Optex, Inc. 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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Optex RLS-2020 Product Series
March, 2017

LASER SCAN DETECTOR
DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

MasterFormat 2014:
28 16 00 Intrusion Detection

MasterFormat 2016
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.
Important Note to Security Systems Specifiers

CSI MasterFormat 2016 incorporates numerous significant changes affecting electronic safety and security. This document is written to provide flexibility in using either format, although adoption of MasterFormat 2016 is encouraged. The following is a guide to the MasterFormat numbers relevant to the product referenced in this specification.

Primary Specification Area:
MasterFormat 2014:
28 10 00   Electronic Access Control and Intrusion Detection
   28 16 00   Intrusion Detection

MasterFormat 2016:
28 30 00   Security Detection, Alarm, and Monitoring
   28 15 00   Access Control Hardware Devices
   28 31 21   Area and Perimeter Intrusion
          28 31 21.19   LIDAR Area and Perimeter Security Systems

Related Requirements:

MasterFormat 2014:
28 13 33.26   Access Control Interfaces to Intrusion Detection
26 16 33   Intrusion Detection Interfaces

MasterFormat 2016
28 16 13   Access Control Interfaces to Intrusion Detection
26 31 31   Intrusion Detection Interfaces
28 47 21.15   Notification Interfaces to Security Detection, Alarm and Monitoring
28 51 51.15   Information Interfaces to Security Detection, Alarm and Monitoring
LASER SCAN DETECTOR

PART 1 GENERAL

1.01 SUMMARY
A. Section includes a detection mechanism incorporating continuous laser scanning over an approximately quarter-circular area
B. Product – An IP66 rated indoor/outdoor laser scanning sensor/detector capable of determining a moving object's size, speed, and distance up to a range of 21 meters from the detector, over 95 degrees.
C. Related Requirements

Refer to MasterFormat notes at the beginning of this document to select requirements specific to the MasterFormat version being used.

1.02 REFERENCES
A. Abbreviations
   1. EDQ – Environmental Disqualification
   2. IR – Infrared
   3. NVR – Network Video Recorder
   4. VMS – Video Management System
B. Definitions
   1. Anti-masking error – An error code activated when an obstacle has been placed in front of the sensor in order to block the detection area.
   2. Anti-rotation error - An error code activated when the area being scanned changes by a significant amount as a result of the unit being rotated from its original settings.
   3. Auto Learning – The process whereby a detection area is automatically learned by the detector within the boundary defined by rough alignment rotary switches and fine adjustment potentiometers.
   4. Redwall Event Code – UDP or TCP/IP code representing alarm or error conditions to be transmitted over an IP network to third party devices, such as NVR’s and VMS.
C. Reference Standards
   1. IEEE 802.3 - Ethernet Standards
   2. UL 639 - Safety for Intrusion-Detection Units
   3. Laser Safety
      a. FDA (21 CFR part 1040.10 and 1040.11) Class 1 - Laser Safety Standard
      b. IEC 60825-1 Ed.2 and Ed.3 – Safety of Laser Products
4. Enclosure
   a. ANSI / IEC60529 – Degrees of Protection Provided by Enclosures

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 America
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Phone: +1 800 966-7839
Web: www.optexamerica.com
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B. Models: RLS-2020I (indoor), RLS2020S (indoor/outdoor)

C. Alternates: None

2.02 GENERAL DESCRIPTION

A. The Laser Scan Detector (“detector”) shall be <indoor or outdoor> laser scanning sensor/detector capable of detecting objects in the plane surface detection area, 20 x 20m, 95 degrees.

