only



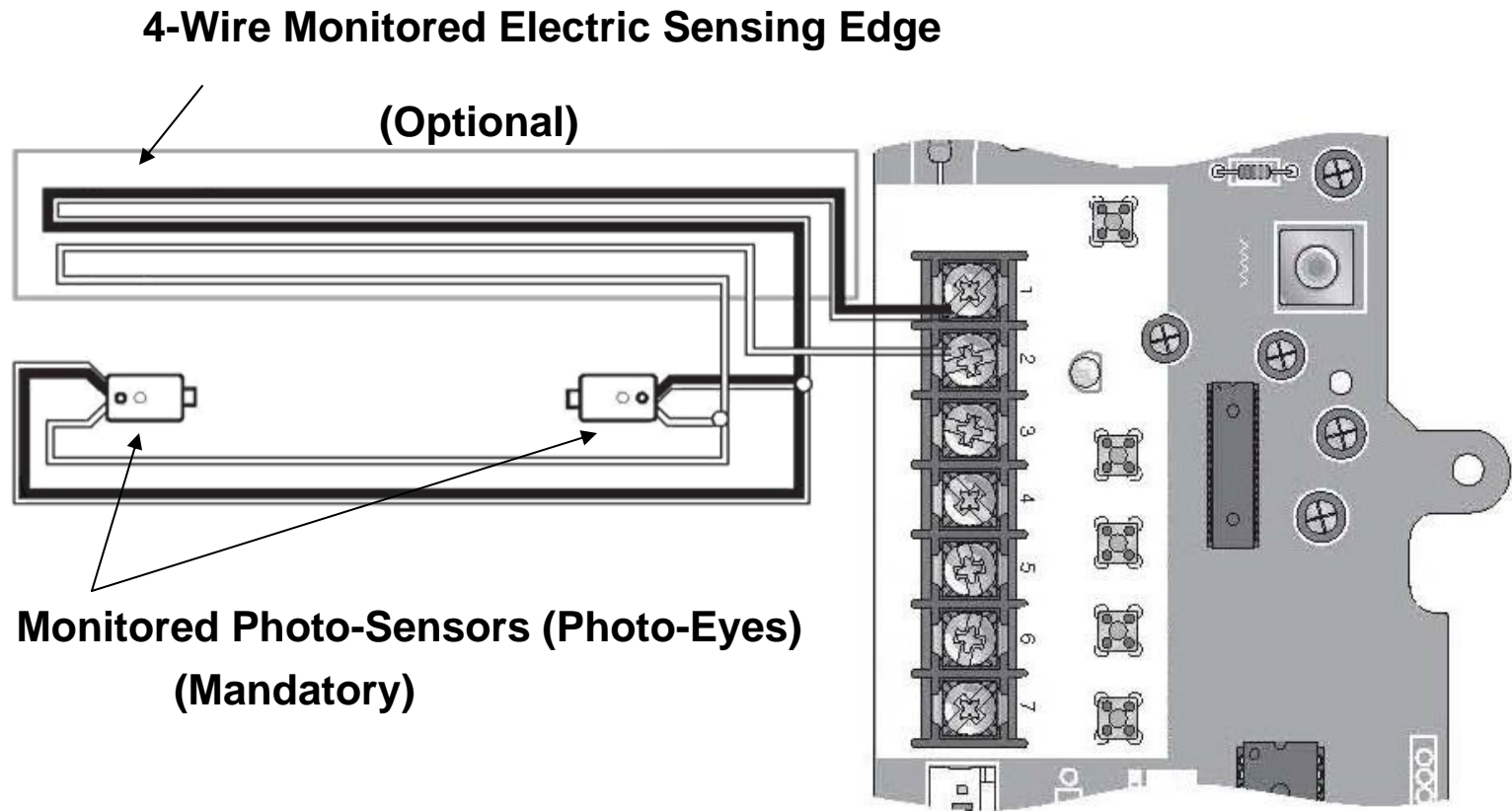
Note: Attachment to terminal strip / PCB for illustration purposes only. Actual attachment recommendations will vary from manufacturer to manufacturer.

