

# ACCESS CONTROL PERFORMANCE SPECIFICATION

## 1.0 General

### 1.1 Scope of Work

#### 1.1.1 Introduction

The Contractor shall provide, install, and program a functionally complete integrated access control, electronic locking, and door monitoring system per the Manufacturer's guidelines and codes, as described in the following specifications.

The equipment and application shall be Policy AD-65 compliant.

#### 1.1.2 Work Included in this section

A. Installation of access control system

B. Equipment Schedule  
See Scope Document and Drawings

C. See Appendix for door library type

D. System Wiring

- All system wiring shall be plenum rated.
- Wire gauge and shielding shall follow the manufacturer's installation guidelines.
- All wiring shall be installed in accordance with the National Electric Code (NEC) and the National Fire Protection Agency(NFPA).
- All wiring shall be concealed where possible. All exposed wiring shall be installed in a protective housing such as conduit or wire mold.
- Cables penetrating floors and firewalls must be routed through a metallic sleeve and properly fire stopped to meet national and local fire codes. All walls and floors shall maintain their existing fire rating.

E. System Programming

- The Contractor shall complete the programming of all inputs, outputs, readers, doors, and iStar panels, forced door events, held door events, and panel supervision events (com. Fail, battery, tamper, etc.). Ensure all events are downloaded to controller.
- The Contractor shall utilize the University's standard naming conventions.

#### 1.1.3 Related Work Specified under Other Sections of these Specifications (Related sections)

- A. This work shall be done in strict accordance with these Contract Documents prepared for The Pennsylvania State

University, hereinafter referred to as "Owner".

- B. The Contractor shall perform all work described in this document along with any work not expressly mentioned in the specifications, but necessary, for the proper execution of the same. It is not the intent to delineate or describe every detail and feature of the work. No additions to the contract sum will be approved for any materials, equipment, and/or labor to perform work hereunder unless it can be clearly shown to be beyond the scope and intent of the drawings and specifications and essential to the proper prosecution of the work.
- C. Work under this contract consists of the complete installation and includes, but is not necessarily limited to, the furnishing of all labor, superintendence, material, tools, and equipment necessary to complete all the work as specified hereinafter.

## 1.2 General Conditions

### 1.2.1 Submittals at Bid Time

For bid evaluation, bid submittals shall include two (2) sets of the items described below:

- A. Specification sheets (cut sheets) of all proposed equipment.
- B. Equipment list identifying:
  - Model number of each unit
  - Quantities of each type of device
  - Unit costs
- C. Specification Compliance: Shall constitute a letter submitted with the bid, responding to specification sub-sections individually, indicating exceptions, substitutions, and alternatives. The Contractor shall submit requests for substitutions (as well as all relevant technical data pertaining to substituted equipment) to the specifier ten (10) days prior to the close of bid for evaluation and approval.

### 1.2.2 Documentation to be submitted by Contractor after Award of Contract

- A. Drawings: Shop drawings to provide details of the proposed system and the work to be provided. These include point-to-point drawings of systems and wiring diagrams of individual devices.
- B. Permits: The Contractor shall be responsible for identifying requirements for permits from all building, police, and fire authorities for the installation of the system(s) specified herein and shall assist the Owner in obtaining the relevant permits.

### 1.2.3 Documentation to be submitted by Contractor upon Completion of System Installation

- A. "As-built" drawings: Upon completion of installation, the Contractor shall prepare "as-built" drawings of the system. These "as-built" drawings shall be (AutoCAD 2021 or later) drawings of

each floor plan indicating exact device locations, panel terminations, cable routes, and wire numbers as tagged and color-coded on the cable tag.

In addition, final point-to-point wiring diagrams of each type of device (in AutoCAD) shall be included in the “as-built” drawings.

“As-built” drawings shall be submitted to the Owner for approval prior to the system acceptance walk-through.

- B. Operation and Maintenance Manuals: One (1) set of operating manuals shall be provided explaining the operation and maintenance of the system.
- C. Paperwork to be placed inside of iStar panel:
  - iStar installation manual
  - Reader and reader interface manual
  - Door release hardware manuals
  - Request to exit motion detector manuals
  - Power supply manuals
  - All wiring notes

#### 1.2.4 On-site Security Personnel Training

Upon completion of the installation, the Contractor shall furnish training in the complete operation of the system.

#### 1.2.5 System Approvals

- A. The system shall be the standard product of one manufacturer, and the manufacturer shall have been in business manufacturing similar products for at least five (5) years.
- B. After-Sales Support: The Contractor shall be a factory-authorized and trained dealer of the system and shall be certified to maintain/repair the system after system acceptance.

#### 1.2.6 Quality Assurance

- A. All equipment, systems, and materials furnished and installed under this section shall be installed in accordance with the following applicable standards:
  - National codes: NEC and NFPA
  - Approvals and Listings: UL
  - Pennsylvania Department of Labor and Industry
  - EIA/TIA Telecommunications wiring standards
  - Local Authorities Having Jurisdiction

#### 1.2.7 Guarantee of Work

All components, parts, and assemblies supplied by the Manufacturers and installed by the Contractor shall be warranted against defects in material and workmanship for at least twelve (12) months (parts and labor),

commencing upon the date of acceptance by the Owner. A qualified factory-trained service representative shall provide warranty service.

#### 1.2.8 Service/Maintenance

- A. The Contractor shall be responsible for maintenance and repair of the system during the warranty period, free of charge (parts and labor), including the repair of workmanship defects.
- B. The installer shall correct any system defect within six (6) hours of receipt of a call from the Owner.
- C. The Contractor shall offer extended service/maintenance agreements up to four (4) years after the warranty expires. The agreement shall be renewable monthly, quarterly, or yearly.

#### 1.2.9 Building Security

Building security shall remain functional during installation. Doors and door locking shall remain operational. University Police and Public Safety Physical Security Office must be notified if it is not possible to lock the doors at the end of each workday. Failure to comply will result in removal from the approved vendor list.

### 1.3 Handicapped Door Opener Interface

#### 1.3.1 Handicap Door Operation

##### A. Exterior Door Button

1. Button is disabled when the building is locked.
2. Button is enabled with a valid card read when the building is locked.
3. Button opens the door without a card read when the building is unlocked.

##### B. Interior Door Operation

1. Button unlocks the door and then opens the door when the building is locked.
2. Button triggers a request to exit input on the RM-4 module.
3. Button opens the door when the building is unlocked.

- C. Any use of wireless handicapped buttons MUST be approved by The Physical Security Office.

#### 1.4 PoE on door mortice and cylindrical locksets

1.4.1 Approvals – Assa Abloy IN120 PoE locksets may be approved by Physical Security Office for installation on select interior office, lab, conference room, and classroom doors.

#### 1.5 Magnetic Locks

##### 1.5.1 Approvals

The use of magnetic locks is prohibited unless approval from Physical Security Office is granted. All approved magnetic locks shall be installed in accordance with all life safety regulations and NFPA codes to include

blue manual bypass egress stations and code required ties to building fire alarm system.

## PRODUCTS

### 2.0 Access Control System

#### 2.0.1 Access Control System

The existing system utilizes Software House CCure 9000 software running on a MAS SAS enterprise application server. The hardware consists of Sensormatic iStar Ultra series Controller(s) and associated hardware, which provides for the physical connection to readers, locking hardware, sounder, door status switches, and request to exit devices.

Sensormatic has been approved as a Proprietary Item and substitutions will not be permitted without the permission of the Owner.

#### 2.0.2 Sensormatic System Feature/Capability

The following indicates system capabilities and capacities:

- A. LAN/WAN Communications: CCure host server to local iStar panel.
- B. B. The iStar panels shall have a minimum of 64MB RAM to exceed the University's requirement of 500,000 card records in local memory, 2 GB RAM for event storage in the event of a network failure.
- C. C. Programming Software: The Programming Software shall include the following features:
  1. LAN/WAN connection with CCure Host
  2. Fully configurable operator privilege authority level control
  3. CCure parameter editing and storage
  4. CCure and iStar software upgradeability
  5. LAN/WAN Communications database management
  6. Event history buffer uploading

#### 2.0.3 Sensormatic System Interface Requirements

- A. All Installations: The Sensormatic access control systems shall be installed in accordance with the National Electric Code and the local Authority Having Jurisdiction (AHJ).
- B. The Sensormatic access control hardware shall be installed in accordance with UL requirements.

### 2.1 Sensormatic System Materials

#### 2.1.1 Sensormatic System Hardware Description

Sensormatic System: The access control system shall be provided, at a minimum, with the following components. Additional accessories shall be provided based on the quantities and features required for the application.

1. Sensormatic iStar Ultra Panel
  - a. System Accessories
    - i. 2GB RAM or greater
    - ii. iStar power supply with 7-amp hour battery backup for the panel
2. HID Reader- RMP40- Part # 922PWNTEKE019A (terminal strip connection)
3. Sensormatic RM-4 personality module
4. 6 amps @ 12 vdc for card readers
5. 10 amps @ 24 vdc for door controls (strikes/latch retraction)
6. Electric door strikes to be rated for continuous duty
7. Electrified doors need to be low current not to exceed 1 amp
8. Bosch DS160i request to exit motion sensor with door sounder
9. Interlogix #1078c door monitor switches
10. System Sensor MHW sounder (for exterior doors)
11. Handicapped door opener interface
12. Von Duprin EPT-10 power transfer device or equivalent

## 2.2 Sensormatic iStar Ultra Controller

### 2.2.1 iStar Ultra Controller Description

The iStar specified herein shall be used to control the locking/unlocking of doors

### 2.2.2 iStar System Interface Requirements

- A. Grounding: The Contractor shall properly earth-ground the iStar panel to prevent electrostatic charges and other transient electrical surges from damaging the iStar panel.
- B. Primary power: The Contractor shall connect the iStar panel to a dedicated 120 VAC power source through the external iStar power supply.
- C. Power supervision: The external power supply shall provide contacts that activate when there is an AC power failure, and the system will report a "Power Failure" message to the CCure server.
- D. Communications: The Contractor shall connect the iSTAR Ultra to the Penn State SecNET for communications and programming with one of the CCure host servers.
- E. Housing & Food Services: The Contractor shall install the iStar Ultra in a 16 AWG metal wall-mounted lockable cabinet with tamper switches on the front and rear. (Standard Sensormatic Cabinet).

2.3 HID Reader- RMP40- Part # 922PWNTEKE019A (terminal strip connection)– No substitutions without Security Office approvals.

HID reader is a MultiTech card reader capability of mag strip, smart card and mobile device.

#### 2.3.1 Interfacing Requirements

- A. Sensormatic RM-4 Personality Module: The Contractor shall install an RM-4 to interface the RMP40 reader to the iStar panel.
- B. Grounding: The Contractor shall properly earth-ground the RMP40 reader to prevent electrostatic charges and other transient electrical surges from damaging the reader.
- C. Mounting: The Contractor shall mount the reader vertically, except where it is not possible. Reader to be mounted 42” on center.

### 2.4 Sensormatic RM-4 Personality Module

#### 2.4.1 RM-4 Personality Module Description

The RM-4 module specified herein shall connect and work as an interface between the RMP40 reader and the iStar access control panel. The RM-4 shall also provide inputs and outputs for the connection of a door status switch, request to exit switch, door ajar sounder, and door strike relay

#### 2.4.2 The following outlines RM-4 capabilities and formats:

- A. The RM-4 shall be used to interface communications between the RMP40 credential reader and the iStar access control panel.
- B. The RM-4 shall be used to connect and supervise the door status switch and the request to exit switch/motion.
- C. Provide an output/trigger for the door strike relay and door ajar sounder.
- D. Convert the data communication format from the reader to RS485.
- E. Create an address for the reader to the iStar.
- F. If a Door strike relay module is NOT included with RM4, one WILL NEED to be provided.

#### 2.4.3 RM-4 System Requirements

- A. Grounding: The Contractor shall properly earth-ground the RM-4 to prevent electrostatic charges and other transient electrical surges from damaging the RM-4.
- B. Component Housing: The Contractor shall install the RM-4 in a NEMA Type 1 hinged, lockable enclosure along with the door strike relay (Altronix RSBN-TTL or Equivalent).

### 2.5 Interlogix 1078C Door Monitor Switch (or an Approved Equivalent)

#### 2.5.1 Interlogix 1078C Description

The 1078C Door Monitor Switch specified herein shall provide a means of monitoring the status of the controlled door. The switch will monitor the door for forced entry and indicate if the door is left ajar after a valid card is read.

#### 2.5.2 1078C Feature/Capability Summary

- A. Contact shall be a hermetically sealed magnetic reed switch.
- B. Reed switch shall be potted in the contact housing with a polyurethane-based compound.
- C. Housings shall be molded of flame retardant ABS plastic

#### 2.5.3 1078C System Requirements

- A. RM-4 Connection: The Contractor shall connect the 1078C to the appropriate input on the RM-4.
- B. Supervision Resistor: The Contractor shall connect the supervision resistor provided with the RM-4 at the 1078C for the supervision of the wiring between the resistor and the RM-4.
- C. Securing the 1078C: The Contractor shall secure the 1078C in place by placing a light coating of silicone RTV caulk.

### 2.6 Bosch DS-160i Request to Exit Motion Detector

#### 2.6.1 Bosch DS-160i Request to Exit Motion Detector Description

The DS-160i request to exit motion detector specified herein shall provide a means to bypass the Door Monitor Switch and/or the unlocking of the controlled door upon exiting. The built-in sounder activates when there is a forced or held door condition.

#### 2.6.2 Bosch DS-160i Feature/Capability Summary

- A. Coverage: The DS-160i shall provide coverage for single or double door use.
- B. DS-160i shall be mounted above the door on the wall or ceiling.
- C. Two sets of relays shall be Form "C" contacts.
- D. Selectable fail-safe/secure modes. Set to fail secure.
- E. Sounder for annunciation of held and force door conditions.

#### 2.6.3 Bosch DS-160i System Interface Requirements

- A. RM-4 Connection: The Contractor shall connect the DS-160i to the RM-4 module.

### 2.7 Sounders (Exterior Doors)

- 2.7.1 Exterior doors shall be provided with and programmed for individual sounders. System Sensor Model MHW Mini Horn. Wired and set for 12VDC sounder switch set for level 4.



## 2.8 Power Supply

### 2.8.1 Power Supply Features/Capability Summary

- A. 4-amp at 12 VDC (panel)
- B. 8-amp continuous supply current 24 VDC. (lock power supply)
- C. Automatic switchover to stand-by battery when AC fails.
- D. Thermal and short-circuit protection with auto-reset.
- E. Battery failure and battery presence supervision.
- F. AC failure supervision.

### 2.8.2 Power Supply Interface Requirements

- A. Primary Power: The Contractor shall connect the power supply to a non-switched, dedicated 120 VAC power source.
- B. Power Supervision: The Contractor shall connect the power supply's supervisory outputs to the iStar.
- C. Battery Backup: The Contractor shall provide a minimum of 12 hours of backup power in the event of primary power failure.

## 2.9 Electric Latch Retraction

### 2.9.1 Electric Latch Retraction

#### A. Electric Latch Retraction (EL) - Option

The EL feature allows for the remote unlocking of exit devices. A control station operator can flip a switch, or an access control system can activate an output to retract the latch bolt and immediately change an exit door to push-pull operation. The EL feature is an alternative to manual dogging. EL devices are also useful with automatic door operators and may be applied to fire-rated devices when under the control of an automatic fire alarm system.