B. The detection range is radius 21m at 10% reflectivity.

C. The detector shall employ an FDA Class1 compliant laser source.

D. The detector shall be able to be mounted and configured for either vertical or horizontal.
   1. The detector will have the provision to subdivide the detection area into four specific sub-areas, each with its own dedicated alarm output.
   2. Detection area/sub-area setting options:

E. Maximum 4 sub-areas can be created.
   1. The detector will store up to four area setting patterns (RLS-2020S only)

F. Inputs
   1. The detector shall have signal inputs for analog connection (RLS-2020S only)
      a. Detection area switching
      b. Self checking
      c. Initializing the detection area

G. Outputs
   1. The detector shall have three signal outputs selectable from the following types:
      a. Sub-area alarm outputs - generated by an intrusion in a specific subdivided areas of the detection zone
      b. Tamper output – generated when the terminal cover of the detector is removed
      c. Trouble output – generated when any of the following error conditions are detected:
         1.) anti-masking
         2.) anti-rotation
         3.) internal self-check error
d. 4.) environmental disqualification (EDQ) – generated during severe weather conditions, including heavy rain, dense fog, or snow (RLS-2020S model only)
e. The detector shall provide for **max. 4 sub areas outputs alarm on UDP and/or TCP/IP transmission over the network.**

H. The detector shall be suitable for **<indoor and outdoor>** use and be housed in rated polycarbonate enclosure. (RLS-2020i indoor only use) (RLS-2020S indoor/outdoor use)

I. The laser scan detector shall have the following additional properties:
   1. sensitivity selection adjustment
   2. target size selection adjustment
   3. Ethernet connectivity
   4. support for network data connection to 3rd party NVR and VMS products
   5. LED indications for power, alarm, and error codes

2.03 ACCESSORIES

A. The sensor shall have the following optional accessories available:
   1. Management and adjustment Software - a software program that allows configuration of settings via a local network during installation or maintenance; registers and manages the detector unit located within the local network; displays the area information and switch setting information obtained from the unit; and, enables changing the obtained detection area and switch settings and update the detector.
   2. 2020-PLMK Pole mount bracket, 2020-PDMK pendant mount bracket, 2020-WMA 12inch wall arm bracket, 2020-WMA8 8inch wall arm bracket, 2020-ANGS indoor angle adjustment mount bracket, 2020-ANGX indoor adjustable angle mount bracket, RLS-RB recess ceiling mount bracket
   3. Laser area checker tool (LAC-1) – a tool which measure IR energy to assist in the confirmation of the laser detection plane.

2.04 SPECIFICATIONS

A. Detector
   1. Detection Method IR active Laser Scan
      a. Wavelength 905 nm
      b. **Average power:** **Max. 0.021 mW (AEL)**
      c. **Pulse width :** 4 ns
      d. **Emission period :** 35 μs
      e. Resolution/Response Time:
   2. 0.25° within 75 msec to 1 minutes indoor and outdoor modes (RLS-2020i indoor only) (RLS-2020S indoor and outdoor availability)
   3. 0.125° within 100 msec to 1 minutes ) indoor small object mode (for RLS-2020S model only)
   4. 0.25° within 25 msec to 1 minutes ) indoor small object throwing mode (for RLS-2020S model only)
   5. Detection Area
a. Radius: 21 meters (68 feet)

b. Arc
1.) Vertical sensing mode: 95°
2.) Horizontal sensing mode: 95°

6. Warm up period: < 70 seconds

B. Alarms – 3 selectable from:
1. Sub-area alarm outputs (4)
2. Tamper output:
3. Trouble output
4. Environmental disqualification (EDQ) – generated during severe weather conditions, including heavy rain, dense fog, or snow (RLS-2020S model only)

C. Output: 28VDC 0.2A max, N.O./N.C. selectable

D. Alarm Period (delay): 2 Seconds

E. Power
1. Voltage input options:
   a. 10.5 – 30 VDC
   b. POE or POE+ (IEEE 802.3af, 802.3at)
2. Current draw: 500mA max. (12VDC), 250mA max. (24VDC), 6W max. (PoE)

F. Communications
1. Network: Ethernet 10BASE-T/100BASE-TX, RJ-45 connector
2. Protocols UDP, TCP/IP, Redwall Event Code, Http web setting, SNMP

G. Enclosure
1. Dimensions(W x H x D): 6.3 x 5.8 x 6.3 inches (160 x 146 x 160 mm)
2. Weight: <2.2 lb (1 kg)
3. Environmental
   1.) Rating: IP66
   2.) Operating temperature: -40 °C to +50 °C (-40 °F to +122 °F)

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