

## SECTION 28 16 00

### ELECTRONIC INTRUSION DETECTION SYSTEM

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. General Description: This specification section covers the furnishing and installation of a complete, low-voltage, Electronic Intrusion Detection System (EIDS).
- B. Contractor shall furnish and install security hardware devices, mounting brackets, power supplies, switches, control equipment, and other components of the system as shown and specified.
- C. Contractor shall furnish and install outlets, junction boxes, conduit, connectors, wiring, and other accessories necessary to complete the system installation. Requirements shall be in accordance with Division 26, Electrical.
- D. Contractor shall coordinate with the telecommunications contractor to furnish connectors, wiring and other accessories necessary to complete the system installation. Requirements shall be in accordance with Division 27, Communications.
- E. General Conditions: Provide the work in accordance with Section 28 05 00, Security General Requirements.

##### 1.02 PRECEDENCE

- A. Obtain, read and comply with General Conditions and applicable sub-sections of the contract specifications. Where a discrepancy may exist between any applicable sub-section and directions as contained herein, this section shall govern.

##### 1.03 GENERAL CONDITIONS

- A. In accordance with Section 28 05 00, Security General Requirements.

##### 1.04 RELATED WORK

- A. In accordance with Section 28 05 00, Security General Requirements.

##### 1.05 APPLICABLE PUBLICATIONS

- A. In accordance with Section 28 05 00, Security General Requirements.

##### 1.06 SHOP DRAWINGS & EQUIPMENT SUBMITTAL

- A. In accordance with Section 28 05 00, Security General Requirements.

##### 1.07 OPERATING AND MAINTENANCE MANUALS

- A. In accordance with Section 28 05 00, Security General Requirements.

##### 1.08 WARRANTY

- A. In accordance with Section 28 05 00, Security General Requirements.

##### 1.09 OWNER'S RIGHT TO USE EQUIPMENT

- A. The Owner reserves the right to use equipment, material and services provided as part of this work prior to Acceptance of the Work, without incurring additional charges and without commencement of the Warranty period.

#### **1.10 TECHNICAL REQUIREMENTS, ELECTRONIC INTRUSION DETECTION SYSTEM (EIDS)**

- A. Purpose: The Electronic Intrusion Detection System is designed to monitor security alarm devices, and to report to the DPS Safety and Security Communications Center on the activity of security alarm devices throughout the building.

- B. Environment:

- 1. The system shall be wholly contained within the site/building. Refer to the drawings and Bid Instructions to determine the scope limitations for this phase of work.
- 2. Security Alarm Remote Monitoring: System security alarm and trouble signals shall be transmitted to the DPS Safety and Security Communications Center via its integral Digital Alarm Communicator Transmitter, communicating over telephone lines provided by the Owner. Optionally, the Owner may elect to monitor the system through the District LAN/WAN using TCP/IP protocols. Contractor shall coordinate with the Owner on the provision and compatibility of Owner-provided connectivity.

- C. Attributes:

- 1. General:

- a. The system shall comprise Electronic Intrusion Detection System field devices including but not limited to intrusion detectors, door position switches, and duress alarm stations, located as shown on the drawings and connected together to provide a complete and operational system.
- b. The EIDS shall be based on a distributed system of individual point monitoring modules, access keypads and alarm control centers (ACC).
- c. The system shall be U.L. listed for Central Station, Local and Auxiliary, and Burglary (UL Central Station and Local) applications and shall be compatible with the Owner's existing alarm receiving station.

- 2. System Control Panel:

- a. System Software: The base panel shall come complete with the software necessary to implement every system feature and to allow for the addition of every expansion or functional module without changes or addition to the basic software.
- b. The base control panel shall be fully supervised and programmable. Panel shall be complete with integral power supply and supervised battery charger, auxiliary power for powering security detection devices, integral supervised digital alarm communicator, supervised bell/siren output, and two general purpose programmable outputs which can be programmed as general purpose outputs or as the system's addressable loops.

- 3. Panel Zone Expansion: The panel shall be expandable by adding standard hardwired zone modules to the base panel. The system shall be capable of expansion using hardwired, addressable and wireless simultaneously in any combination that suits the application.

