Since 1980, PROTECH has been designing, manufacturing, and marketing Perimeter Intrusion Detection Systems (PIDS) to protect personnel, property, and assets at sensitive sites. We manufacture systems that give early warning of potential threats at the perimeter. PROTECH offers a complete range of perimeter intrusion detection systems and technologies including – G-FENCE fence-mounted intrusion detection, infrared beam technology (invisible fences), PIRAMID dual technology motions sensors and video analytic object detection and tracking. Our technology can be integrated with monitoring applications including Protech's MAXIBUS, Smart Bridge, or Spectra

For additional information, contact:

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ACTIVE INFRARED BARRIER

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

MasterFormat 2020

28 31 21 Area and Perimeter Intrusion Detection

28 31 21.17 Fixed Optical Beam 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>, where the parameter specified in [brackets] is the normal default.**

2. Explanatory notes and comments are presented in *italic* text.

ACTIVE INFRARED BARRIER

PART 1 GENERAL

1.01 SUMMARY

A. Section includes an active infrared barrier system.

B. Product - A system consisting of sensing towers which integrate transmitter and receiver functions in a single tower and create an infrared intrusion barrier and sends alarms through dry contact output.

C. Related Requirements

1. 28 01 30 Operation and Maintenance of Security Detection, Alarm and Monitoring
2. 28 06 30 Schedules for Security Detection, Alarm and Monitoring
3. 28 31 31 Intrusion Detection Interfaces

1.02 REFERENCES

A. Definitions

1. Cell – A mono directional Infrared transmitter-receiver device installed in a tower. A pair of cells, installed in 2 different towers, will create an Infrared detection beam between these towers.
2. Beam – communication between paired cells
3. Single face – Infrared beam transmission or reception, or both, from one surface (face) of a sensing tower.
4. Double face – Infrared beam transmission or reception, or both, from opposing surfaces (faces) of a sensing tower.
5. VCSEL – (Vertical-Cavity Surface-Emitting Laser) is a type of laser diode that emits light perpendicular to the surface of the semiconductor chip

B. Reference Standards

1. Electromagnetic compatibility
   a. EU EMC Directives EN 55022, EN 55024
   a. FCC-47 CFR Part 15, Class B
2. Enclosure
   a. ANSI/ IEC60529 - Degrees of Protection Provided by Enclosures
   b. International Electrotechnical Commission (IEC) - Ingress Protection Rating IP55
3. Laser Safety
   a. IEC 60825-1 Ed.2 and Ed.3 – Safety of Laser Products
   b. FDA (21 CFR part 1040.10 and 1040.11) Class 1 – Laser Safety

1.03 SUBMITTALS

A. Product Data

1. Manufacturer’s printed or electronic data sheets
2. Manufacturer’s installation and operation manuals

B. Shop Drawings

1. Termination points and enclosures

1.04 QUALIFICATIONS

A. Manufacturer of system shall have a minimum of five (5) years' experience in the design, manufacture, and successful implementation of perimeter sensing systems.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver the equipment system in the manufacturer's original, unopened, undamaged container with identification labels intact.

1. Ship and store the system protected from mechanical and environmental conditions as designated by the Manufacturer.

1.06 WARRANTY

A. The Manufacturer shall provide a limited warranty for the system to be free of defects in workmanship and material under normal operating conditions for a period of two years from the date of product shipment.

- END OF SECTION –

PART 2 PRODUCT

2.01 EQUIPMENT

A. Manufacturer: PROTECH/Protection Technologies, Inc.
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B. Model: MIRIS 3100

C. Alternates: None

2.02 GENERAL DESCRIPTION

A. The system shall detect all attempts at intrusion by using adjustable infrared barriers formed by two or more externally powered sensing towers, each of which communicates alarm information via relay outputs for each tower.

B. Intrusion detection shall be based upon the interruption of pulsed infrared beams between sensing towers, spaced with a maximum range of 656 feet (200 m).

2.03 SYSTEM COMPONENTS AND OPERATION

A. Sensing towers shall be configurable for height and number of infrared beams.
   1. Sensing towers shall be available for infrared beam operation in both single face and double face operation.
   2. Sensing towers shall be available configured as both infrared transmitters and receivers.
   3. The response time for an intrusion alarm shall be selectable from 40 ms to 500 ms.

B. The system shall operate with sensing towers spaced up to 656 feet (200 m).

C. Alarm outputs per tower: Intrusion, disqualification, tamper

D. Alarm indicator: Buzzer and LED in each tower

E. Each sensing tower shall have an integrated anti-climbing cap.

F. Each sensing tower shall have integrated alignment tools.

G. The sensing tower shall be capable of in-line, corner, floor, or wall mounting.

H. Each tower shall have an active heater set to deactivate at 95° F (35° C)

I. Each tower shall employ an FDA Class1 compliant VCSEL diodes for longer range.

2.04 DETAILED SPECIFICATIONS

1. Number of tower faces: 1 or 2
   See above note in 2.03 A 1.
2. Number of cells per tower face: 4, 6, or 8 available
3. Effective cell alignment: Horizontal +/- 90°, vertical +/- 10°
4. Beam Wavelength: 940 nm
5. # Channels (frequencies): 4 (1 channel per barrier)
   a. Maximum range: 656 feet (200 m)
6. Power: 24/48 VDC
7. Physical
   a. Tower height: **<6 ft. (2m) > <10 ft. (3m)>**
   The following table provides the available tower options:

Part no.	*Height*	*Faces*	*# Beams per Face*
Tower 2MSF	*6ft. (2 m)*	*1*	*4 or 6*
Tower 2MDF	*6ft. (2 m)*	*2*	*4 or 6*
Tower 3MSF	*10 ft. (3 m)*	*1*	*6 or 8*
Tower 3MDF	*10 ft. (3 m)*	*2*	*6 or 8*

   b. Mounting: **[floor sockets] < wall mounts>**
   c. Cabling protection: Internal
   .
   d. Environmental
      1) Operating temperature: From -40°F to +158°F (-40°C and +70°C)
      2) Rating: IP55
      3) Optical classified as Class 1 under IEC 60825-1 and 21 CFR 1040.10.
         a) Wavelength: 940nm Infrared VCSEL
         b) Pulse duration: 11.96µs,
         c) Pulse period 20ms
         d) Max output power per pulse 1.05mW
8. Alarms
   a. Outputs: Dry contact relays
   b. Parameters Intrusion, disqualification, tamper
9. Communications:
   a. none

- END OF SECTION -

PART 3 EXECUTION

3.01 INSTALLERS

A. The Contractor’s installers and technicians shall be factory trained and certified to install, service, and maintain the system.

B. Contractor personnel shall comply with all applicable state and local licensing requirements.

3.02 PREPARATION

A. Contractor shall insure that all products to be installed have been verified to possess the latest version of available firmware.

3.03 INSTALLATION

A. The Contractor shall adhere to all Manufacturer’s published installation procedures, diagrams, and guidance.

B. Sensing Towers

1. All vegetation shall be cleared from the sight path between adjacent sensing towers.

- END OF SECTION -