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**CSI SPECIFICATION SECTION 8.**

**SECTION [08460]**

**SENSORS FOR AUTOMATIC DOORS**

1. **GENERAL**
	1. SUMMARY

		1. This Section includes the following types of automatic entrance/ exit door sensors:
			1. Exterior and interior Swing or Revolving door applications.
			2. Entrance and exit applications.
		2. Related Sections:
			1. Division 16 Sections for electrical connections including conduit and wiring for automatic entrance door operators.
			2. Division 08.71.13 and 08.71.16 for door hardware connections for automatic doors.
		3. REFERENCES

			1. Underwriters Laboratories (UL) UL 325 – Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems
			2. American National Standards Institute (ANSI) / Builders’ Hardware Manufacturers Association (BHMA)
			3. ANSI/BHMA A156.10: American Standard for Power Operated Pedestrian Doors
			4. ANSI/BHMA A156.19: American Standard for Power Assist and Low Energy Power Operated Doors
			5. ANSI/BHMA A156.27 American Standard for Power and Manual Operated Revolving Pedestrian Doors
			6. American Association of Automatic Door Manufacturers (AAADM)
	2. DEFINITIONS

		1. Activation Device: A sensing device that, when actuated, sends an electrical signal to the door operator to open the door, re-open or hold a door open.
		2. Safety Device: A presence sensing device that prevents a door from opening or closing or stops, stalls or reverses a door when the detection area is occupied by a person.
	3. PERFORMANCE REQUIREMENTS

		1. Provide an automatic entrance, door mounted sensor for swing doors, fold doors or revolving doors capable of providing reactivation and safety during the travel of the door. Shall utilizing Infrared Triangulation Technology. The presence detection shall consist of one row with 4 infrared spots per sensor module.

* + - 1. Presence area shall consist of 1 row of detection. The row shall have angle adjustment capability to achieve compliance with ANSI/BHMA 156.10 and/or ANSI/BHMA A156.27. Presence detection shall remain active at all times. Presence area shall have an adjustable learn time, enabling the sensor to learn permanently changed environments.
		1. For Swing Doors: Sensor shall be coupled with a capable automatic door control to provide safety on the push and/or pull side of an automatic door.
		2. For Revolving Doors: Shall be coupled with a capable automatic door control to provide safety in the rotating path of the wings.
		3. Requirements:
			1. Utilizes Distance measuring technologies, PSD – Position Sensitive Device.
			2. Each sensor module shall be capable of providing a maximum detection field width of 15”.
			3. Sensor Shall provide Dip Switch for adjustments and configuration while using single button for sensor setup. Use of a remote-control device to adjust sensor shall not be accepted.
			4. Sensor shall utilize only one cable to the door control where sensors are secured to the door frame.
			5. Each Sensor Module angle shall be adjustable by turning adjustment screw without removing module from extrusion, angle depth shall be 0 to +25 degrees.
			6. Each sensor shall be modular design, consist of 1 Master plus 1 LED module or add on module Slave with automatic function recognition, for a maximum of 4 modules and 2 LED modules.
			7. Each OA-Edge T shall have an LED indicator for testing or troubleshooting, visible with cover installed.
			8. Each Module shall have 4 IR spots per module (2 or 4 spots, Dip Switch selectable).
		4. Mounting Range Requirements: 4’-11” to 9’-10”
		5. Output: Safety
			1. Safety, Form C Relay Voltage / 42VDC, Current / 0.03 Amp Max (Resistance Load)
			2. Reactivation, Safety 2 Form C Relay Voltage / 42VDC, Current / 0.03 Amp Max (Resistance Load)
		6. Time at Detection: <75ms Max.
	1. QUALITY ASSURANCE

		1. Installer Qualifications: Manufacturer's authorized representative who is an AAADM certified inspector and employed by a company who regularly engages in the installation and service of pedestrian automatic doors as its primary business and holds a certification from the automatic door manufacturer.
		2. Manufacturer Qualifications: A qualified manufacturer with a manufacturing facility that specializes in automatic door devices.

