



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 PRO-Spectra.

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FENCE-MOUNTED INTRUSION DETECTION SYSTEM

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

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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.

FENCE-MOUNTED INTRUSION DETECTION SYSTEM

PART 1 GENERAL

1.01 SUMMARY

- A. Section describes a perimeter fence-mounted intrusion detection system employing accelerometer technology.
- B. Product - A fence-mounted cabling system with attached accelerometer sensors which detects all attempts at intrusion that use cutting, climbing or lifting of the fence, while disregarding meteorological phenomena such as wind, rain, snow, or other interference from vibration, up to 600 m per system.
- 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. Climbing event – An occurrence where one attempts to climb onto a fence.
 - 2. Cutting event – An occurrence where one attempts to cut the fence.
 - 3. Wind event – An occurrence where wind moves several fence panels.
 - 4. Zones – Logical groupings of sensing elements for the purpose of establishing specific identifiable areas of coverage.
- B. Reference Standards
 - 1. Electromagnetic compatibility - EU EMC Directives EN 55022, EN 55024
 - 2. IEEE 802.3 Ethernet
 - 3. Environmental
 - a. ANSI/ IEC60529 - Degrees of Protection Provided by Enclosures
 - b. International Electrotechnical Commission (IEC) - Ingress Protection Rating IP 44, IP 67

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 fence 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 and in a temperature environment of -40°F to +158°F (-40°C and +70°C)

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. Models: G-Fence 600, G-Fence 600Z
G-Fence 600 has 2 intrusion alarms; G-Fence 600Z has 10.
- C. Alternates: None

2.02 GENERAL DESCRIPTION

- A. The fence-mounted intrusion detection system (IDS) shall employ a passive detector cable installed on the fence. Upon an intrusion, accelerometer-based technology sensors shall detect vibrations on the fence (caused by cutting, climbing or lifting) and send information to the control unit(s), which analyze the information before triggering an alarm.
- B. The IDS shall employ accelerometer-based technology sensors which detect vibrations on the fence (caused by cutting, climbing or lifting) and send information to the control unit(s), which analyze the information before triggering an alarm.

2.03 SYSTEM COMPONENTS - The system shall have a maximum system length of 1968 feet (600m) and be comprised of fence cabling with integrated sensor elements, termination unit(s) and a control unit, as follows:

- A. A section of sensing/detection cable, maximum 100 m long, which integrates up to 40 detector elements, attached to a fence, and connected to a control unit.
In addition, up to 656 feet (200 m) of passive cable may be added per direction.
1. Maximum number of sensors per direction 120
 2. Sensor type: X-Y-Z accelerometer
 3. Configuration: Individual sensitivity settings
 4. Diagnostic: integrated LED in sensor
- B. Control unit which analyzes and processes the data from up to six detector cable sections, with the following properties:
- a. Detection zones: [2] <10>
G-Fence 600 has 2; G-Fence 600Z has 10.
 - b. Technical Alarm 1
 - c. Tamper Alarm 1
 - d. Settings
 - 1) Direction only - sensitivity
 - 2) via PC
 - a) Sensor sensitivity, individual or direction
 - b) Impacts per zone
 - e. Integrated web server

- C. Link termination unit which terminates the detection cable in an open loop configuration or terminates and bridges two detection cables between adjacent control units.
- D. Surge Protection device

2.04 PERFORMANCE

- A. The system shall be capable of detecting and localizing a cutting event to within 3 meters (9.8 feet).

The actual protected length is a function of the width of the fence panel. Typically, one sensor per panel is employed. For example, 40 sensors, each on an 8 ft. (2.5 m) panel, cover a protected length of 320 ft. (100 m)

- 1. Total Coverage: Up to 1968 feet (600 meters), 300 m per direction
- B. Number of perimeter zones: **[2] <10>**
G-Fence 600 has 2 zones one for each direction; G-Fence 600Z has 10 configurable zones
- C. Calibration: Auto
- D. Cable cut response time: **[30 s]<30s to 24hr>**
The G-Fence 600 has 30 seconds, G-Fence 600Z has adjustment from 30 seconds up to 24hr.
- E. Alarm conditions: intrusion, technical defect, tamper
- F. Event Logging: 1000 events

2.05 ELECTRICAL

- A. Control Unit Connections
 - 1. Operating Voltage: 12 VDC
The system requires an external power supply, and a back-up battery is recommended.
 - 2. Current consumption: 188 mA maximum
 - 3. Current consumption per sensor: 20 μ A
 - 4. Detection cable(s): bidirectional from control unit
 - 5. Ethernet: 1 RJ-45
- B. Alarms outputs: dry contacts
 - a. Intrusion: **[2] <10>**
G-Fence 600 has 2 intrusion alarms; G-Fence 600Z has 10.
 - b. Technical defect: 1
 - c. Tamper: 1

2.06 MECHANICAL

- A. Mounting: Integral hooks or wall mounting
Metal zip tie recommended over sensor, plastic zip tie or metal around cable.
- B. Security: Tamper switch for control unit cover.
- C. Cable Jacket: Polyethylene
- D. Weight:
 - 1. Control Unit: 1.6 lb./7 Kg

- 2. Termination/Link Unit .5 lb./ .2 Kg
- 3. Detector cable: 15 lb./ 6.8 Kg
- E. Dimensions: See Attachment A

2.07 ENVIRONMENTAL

- 1. The systems shall be rated for indoor or outdoor use.
- 2. Operating Temperature: -40°F to +158°F (-40°C to +70°C)
- 3. Relative Humidity: 0 – 95% non-condensing
- 4. Ratings:
 - a. Control unit: IP 44
 - b. Termination link: IP 66/67
 - c. Detector cable" IP 67

2.08 WEB SERVER AND PROGRAMMING

- A. The control unit shall be capable of being programmed via an IP connection.
- B. Integrated Web Server
 - 1. The control unit shall have an integrated server to provide the following functions:
 - a. direct configuration
 - b. event log history
 - c. buzzer control
 - d. sensitivity adjustment
 - e. Number of impact per zone adjustment
 - 2. The web server shall be accessed via an IP connection using the Internet browser.

- 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 INSTALLATION

- A. The Contractor shall adhere to all Manufacturer's published installation procedures, diagrams, and guidance.
- B. Control units
 - 1. Control units shall be installed at a height of five to six feet.
 - 2. Control unit can be installed inside using up to 200m of passive cable, 18AWG per direction.
- C. Detector cable
 - 1. Detector cables shall be installed at the mid-height of the fence.

- END OF SECTION -

Attachment A

Exterior dimensions:

