



OPTEX specializes in indoor and outdoor passive and active infrared technology, including a wide variety of hardwired and wireless outdoor detectors and photobeams, specialized sensors to trigger CCTV systems and a one-of-a-kind IP or Analog Class-1 Laser detector for high security applications and VMS integration. For additional information, contact:

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LASER SCAN DETECTOR

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

MasterFormat 2020

28 31 21.19 LIDAR Area and Perimeter Security Systems

Notes to Specifier:

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *colored* text.

LASER SCAN DETECTOR

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes a LIDAR detection mechanism incorporating continuous laser scanning over a rectangular area with optional built in Full High Definition (FHD) video camera with IR LED lighting.
- B. Product – An indoor/outdoor laser scanning sensor/detector capable of determining a moving object's size, speed, and distance up to 20 meters (65 feet), with network connectivity.
- C. Related Requirements
 - 1. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
 - 2. 28 06 30 Schedules for Security Detection, Alarm, and Monitoring
 - 3. 28 16 13 Access Control Interfaces to Intrusion Detection
 - 4. 26 31 31 Intrusion Detection Interfaces
 - 5. 28 47 21.15 Notification Interfaces to Security Detection, Alarm and Monitoring
 - 6. 28 51 51.15 Information Interfaces to Security Detection, Alarm and Monitoring

1.02 REFERENCES

- A. Abbreviations
 - 1. LIDAR - Light Detection and Ranging
- B. Reference Standards
 - 1. Electronic Code of Federal Regulations, Title 47, Chapter 1 Federal Communications Commission), Part 15, Subpart B - Unintentional Radiators
 - 2. IEEE 802.3 - Ethernet Standards
 - 3. ONVIF Profile S
 - 4. UL 639 - Safety for Intrusion-Detection Units
 - 5. Laser Safety
 - a. FDA (21 CFR part 1040.10 and 1040.11) Class 1 - Laser Safety Standard
 - b. IEC 60825-1 – Safety of Laser Products
 - 6. ANSI / IEC60529 – Degrees of Protection Provided by Enclosures
 - 7. International Electrotechnical Commission (IEC), Ingress Protection Rating IP66

1.03 SUBMITTALS

- A. Product Data
 - 1. Manufacturer's printed or electronic data sheets
 - 2. Manufacturer's installation and operation manuals

1.04 QUALIFICATIONS

- A. Manufacturer shall be ISO 9001 certified with a minimum of three years' experience in manufacturing perimeter and area intrusion sensors.
- B. Contractor installation personnel shall be Manufacturer- trained and certified for the Laser Scan Detector.

1.05 WARRANTY

- A. Manufacturer shall provide a 2 year limited warranty for the system to be free of defects in material and workmanship.

END OF SECTION

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. Manufacturer: OPTEX CO., LTD.
5-8-12, Ogoto Otsu,
Shiga 520-0101
Japan
- Phone: +81-77-579-8000
Web (English): www.optex.co.jp/e/

- B. Models: RLS-2020A, RLS-2020V

The Optex RLS-2020A has a 20m x 20m detection area.

The Optex RLS-2020V has a 20m x 20m detection area and built-in IR LED and Full High Definition day/night camera.

- C. Alternates: None

2.02 GENERAL DESCRIPTION

- A. The Laser Scan Detector ("detector") shall be an indoor/outdoor laser scanning sensor/detector capable of determining a moving object's size, speed, and area encompassing 20 x 20 meters (65 x 65 feet) from the detector in a rectangular footprint, oriented horizontally, vertically, or diagonally.
- B. The detector shall provide functionality in conditions of low light and reduced visibility, including rain, snow, and fog.

Fog performance will be determined by fog density.

- C. The detector shall have the following required further characteristics:

1. Employ an FDA Class1 compliant laser source.
2. Detection range: 0 to 21 m @ 10% reflectivity over 95°
The detection range may be expanded by using the full arc of the laser scan sweep over 95° to an approximate quarter circle with a 30 m radius. See attachment.
3. Detection Zones: 8 independent within the rectangular footprint, each customizable for object target size, sensitivity
4. Resolution: .125° within 100 msec. to 15 min.
5. Employ built-in analytics to adapt sensor algorithm to environmental changes, such as weather and scenery.
6. Provide an auto area adjustment to continuously adjust the detection area between the object height and revised line of the ground due to snow or ground clutter accumulation.
 - a. Adjustment range: to 20m (0 to 65ft).
1m (3.3 ft.) is default.
7. Able to be mounted and configured for either vertical, horizontal, or diagonal sensing modes.
8. Mechanical pan-tilt adjustment
9. Provide X-Y coordinates and area information

The following section applies only to the RLS-2020V.

10. Able to stream a video of a real-time object position mapped against an uploaded background image.
- D. IR lighting and camera shall be integral to the detector assembly.
1. Properties (camera):
 - a. Resolution options: 1920 x 1080p; 1280 x 720p; 640 x 360p
 - b. Viewing angle: H: 130° / V: 65°
 - c. Minimum luminosity: 1 lux
 - d. Image compression: H.264; JPEG
 - e. Frame rate: 1-10 frames per second
 - f. IR cut filter:
 - 1.) Selectable for: Auto-adjustable, night, day operation
 - 2.) Removable
 2. The camera shall provide:
 - a. Performance in low-light or night conditions
 - b. Visual verification of alarms
 - c. Scene visualization and ability to overlay a laser detection guideline with object markings
 - d. Event recording
 3. Pre and post alarm image captures, with support for up to 500 events
 4. Privacy masking configuration
 5. Output options: Video, all-black (full masking), mosaic.
- E. Event logging – The detector system shall maintain a log of alarm events, with date, time, and trigger.
- F. Privacy - Any 2D data shall be anonymized to maintain privacy compliance.
- G. Outputs and Alarms:
1. Mechanical relay outputs (6): NO/NC contacts, 28 VDC 0.2A max.
 - a. Alarm Period (delay): 2 Seconds
 2. Digital outputs (6): ONVIF compliant signals sent over the network.
 3. ONVIF motion alarm (1): Configurable with multiple events.
 4. HTTP notification: User defined HTTP command to a designated network address
- H. Inputs:
1. Programmable for:
 - a. detection profile switching
 - b. area set
 - c. sensor check
 - d. LED 's on
 - e. AND/NAND logic
 - f. dynamic event filtering
 2. Relay inputs (2): Non-voltage contact closure
 3. Digital inputs (2): Configurable as "ONVIF relay output" from VMS

- I. Communications
 - 1. Network: Ethernet 10BASE-T/100BASE-TX (Auto negotiation)
 - a. Connector (2): RJ-45
 - b. Terminal RS-485 (A,B)
 - 2. Protocols UDP, TCP, IPv4, IPv6, HTTP, HTTPS, DNS, DHCP, NTP
SNMPv1-v3, WS-Discovery, ONVIF (Profile S), IEEE 802.1x
- J. Management - The detector shall have embedded firmware allow a user to configure:
 - 1. Detection area allocation and area masking
 - 2. Up to 8 alert zones and their individual sensitivity
 - 3. Dynamic event filtering
 - 4. Camera output mode
 - 5. Event log export & import function
 - 6. User interface adjustment
- K. Power
 - 1. Voltage input: 19.2-30 VDC or PoE+ (IEEE 802.3at compliant)
 - 2. Current draw: **<420 mA max. (24 VDC), 10 W max. (PoE)>**,
<580 mA max. (24 VDC), 14 W max. (PoE)>
- L. Enclosure
 - 1. Dimensions (H x W x D): 8.0 x 8.1 x 6.4 inches (202.6 x 206.7 x 163.5 mm) max
 - 2. Weight: <46 oz (1.3 kg)>, <57 oz (1.6 kg) >
 - 3. Mounting: Ceiling, wall, or pole
 - a. Vertical mounting height:
 - 1.) Indoor: 2 m (6.7 ft.) minimum
 - 2.) Outdoor: 4 m (13 ft.) minimum
 - 4. Environmental
 - 1.) Operating temperature: -40 °C - +60 °C (-40 °F - +140 °F)

2.03 ACCESSORIES

- A. The sensor shall have the following optional accessories available:
 - 1. Replacement window
 - 2. Laser area checker tool – a tool which measures IR energy to assist in the confirmation of the laser detection plane.
 - 3. Pole-mount bracket

END OF SECTION

PART 3 EXECUTION

3.01 INSTALLERS

- A. Contractor shall follow Manufacturer's recommended installation procedures and guidelines.
- B. Contractor personnel shall comply with all applicable state and local licensing requirements.

3.02 ATTACHMENTS

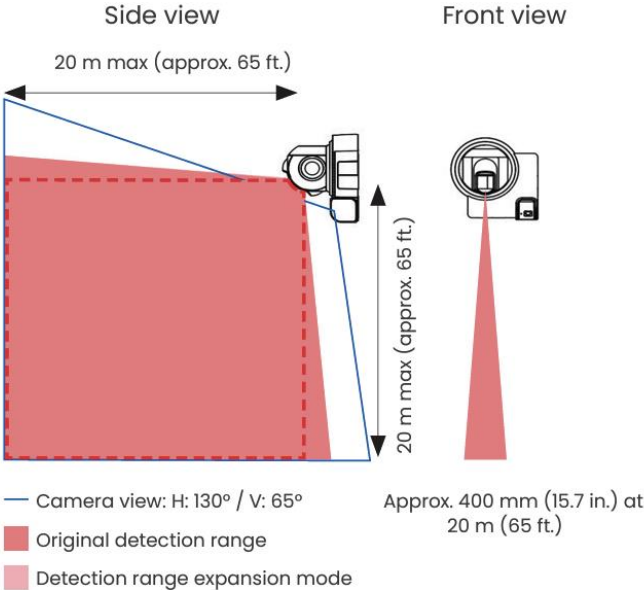
- A. Detection area illustrations

END OF SECTION

ATTACHMENT – Detection Area Illustrations

Standard Detection Range

20 x 20 m (Approx. 65 x 65 ft.), 95 degrees



Detection Range in Expansion Mode

30 x 30 m (Approx. 65 x 65 ft.), 95 degrees

