

**SECTION 13850
DETECTION AND ALARM**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Control Panel
 - 2. Associated Equipment
- B. Products Installed But Not Supplied Under This Section
 - 1. Section 16140 - Wiring Devices
 - 2. Section 16530 - Emergency Lighting
- C. Related Sections
 - 1. Section 13700 - Security Access and Surveillance
 - 2. Section 13800 - Building Automation and Control

1.02 REFERENCES

- A. Underwriters Laboratories (UL):
 - 1. UL385 – Grades A, AA Police Connect.
 - 2. UL609 - Grade A Local Mercantile Premises and Mercantile Safe and Vault.
 - 3. UL611/UL1610 – Grades A, AA Central Station.
 - 4. UL684 - Local, Central Station, and Remote Station.
 - 5. UL 864 - Wireless smoke detectors.
- B. Federal Communications Commission (FCC):
 - 1. FCC Part 15 –
 - 2. FCC Part 68 -
- C. National Fire Protection Association (NFPA):
 - 1. NFPA72 -

1.03 SYSTEM DESCRIPTION

- A. Provide a Fire and Burglary Alarm System that includes the following capabilities:
 - 1. Commercial UL listed system.
 - 2. Supporting up to 32 zones.
 - 3. Interfacing with: an alpha numeric paging device.
 - 4. Operating with a long-range radio unit.
 - 5. Operating with an integrated security and access control systems.
 - 6. Supporting zones for supervision of peripheral devices.

7. A scheduling capability to allow for automated operations.
8. Monitoring smoke detector maintenance signals.

1.04 SUBMITTALS

- A. Submittals shall include manufacturer data sheets for all major system components.

1.05 QUALITY ASSURANCE

- A. The alarm manufacture shall be certified as being compliant with ISO9001.

PART 2 PRODUCTS

2.01 SYSTEM PERFORMANCE

- A. Control Panel - The Control Panel shall be an 8-partition unit, capable of supporting hardwire, hardwire expansion and wireless zones. Peripheral devices supported by the Control Panel shall include bells, dialers (telephone lines), keypads, RF receivers, and relays. The following performance requirements shall be met.
 1. Basic Hardwire Zones – A total of 8 style-B hardwire zones shall be capable of supporting the following:
 - a. EOLR supervision supporting normally open (N.O.) or normally closed (N.C.) sensors.
 - b. Individually assignable to one of 2 partitions.
 - c. Up to 16 2-wire smoke detectors on 2 selected zones (32 total).
 - d. 4-Wire smoke detectors on any zone.
 - e. Up to 50 2-wire latching glass break detectors on one specific zone.
 - f. Individually assignable to bell outputs and/or auxiliary relay.
 2. Polling Loop Expansion Zones – The Control Panel shall also be capable of supporting up to 24 additional hardwire zones using a built-in, 2-wire, polling (addressable) loop interface. The polling loop shall provide power and data to remote point modules, and constantly monitor the status of all zones on the loop. Maximum current draw shall not exceed 128 mA. The polling loop zones shall be capable of:
 - a. Using Remote Point Module (RPM) devices.
 - b. Supervision by the Control Panel.
 - c. Individually assignable to one of the partitions.
 - d. Individually assignable to bell outputs and/or auxiliary relay.
 - e. 4,000-foot capability without shielded cable

3. Wireless Expansion Zones – The Control Panel shall also be capable of supporting up to 32 wireless zones via a radio frequency (RF) receiver. The Wireless zones shall be capable of:
 - a. Supervision by the Control Panel for check-in signals.
 - b. Individually assignable to one of the partitions.
 - c. Individually assignable to notification appliance outputs and/or auxiliary relay.
 - d. Tamper protection shall be optional.
 - e. Supporting commercial wireless smoke detectors.

4. Partitions – The independent partitions shall provide the following features:
 - a. A Common Lobby partition shall be capable of automatic arming, when the last partition sharing the lobby is armed, and automatically disarmed when the first partition sharing the common lobby is disarmed.
 - b. A Master Partition shall be provided for assigning keypads capable of simultaneously viewing the system status of both partitions.
 - c. Both partitions shall be capable of having keypads assigned.
 - d. All zones, except fire, shall be assignable to one of 8 partitions.
 - e. Both partitions shall be capable of supporting relays.
 - f. The ability to display fire and/or burglary and panic and/or trouble conditions at all other partition keypads shall be optional.
 - g. The ability to support selectable options including entry/exit delay and subscriber account information.

5. User Codes – The Control Panel shall accommodate 75 user codes. The following characteristics shall be assigned to each user code.
 - a. Authority level.
 - b. Partitions operated by the user code.
 - c. Global arming capability.
 - d. Use of a RF button to arm and disarm the system.
 - e. Optional opening/closing central station reporting.

6. Peripheral Devices – The Control Panel shall support up to 16 addressable devices. The devices shall include any combination of keypads, RF receivers, relay modules, notification circuit modules and access control modules. Peripheral devices shall have the following characteristics: Each device shall be:
 - a. Physically set to an individual address.
 - b. Enables using the Device Programming Mode.
7. Remote Keypads_– The Control Panel shall be compatible with remote keypads and allow the user to:
 - a. Arm and disarm the system or one partition is a multiple partition system.
 - b. Bypass zones.
 - c. View messages from the central station.
 - d. Display zone descriptors (alarm, trouble, bypass, etc) in the display window.
 - e. Individually silence notification circuits and/or reset panel.
8. Notification Output Circuits – The Control Panel shall internally provide two supervised NAC outputs for operating fire and burglar alarm notification appliances It shall also support two additional supervised NAX outputs when using a supervised NAC module. Each NAC output shall be rated at 10-14 VDC, 1.7 amp max power limited. Total alarm current draw when using two NAC outputs shall not exceed 2.3 amps for battery independent operation.
9. Auxiliary Relay – A built-in Form C relay shall be provided. The relay contacts shall be rated at 28 VAC/VDC, 2.8 amps maximum. The relay shall support:
 - a. Alarm activation.
 - b. Trouble/supervisory activation.
 - c. Reset of 4-wire smoke detectors.
 - d. Battery saving feature.
10. Output Relays – A total of 16 relay outputs shall be accommodated using relay modules. Each relay module shall provide four Form C (normally open and normally closed) relays for general-purpose use or two Y-style supervised bell outputs. The relay characteristics shall be capable of being:
 - a. Programmed to activate in response to system events.
 - b. Programmed to activate using time intervals.
 - c. Used for additional y-style supervised be NAC outputs.
 - d. Activated manually using a relay command mode.
 - e. Supervised by control panel.

- f. Assigned an alpha descriptor.
11. Addressable Loop Output Relay – A total of 16 Form C (normally open and normally closed) shall be accommodated using the addressable detection loop single relay module. The relay characteristics shall be capable of being:
- a. Programmed to activate in response to system events.
 - b. Programmed to activate using time intervals.
 - c. Used for additional y-style supervised be NAC outputs.
 - d. Activated manually using a relay command mode.
 - e. Supervised by control panel.
 - f. Assigned an alpha descriptor.
12. Ancillary Control – The Control Panel shall be capable of being programmed to activate up to 16 control relays which open doors, turn off lights, etc.
13. 12-Volt Power Supply – The Control Panel shall be have a 12-Volt power supply transformer. The transformer shall supply a total of 2.3 amps total for both panel notification circuits and ancillary functions.
- a. Alarm notification appliances, including but not limited to sirens and strobes.
 - b. Power for relays, keypad/annunciators, 4 wire smoke detectors, access control devices, etc..
14. Telephone Dialers – The Control Panel shall be equipped with a built-in supervised telephone dialer for communications with the central station. It shall also be capable of supporting a supervised backup dialer for connecting to a second telephone line for commercial fire applications.
15. Trigger Output Connector – The Control Panel shall contain an internal connector equipped for a single input and seven outputs. The outputs shall interface with:
- a. Remote keypad sounder.
 - b. UL listed key switch.
 - c. LED indicator module.
 - d. Auxiliary alarm signaling equipment.
 - e. Event logging serial printer.
 - f. Computer used to direct wire downloading via a serial module.

16. Keyswitch – Both partitions within the Control Panel shall be capable of supporting a keyswitch.
17. Pager Interface – The Control Panel shall be capable of sending event information to an alphanumeric pager via a pager interface device.
18. Voltage Triggers – The Control Panel shall provide a trigger outputs. The trigger connector pins change state for different conditions in order to interface with equipment such as long range radio equipment (LRR), remote keypad sounders, keyswitch ARMED and READY LEDs, or a system event log printer.
19. Event Log – The Control Panel shall contain a programmable event log capable of the following:
 - a. Storing up to 224 events.
 - b. Viewable at the keypad.
 - c. Printed on a serial printer.
 - d. Storing access control system events.
 - e. Sending printed events to an alphanumeric pager.
20. Scheduling – The Control Panel shall provide the following automated scheduling capabilities:
 - a. Open/Close schedules used to control arming/disarming and reporting.
 - b. Holiday schedules, which allow different time windows for open/close schedules.
 - c. Timed events which activate relays, auto-bypassing, un-bypassing, auto-arming and disarming.
 - d. Access schedules, which limit system access to users, by name.
 - e. End User Output Programming Mode shall provide 20 timers for relay control.
21. Communications Formats – The Control Panel shall support the following formats for the primary and secondary central station receivers:
 - a. ADEMCO Low Speed (Standard or expanded)
 - b. Sescoa/Radionics
 - c. ADEMCO Express
 - d. ADEMCO High Speed
 - e. ADEMCO Contact ID