- 4. System Keypads: The system shall accommodate up to 16 LCD keypads which are powered from the base panel via the four-wire communications bus. LCD keypads shall have a display capacity of at least 32 alphanumeric characters with adjustable brightness and contrast. Keys shall be backlit for low light ease of

- use. Keypads shall include individual "Armed", "Ready" and "Trouble" indicators, three keypad-activated alarm keys, and five programmable function keys. Keypads shall be available with red bezels as required for fire systems.
5. Partitions: The system shall be programmable for fully independent partitions, with each partition having its own account code. Keypads shall be assignable as partition keypads or global keypads. Each zone in the system shall be assignable to one or more partitions.
  6. Ground Fault Detection: The system shall include an integral ground fault detector which shall detect a single ground fault on any extended conductor in the system.
  7. Supervision: Each zone in the system shall be supervised. The base panel and any remote panel with its own AC input shall be supervised for AC loss. Batteries for the base panel and all remote panels shall be supervised for low power and be short circuit-protected. Each addressable device and each wireless input device shall be supervised for its presence. The communications bus shall be supervised for low voltage and the presence of each enrolled module and keypad. Digital alarm communicators shall be supervised for telephone line trouble and failure to communicate.
  8. Central Station Reporting:
    - a. The system shall provide high speed 10 bps and 20 bps 1400/2300 Hz handshake, Contact ID and SIA reporting formats and shall be capable of being programmed to call up to 3 telephone numbers.
    - b. The telephone numbers shall be programmable for backup dialing should the primary number fail.
    - c. The system shall report a separate account code for each partition and for non-partition (system) events.
    - d. The system shall provide opening/closing scheduled suppression to prevent opens and closes from being reported to the central station.
  9. TCP/IP LAN/WAN Communications: The system shall have the ability to communicate alarm signals to a central station or dedicated PC (equipped with appropriate software), through a constant connection providing full supervision of the link between the panel and the TCP/IP receiver. Communication shall be via a LAN or WAN, compatible with 10BaseT and 100BaseT Ethernet TCP/IP communications.
  10. System Event Buffer: The system shall have an event buffer. All events shall be viewable by upload/download to a PC.
  11. System Programming:
    - a. The system shall be fully programmable from the LCD keypads and shall also allow event buffer viewing at the keypads.
    - b. Remote Programming Software (RPS): Provide separate PC-based upload/download software which shall allow programming and operation from a directly connected local computer, or from a remote computer via a telephone line or TCP/IP LAN/WAN communications. Remote access shall be controlled by the Owner to prevent unauthorized access.
    - c. All system programming shall be maintained in nonvolatile memory so that programming information is retained even if all AC and battery power is removed.

## **PART 2 - PRODUCTS**

### **2.01 GENERAL**

Product Acceptability: The Products section contains lists of acceptable products. If product substitutions are proposed, they must be made based upon a comparison of equivalence to the product specified. Considerations may include but shall not be limited to functional, physical, aesthetic and/or interface aspects. The Owner shall be the sole judge of whether or not a submitted substitution is deemed to be "equivalent" to that specified.

## 2.02 ELECTRONIC INTRUSION DETECTION SYSTEM

### A. System Control Panel:

1. Control/Communicator Panel: Bosch 7412 series, with transformer, fire-rated enclosure, battery back-up, modem/TCP/IP interface, and phone line interfaces. Contractor shall confirm compatibility with Owner receiver.

### B. Peripheral Control Equipment:

1. Zone Expansion Bosch B208.
2. Keypad Bosch B920
3. Coordinate configuration requirements with the Owner and provide programming, configuration and interfaces as necessary to provide a complete and operable system.

### C. Power Supply:

1. LifeSafety Power FPO100/200-E2, or,
2. Altronix AL400ULX, or,
3. Lifetime Series Pro FPX200A/100-A8D8E2.
4. Battery Back-up: Provide battery back-up to retain functions of all electronics for a period of twenty-four (24) hours upon loss of 120VAC power.

### D. Alarm Initiating Devices:

1. Door Position Switch: Door Position Switches shall be furnished and installed by the Contractor. The Contractor shall align, prepare and fabricate doors and frames to accept specified door position switches. The Contractor shall be responsible for coordinating the installation so systems and hardware operate as specified.
  - a. Surface Mounted Door Switch: Sentrol Model 2505-A-06 or Flair Model MSS-100-23 Surface Mounted Magnetic Switch with armored cable. Route armored cable to junction box and permanently secure to box with clamp or set-screws. Use only where flush mounted devices cannot be installed.
  - b. Non-fire Rated Doors, Flush Mount:
    - 1) Hollow Metal Doors: Sentrol Model 1076C-W, or comparable, Concealed Magnetic Door Switch.
    - 2) Storefront Doors: Sentrol Model 1076C-W, or comparable, Concealed Magnetic Door Switch.
    - 3) Wood Faced Doors: Sentrol Model 1277-W, or comparable, Concealed Magnetic Door Switch.
  - c. Fire Rated Doors
    - 1) General: Contractor shall coordinate all security hardware equipment and installation so as to maintain the Fire Rating of each specific door to the satisfaction of the local Authority Having Jurisdiction.

- 2) Hollow Metal Doors: Sentrol Model 1078CW, or comparable, concealed magnetic door switch, or equal, approved by UL for use on UL classified fire doors with metal faces, rated up to 3-hours.
  - 3) Storefront Doors: Sentrol Model 1078CW, or comparable, Concealed Magnetic Door Switch, or equal.
  - 4) Wood Door w/Hollow Metal Frame: Sentrol Model 1078CW, or comparable, Concealed Magnetic Door Switch, with Sentrol Model 1835 Mini-Max Wide Gap Magnet. Magnet shall be made of rare-earth magnetic materials, and shall be of 5/8" x 1/8", cylindrical (washer) shape. Drill 1/8"-deep hole to flush mount magnet to top of door.
- d. Gates and Roll-Up Doors: Sentrol Model 2205-A, or comparable, with armored cable. Route armored cable to junction box and permanently secure to box with clamp or set-screws.
2. Duress Button: Provide Honeywell 270R, or comparable, locking duress button, mounted under desk or on wall. Coordinate final location with the Owner.
  3. Motion Detector: Provide Area Motion Detectors designed for the area of usage by Bosch and shall be furnished and installed by the Contractor. The Contractor shall mount and align devices to cover the area shown on the plans. The Contractor shall be responsible for coordinating the installation so systems and hardware operate as specified.

### **2.03 WIRE AND CABLE**

- A. General: Cables which are not installed in conduit shall be rated for plenum use.
- B. Intrusion drops; 22 gauge – 6 conductor, stranded, or as recommended by the manufacturer to insure performance.
- C. Keypad drops; 22 gauge – 6 conductor, stranded, or as recommended by the manufacturer to insure performance.
- D. Module drops; 18 gauge – 6 conductor, stranded, shielded
  1. Module B must originate from main control panel. If installing more than one module, additional modules (labeled C, D, etc.) may be daisy chained from Module B or a subsequent module which originated from Module B, or may connect to the main control panel
- E. Other system cable: As recommended by the Manufacturer and approved by the Owner.
- F. Cable installed below grade shall be rated for immersion in water.

### **2.04 IDENTIFICATION AND TAGGING**

- A. Color coding cable and wire:
  1. See standard security drawings.
  2. Intrusion devices:
    - a. Blue + Brown: DC Power
    - b. Black + Red: Alarm circuits
    - c. Green + White: Terminated

3. Modules:
  - a. Red + Green: Polling loops.
  - b. Black + White: Device power.
  - c. Blue + Brown: DC Power.
- B. Wire and cable identification:
  1. Identify wire and cable per Division 17 standards.
  2. Label both ends of each wire and cable to identify the device it feeds.
- C. Labeling:
  1. Label the emergency panel circuit serving the security equipment.
  2. Permanently label each power supply, device, equipment item, UPS, junction box, module, etc.

### **PART 3 - EXECUTION**

#### **3.01 GENERAL**

- A. In accordance with Section 28 05 00, Security General Requirements.

#### **3.02 EQUIPMENT, RACK AND CONSOLE INSTALLATION**

- A. Mount equipment in rooms, consoles, equipment racks, and desktops in accordance with Section 28 05 00, Security General Requirements.

