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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 and folding 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. American Association of Automatic Door Manufacturers (AAADM)
	2. DEFINITIONS

		1. Safety Device: A presence sensor device that prevents a door from opening or closing when at the full open or full closed position, as appropriate.
	3. PERFORMANCE REQUIREMENTS

		1. Provide an automatic entrance door sensor capable of providing presence sensing with an active infrared technology as follows:
		2. Requirements:
			1. Sensor shall be capable of detecting a 28 inch minimum high person within the detection pattern.
			2. Shall be used in conjunction with a compatible door control utilizing a internal or external inhibiting device. The sensor shall be capable of providing open door and close door patterns. Additionally, the door open pattern depth shall enable detection through the door threshold area approximately 8”.
			3. When used as an Overhead Presence Sensor on a Swing or Fold Door in accordance with ANSI/BHMA A156.10 Sections 8.2.2 thru 8.2.2.2.2, use of a Door Mounted sensor such as OPTEX OA-EDGE-T or Safety Beam such as OPTEX OS-12 CT is required.
			4. Provide a rain and snow mode.
		3. Thermal Range Requirements: Provide sensor that can be used in all climates and allow for a thermal range from -31 degrees F to +131 degrees F.
		4. Mounting Range Capabilities: 6’-7” to 8’-2” mounting height. Shall detect a stationary 28 inch minimum high person within the detection area described for a minimum of 30 seconds.

* + 1. Remote Control Adjustability: Shall not be accepted.
		2. Presence Detection Zone:

Utilize 48 spots of Active Infrared (AIR) to achieve a pattern width and depth in conformance with requirements in ANSI/BHMA A156.10, section 8.2.2.1 for swing doors and 8.4.2 for fold doors up to a 96” door opening. Pattern shall be capable of looking back thru the threshold approximately 8”.

Separate and independent adjustments for angle, depth and offset patterns.

* 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 manufacturer.
		2. Manufacturer Qualifications: A qualified manufacturer with a manufacturing facility that specializes in automatic door sensor devices.

			1. Product must be compliant to applicable ANSI Standards 156.10 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 Entrance 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 hold 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)

* 1. PRODUCT

		1. Product shall be: OPTEX OA FLEX T with active infrared technology.

* + 1. Mounting Range Capabilities: Shall detect a stationary 28 inch minimum high person within the detection area described for a minimum of 30 seconds.
		2. Presence Detection Zone:

Utilizes 48 emitted spots of Active Infra-red (6 rows deep by 8 columns wide) with dipswitch and angle adjustments to select the required pattern size and/or offset. Pattern shall be capable of looking back thru the threshold approximately 8”.

* + 1. Requirements:
			1. Technology: Active Infra-red Reflection (AIR)
			2. Mounting height of 6’-7” to 8’-2” above finish floor.
			3. Power Supply: 12 to 24 VAC+/- 10% (50 to 60 Hz); 12 to 30 VDC +/- 10%.
			4. Power Consumption: < 2.0 W (< 5VA at AC).
			5. Operating Temperature: -31 to+131 F.
			6. Area Angle Adj: Depth +/- 8 degrees, Width +/- 7 Degrees.
			7. Activation Output: Form A Relay 50V 0.3A Max (resistive load).
			8. Safety Output: Form A Relay 50V 0.3A Max (resistive load).
			9. Test Input: Opto-Coupler Voltage 5 to 30 VDC, 6 mA Max.
			10. Response Time: < 0.3 Sec.
			11. Dimensions: 9 10/16” Long, 2 11/16 High, 1 7-16” Deep.
		2. Remote Control Adjustability: Shall not be accepted.
		3. Finish: Black polycarbonate housing.
		4. **OA-Flex T** shall be capable of meeting overhead presence sensor requirements found in **ANSI/BHMA A156.10**, **section 8.2.2.1** for swing doors and **8.4.2** for fold doors with a maximum door opening of 96”.
		5. When used as an Overhead Presence Sensor on a Swing or Fold Door in accordance with ANSI/BHMA A156.10 Sections 8.2.2 thru 8.2.2.2.2, use of a Door Mounted sensor such as OPTEX OA-EDGE-T or Safety Beam such as OPTEX OS-12 CT is required.
		6. OA FLEX T must be used with a door control system with an internal or external inhibiting device.
		7. **OA-FLEX T** shall be capable of meeting monitoring requirements set forth in **ANSI/BHMA A156.10 (2017) section 8.1.4** when utilized with a compatible monitor capable Door Controller.
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 on surface-mounted and concealed applications on or above header using concealed fasteners to greatest extent possible.
5. Shall be installed and inspected by a certified AAADM inspector for compliance with ANSI/BHMA A156.10. 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.
	* 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/BHMA A156.10. Ensure to place appropriate AAADM labels and completed inspection stickers in the appropriate place for the type of door system selected.