4-Wire Monitored Electric Sensing Edge Only



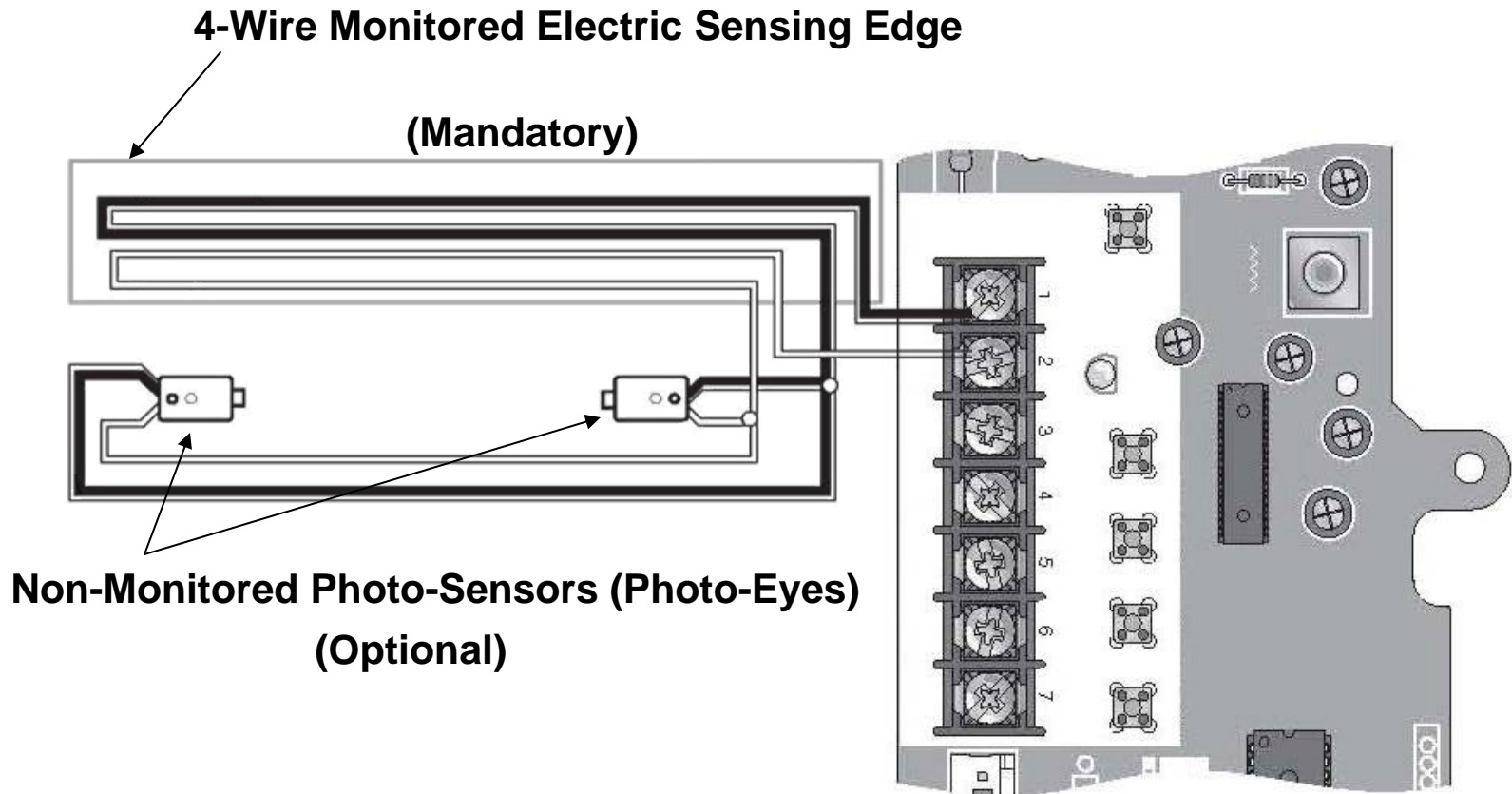
Note: Attachment to terminal strip / PCB for illustration purposes only. Actual attachment recommendations will vary from manufacturer to manufacturer.