#### **3.03 GROUNDING PROCEDURES**

- A. Provide grounding of all systems and equipment in accordance with Section 28 05 00, Security General Requirements.

#### **3.04 WIRE AND CABLE INSTALLATION PRACTICES**

- A. Provide wire and cable installation in accordance with Section 28 05 00, Security General Requirements.

#### **3.05 DATABASE PREPARATION, CHECKING AND ACTIVATION**

- A. Provide database preparation, checking and activation for systems and equipment in accordance with Security General Requirements, Section 28 05 00.
  1. Provide Required System Programming.

#### **3.06 START-UP RESPONSIBILITY**

- A. Provide start-up services for all systems and equipment in accordance with Security General Requirements, Section 28 05 00.

#### **3.07 SYSTEM PERFORMANCE TESTING AND ADJUSTING PROCEDURES**

- A. Provide performance testing, burn-in performance period, and adjusting of all systems and equipment in accordance with Section 28 08 00

B. Electronic Intrusion Detection System Testing

1. Test and verify the normal operation of every alarm point in all four states at each alarm panel. Test each alarm point for the alarm function by normal operation of the alarm point, i.e.: for a door position switch, open the door and so forth.
2. Test each intrusion detector during its programmed secure and bypass time periods to assure that it operates by the pre-programmed schedule.
3. Verify system integration schemes function automatically and correctly.
4. Verify activity at the Digital Alarm Communications Receiver is designated as directed by the Owner.

**3.08 BURN-IN PERFORMANCE PERIOD**

- A. Provide a burn-in performance period to demonstrate the stability of the system, in accordance with Testing and Commissioning, Section 28 08 00.

**3.09 FINAL PROCEDURES**

- A. Perform final procedures in accordance with Section 28 05 00, Security General Requirements.

**4.00 EQUIPMENT SCHEDULE**

<b>28 16 00 - Intrusion Detection System (IDS)</b>			
<b>DESCRIPTION</b>	<b>Manufacturer/Part Number</b>		
	<b>MFG</b>	<b>Part Number</b>	<b>Special Rqmt</b>
PANEL W/TRANSFORMER, D8103 ENCLOSURE, LOCK AND KEY	BOSCH	D7412GV4	
8 INPUT MODULE FOR SDI2 BUS	BOSCH	B208	
CONETTIX IP ETHERNET INTERFACE	BOSCH	B426	
UNIVERSAL ENCLOSURE	BOSCH	D8103	
LOCK AND KEY SET	BOSCH	D101	
ALPHA NUMERIC KEYPAD	BOSCH	B920	
OVERHEAD DOOR CONTACT	HONYWELL	985	
STEEL DOOR CONTACT	GE/SENTROL	1076	
WIDE GAP SURFACE MOUNT, STEEL ARMORED CABLE	GE/INTERLOGIX	2505A	
DOOR CONTACTS - WIDE - GAP	HONYWELL	960	
NEMA 1 HINGED COVER ENCLOSURE, 12"X12"X6" W/STANDARD LATCH	HONYWELL	A12N126	
MOTION DETECTOR - 60' X 60'	BOSCH	DS860	
MOTION DETECTOR - 200' X 15' LONG RANGE	BOSCH	DS778	
MOTION DETECTOR - 360 DEGREES	BOSCH	DS9360	
MOTION DETECTOR	BOSCH	DS970	
SIREN	ADEMCO	WAVE2	

**5.00 ONE-LINE DRAWINGS**

- A. [28 16 00-1 Security Panel One Line Diagram](#)
- B. [28 16 00-2 Security System One Line Diagram](#)
- C. [28 16 00-3 Typical Computer Rm Alarm One Line Diagram](#)
- D. [28 16 00-4 Security Alarm Panel One Line Diagram](#)
- E. [28 16 00-5 Security Alarm Zone Module One Line Diagram](#)
- F. [28 16 00-6 Security Alarm Keypad One Line Diagram](#)

- G. [28 16 00-7 Security Motion Detector 360 One Line Diagram](#)
- H. [28 16 00-8 Security Steel Door Contact One Line Diagram](#)
- I. [28 16 00-9 Security Motion Detector Long Range One Line Diagram](#)

**END OF SECTION 28 16 00**