			1. Product must be compliant to applicable ANSI/BHMA Standards A156.10 for swing doors or, ANSI BHMA A156.27 for revolving doors, when inspected by an AAADM certified inspector.
	2. COORDINATION

		1. Electrical System: Coordinate layout and installation of sensors systems to automatic entrance door assemblies with connections to power supplies and other electrical component systems as supplied by others.
	3. WARRANTY

		1. Automatic Pedestrian Door Sensors shall be free of defects in material and workmanship for a period of one (1) year from the date of substantial completion.
		2. During the warranty period the Owner shall engage a factory-trained automatic door installer/ service personnel who holds a valid AAADM certificate: technician to perform necessary adjustments, service and affect repairs during warranty period.
1. **PRODUCTS**
	1. AUTOMATIC ENTRANCE DOOR SENSOR

		1. Acceptable Manufacturer: OPTEX Inc., 10741 Walker Street, Suite 300, Cypress, CA 90630, 800-877-6656. www.optexamerica.com. (Basis of Design)
	2. PRODUCT

		1. Product shall be: OPTEX OA-EDGE T, Infrared technology sensors. Dimensions: 34 ½ to 44 inches wide by 1 3/4 inches tall by 2 inches deep. One master module with the option to add additional slave modules for a maximum of three Slave modules (Up to 4 modules).
		2. Requirements:
			1. Utilizes Distance measuring technologies, PSD – Position Sensitive Device.
			2. Each sensor module shall be capable of providing a maximum detection field width of 15”.
			3. Sensor Shall provide Dip Switch for adjustments and configuration while using single button for sensor setup. The use of remote-control devices to adjust sensor shall not be accepted.
			4. Sensor shall utilize only one cable to the door control where sensors are secured to the door frame.
			5. Each Sensor Module angle shall be adjustable by turning adjustment screw without removing module from extrusion, angle depth shall be 0 to +25 degrees.
			6. Each sensor shall be modular design, consist of 1 Master plus 1 LED module or add on module Slave with automatic function recognition, for a maximum of 4 modules and 2 LED modules.
			7. Each OA-Edge T shall have an LED indicator for testing or troubleshooting, visible with cover installed.
			8. Each Module shall have 4 IR spots per module (2 or 4 spots, Dip Switch selectable).
		3. Mounting Height: 4’-11” to 9’-10”
		4. Output: Safety
			1. Safety, Form C Relay Voltage / 42VDC, Current / 0.03 Amp Max (Resistance Load)
			2. Reactivation, Safety 2 Form C Relay Voltage / 42VDC, Current / 0.03 Amp Max (Resistance Load)
			3. Time at Detection: <75ms Max
		5. Finish: Black cover.

* + 1. OA-EDGE T shall be capable of complying with presence sensor requirements described in ANSI/BHMA A156.10 sections 8.1 General Requirements for Sensors, section 8.2 for Door Mounted Presence sensors, or ANSI/BHMA A156.27 section 16 Wing Sensors.
1. **EXECUTION**
	* 1. INSPECTION
2. Examine conditions for compliance with requirements for installation tolerances.
	1. INSTALLATION
3. Do not install damaged components.

	* 1. Factory installed and on-site installed units.
4. Install surface mounted units on top rail of door panel, swing and/or approach sides, using concealed fasteners to greatest extent possible.
5. Shall be installed and inspected by a certified AAADM inspector for compliance with ANSI A 156.10 when applicable. Ensure to place appropriate AAADM Labels and sticker in the appropriate location for the type of door system selected.
6. Door Operators: Connect door operators to electrical power distribution system as specified in Division 16 Sections.
	* 1. FIELD QUALITY CONTROL
7. An AAADM certified inspector shall test and inspect each automatic entrance door to determine compliance of installed systems with applicable ANSI standards. AAADM recommends an annual inspection of each automatic door thereafter.
	* 1. ADJUSTING
8. Adjust door operators, controls, and hardware for smooth and safe operation, for weather-tight closure, and complying with requirements in ANSI/BHMA A156.10 and other applicable ANSI/BHMA standards.
	1. WARRANTY
9. One year warranty shall be issued from time of installation followed by an AAADM certified inspection for compliance with ANSI 156.10. Ensure to place appropriate AAADM labels and completed inspection stickers in the appropriate place for the type of door system selected.