Monitored Photo-Sensors w/ 4-Wire Sensing Edge



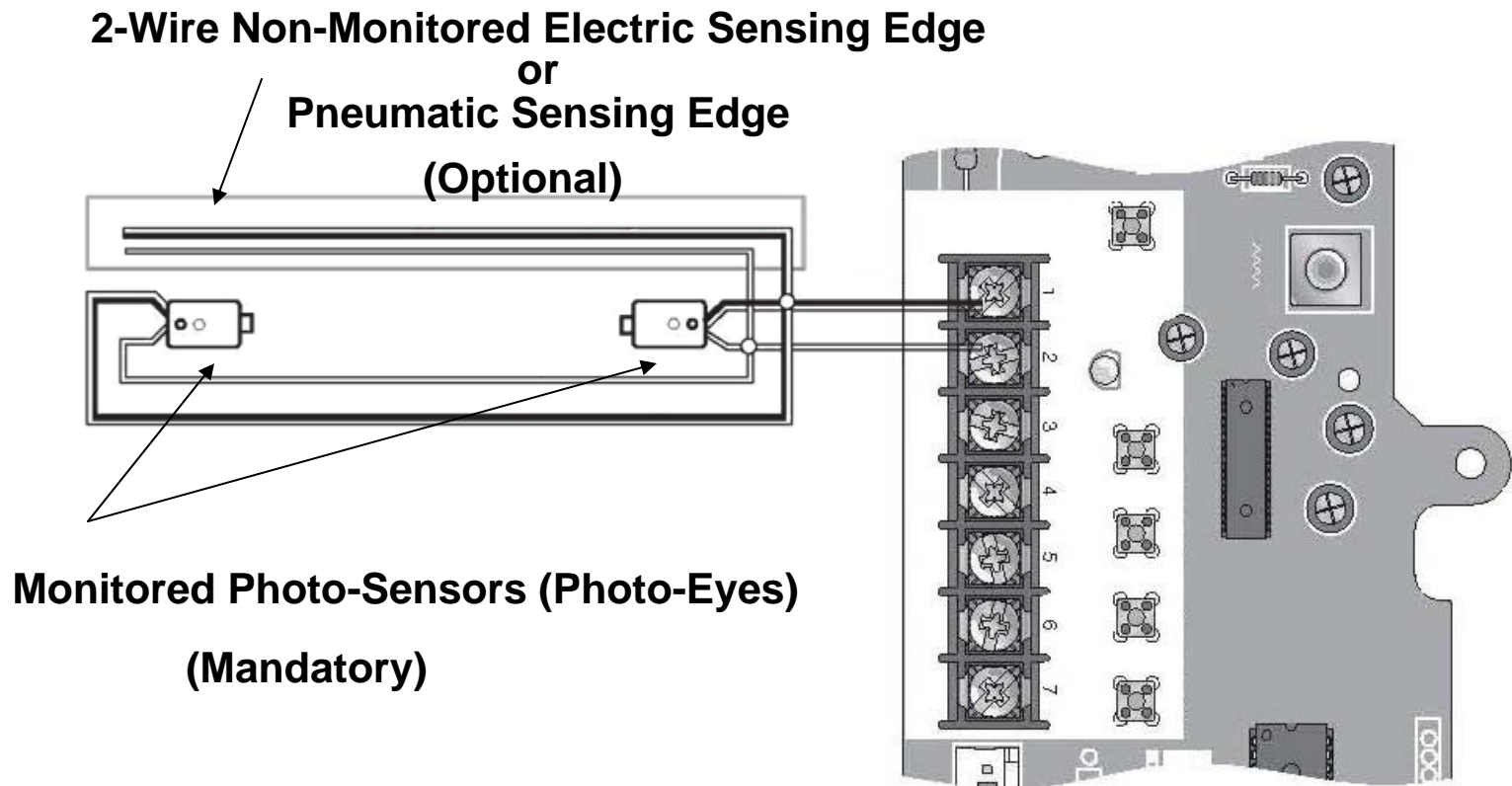
Note: Attachment to terminal strip / PCB for illustration purposes only. Actual attachment recommendations will vary from manufacturer to manufacturer.

Monitored 4-Wire Sensing Edge w/ Photo-Sensors



Note: Attachment to terminal strip / PCB for illustration purposes only. Actual attachment recommendations will vary from manufacturer to manufacturer.

Monitored Photo-Sensors w/ Non-Monitored Sensing Edge



Note: Attachment to terminal strip / PCB for illustration purposes only. Actual attachment recommendations will vary from manufacturer to manufacturer.