22. Audio Alarm Verification – The Control Panel shall support a programmable audio alarm verification (AAV) device, capable of operating in conjunction with an output relay, to permit two-way voice dialog between a central station operator and the premises.
23. Cross-Zoning Capability – In order to prevent false alarms, the Control Panel shall prevent a zone from going into alarm, unless its cross-zone is also faulted within 5 minutes.
24. Exit Error False Alarm Prevention – The Control Panel shall be capable of differentiating between an actual alarm and a false one caused by leaving an entry/exit door open. The Control Panel shall be capable of:
 - a. Being arming while the faulted entry/exit zone(s) and/or interior zones are bypassed.
 - b. Generating an Exit Error report by user and zone.
27. Downloading Features – The Control Panel shall be capable of uploading and downloading at 300 baud. It shall also be capable of uploading ECP devices, their physical addresses, programmed addresses and firmware revision levels.
28. Enhanced Fire Walk-Test Mode – The Control Panel shall provide the installer with the following features:
 - a. Automatic test of all integrated remote point module (RPM) devices, equipped with an automatic test feature.
 - b. While automatic test is in progress all fire zones that remain untested shall be displayed.
 - c. An event log shall be capable of logging the results of tested and untested zones.
 - d. The ability to report the result of tested and untested zones to the central station.
29. Built-in User's Manual and Descriptor Review – A built-in User's Manual shall be provided for End User convenience. The following shall be provided:
 - a. A brief explanation of keypad functions shall be provided at the keypad alphanumeric display.
30. Access Control
 - a. In addition, the Control Panel shall be capable of being connected to an integrated access control systems.
 - b. The panel shall be capable of supporting three different methods of wiegand

access control card readers. These are by use of the ECP bus or the V-Plex addressable loop

2.02 ENCLOSURE

- A. The Control Panel be enclosed in a metal cabinet, suitable for wall mounting. The dimensions shall not exceed 18 inches in height, 14.5 inches in width or 4.3 inches in depth

2.03 ELECTRICAL POWER REQUIREMENTS

- A. System Power – The Fire and Burglary Alarm System shall operate using standard 120 volts AC, 50/60 Hz power.
 - 1. Control Primary Power – Transformer power shall be 18 VAC, 17VA.
 - 2. Backup Battery – A rechargeable 12 VDC, gel type, lead acid backup battery shall be provided. The battery shall be rated between 12 and 34-ampere hours (AH).
 - 3. Alarm Power – Maximum alarm output power shall be 12 VDC, 1.7 amps for each NAC output (maximum total for both of 2.3 amperes).
 - 4. Auxiliary Standby Power – Standby power shall be 12 VDC, 1 amp maximum.
 - 5. Total Power – Combined auxiliary standby and alarm currents shall be 2.3 amps.
 - 6. Fusing – The battery input, auxiliary, and bell outputs shall be protected using PTC circuit breakers. All outputs shall be power limited.

2.04. ENVIRONMENTAL CONDITIONS

- A. Environmental Conditions – The Fire and Burglary Alarm System shall be designed to meet the following environmental conditions.
 - 1. Storage Temperature – The system shall be designed for a storage temperature of -10° C to 70°C.
 - 2. Operating Temperature - The system shall be designed for an operating temperature of 0° C to 50°C (32° F to 120°F).
 - 3. Humidity - The system shall be designed for normal operation in an 85% relative humidity environment.
 - 4. Electromagnetic Interference – The system shall meet or exceed the requirements of FCC Part 15, Class B devices, FCC Part 68, IEC EMC directive.

2.05. ASSOCIATED EQUIPMENT

- A. The following equipment shall be provided as part of the Fire/Burglary/Access Alarm System:
1. Smoke Detectors –
 2. Heat Detectors –
 3. Manual Pull Stations –
 4. Horn/Strobes –
 5. Strobes –
 6. Keypad/Annunciators –
 7. Motion Detectors
 8. Passive Infrared Detectors
 9. Break Glass Detectors
 10. Card Readers –
 11. Addressable Relay Modules
 12. Addressable Notification Modules

PART 3 EXECUTION

3.01 INSTALLATION

- A. The Alarm System shall be installed in accordance with the Manufacturer's Installation Manual.

3.02 TESTING

- A. The Alarm System shall be tested in accordance with manufacturers recommended procedures by an authorized manufacturer's representative.