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External Entrapment Protection

- Documentation -

- All door operator manufacturers are required to state within the installation manuals and/or user's guides which photo sensors and sensing edges are approved by UL for use with the operator
- An operator shall be provided with instructions in the instruction manual specifying the methods of installation, adjustment, and wiring of external controls or devices serving as required protection against entrapment

The following instructions or the equivalent shall also be supplied where applicable:

- **For operators utilizing a non-contact sensor**
 - 1) Instructions on the placement of non-contact sensors for each type of application shall be provided.
- **For operators utilizing a contact sensor**
 - 1) One or more contact sensors shall be located where the risk of entrapment or obstruction exists, such as at the leading edge of a **horizontal slide door**
 - 2) One or more contact sensors shall be located at the bottom edge of a **vertically moving door**

UL 325 – 2010 Revision Switches and Controls

- **A switch shall be located or protected so that it shall not be normally exposed to mechanical damage during use**
- **If a three-button switch or control is provided with a commercial/industrial door operator (or system), one button shall be a stop button**

Note: Installation instructions shall indicate that controls shall be far enough from the door, or positioned such that the user is prevented from coming in contact with the door while operating the controls.

UL 325 – 2010 Revision Installation of Operator

- **Exposed moving parts of an industrial door operator that is intended to be mounted more than 8 ft above the floor are not required to be guarded or enclosed if the operator is marked indicating minimum acceptable installation height**
- **If a industrial door operator is installed below 8 ft., the exposed moving parts must be guarded or enclosed**
 - **Manufacturer will demonstrate and test appropriate protection/guarding when operator is installed below 8 ft. above the floor**

UL 325 – 2010 Revision Installation of Operator

Commercial/Industrial door operator (or system)

- A door or door operator shall be provided with a warning placard

Note: All warning signs and placards must be installed where visible in the area of the door.

- An operator shall be provided with specific instructions describing any **necessary adjustment of the control mechanism** required for satisfactory operation of the operator. The instructions shall also indicate the need for **periodic checking** of any control mechanism
- The installation instructions for commercial/industrial door operators shall include information on the **types and sizes of doors** for which the operator is intended **including the type of entrapment protection suitable for each size and type of door for which the operator is intended.**

Warning Placard



UL 325 – 2010 Revision

Installation Instruction Requirements

The Installation Instructions shall include the following instructions or their equivalent:

IMPORTANT INSTALLATION INSTRUCTIONS

WARNING – To reduce the risk of severe injury or death:

- 1) READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS.
- 2) Install only on a properly operating and balanced door. A door that is operating improperly could cause severe injury. Have qualified service personnel make repairs to cables, spring assemblies, and other hardware before installing the operator.
- 3) Remove all pull ropes and remove, or make inoperative, all locks (unless mechanically and/or electrically interlocked to the power unit) that are connected to the door before installing the operator.
- 4) Install the door operator at least 8 feet or more above the floor if operator has exposed moving parts.**
- 5) Do not connect the door operator to the source of power until instructed to do so.
- 6) Locate the control station: (a) within sight of the door, (b) at a minimum height of 5 feet so small children cannot reach it, and (c) away from all moving parts of the door.
- 7) Install the Entrapment Warning Placard next to the control station in a prominent location.**
- 8) For products having a manual release, instruct the end user on the operation of the manual release.

UL 325 – 2010 Revision User Instruction Requirements

The User Instructions shall include the following instructions or their equivalent:

IMPORTANT SAFETY INSTRUCTIONS

WARNING – To reduce the risk of severe injury or death:

- 1) READ AND FOLLOW ALL INSTRUCTIONS.
- 2) Never let children operate or play with door controls. Keep the remote control (where provided) away from children.
- 3) Personnel should keep away from a door in motion and keep the moving door in sight until it is completely closed or opened. **NO ONE SHOULD CROSS THE PATH OF A MOVING DOOR.**
- 4) Test the door's safety features at least once a month. After adjusting either the force or the limit of travel, retest the door operator's safety features. Failure to adjust the operator properly may cause severe injury or death.
- 5) For products having a manual release, if possible, use the manual release only when the door is closed. Use caution when using this release when the door is open. Weak or broken springs may cause the door to fall rapidly, causing severe injury or death.
- 6) **KEEP DOORS PROPERLY OPERATING AND BALANCED.** See Door Manufacturer's Owner's Manual. An improperly operating or balanced door could cause severe injury or death.
- 7) Have trained door systems technician make repairs to cables, spring assemblies, and other hardware.
- 8) **SAVE THESE INSTRUCTIONS.**