- B. The latch retraction should be of low current motorized model. Latch retraction motor shall draw 1Amp or less.

### 2.9.2 Features/Capability Summary

#### A. Electric Latch Retraction

- Fail secure to keep the door locked in the event of power failure
- Interfaces with automatic door opener for handicapped entrances.
- Can be retrofit into existing door hardware

#### B. Request to Exit

- One internal SPDT switch
- Can be retrofit into existing door hardware

### 2.9.3 Interface Requirements

#### A. Electric Latch Retraction

- The Contractor shall provide a continuous current electric transfer for transferring power from the frame to the door.
- iStar Connection: The Contractor shall connect the electric latch retraction to the iStar panel through a set of SPDT contacts.

#### B. Request to Exit

- RM-4 Connection: Request to exit shall be accomplished using DS160i PIR Motion Request to Exit/sounder device.
- The Contractor shall provide a continuous current electric transfer for transferring power from the frame to the door.

## 3.0 Electric Door Strikes

Electric door strikes shall be of the appropriate model for the associated door's lockset. Any other substitution shall be submitted to PSU for approval. Note: The Security vendor shall be responsible for specifying and installing the appropriate model of the electric strike.

### 3.0.1 Electric Door Strike Description

Electric door strikes provide remote release of a locked door. They allow the door to be opened without retracting the latch bolt. When the door closes the beveled latch bolt rides over the lip and falls into the electric strike pocket

### 3.0.2 Electric Door Strike Features/Capability Summary

- A. Fail secure to keep the door locked in the event of power failure
- B. Rated for continuous duty for daytime unlocking of doors
- C. Tested to over 500,000 cycles
- D. Holding strength greater than 1500 lbs.
- E. UL Listed for Burglary-Resistant and Electric Strike for fire doors and frames.

### 3.0.3 Electric Strike Interface Requirements

- A. Power: The Contractor shall connect the electric strike to the 24VDC power supply.
- B. Latch bolt Status Switch Connection: The Contractor shall connect the latch bolt status switch to the appropriate input on the iStar panel.
- C. Supervision Resistor: The Contractor shall connect the supervision resistor provided with the iStar panel at the latch bolt status switch for the supervision of the wiring between the resistor and the panel.

## 4.0 Execution

### 4.1 Installation

Install all equipment and materials per the “current” recommendations of the manufacturer. The work shall also be in accordance with:

- A. Installation criteria are defined in these specifications and the construction documents.
- B. Approved submittals.
- C. Applicable requirements of the referenced standards.

### 4.2 Supervision

The contractor shall provide the following services as part of the contract:

- A. Supervision of sub-contractors.
- B. Coordination of other contractors for system-related work (electrical contractor, finish hardware contractor, door contractor, architect, and general contractor).
- C. Attend construction meetings.
- D. Keep updated drawings at the site.
- E. Meet construction deadlines per schedule.

### 4.3 Programming

The contractor is responsible for the programming of the system shall include the following tasks:

- A. Programming system configuration parameters (hardware and software, door location/number, communication parameters).
- B. Programming operational parameters such as events including forced door, held door, communication failure/restore times, door shunt times, and system supervisory.
- C. Other programming tasks as required by the Owner. These additional programming requirements shall be coordinated between the Owner and Contractor
  - PSU Physical Security shall be responsible for setting up and maintaining unlocking events and schedules

### 4.4 Testing

- A. Operational Testing: The contractor shall perform thorough operational testing and verify that all system components are fully operational.
- B. Hard-copy System Printout: The contractor shall submit a hard-copy system printout of all components tested and certify 100 percent operation indicating all devices/panels/units have passed the test criteria set forth by the manufacturer.

- C. Acceptance Test Plan Form: An Acceptance Test Plan Form shall be prepared/provided by the contractor prior to the acceptance walkthrough.

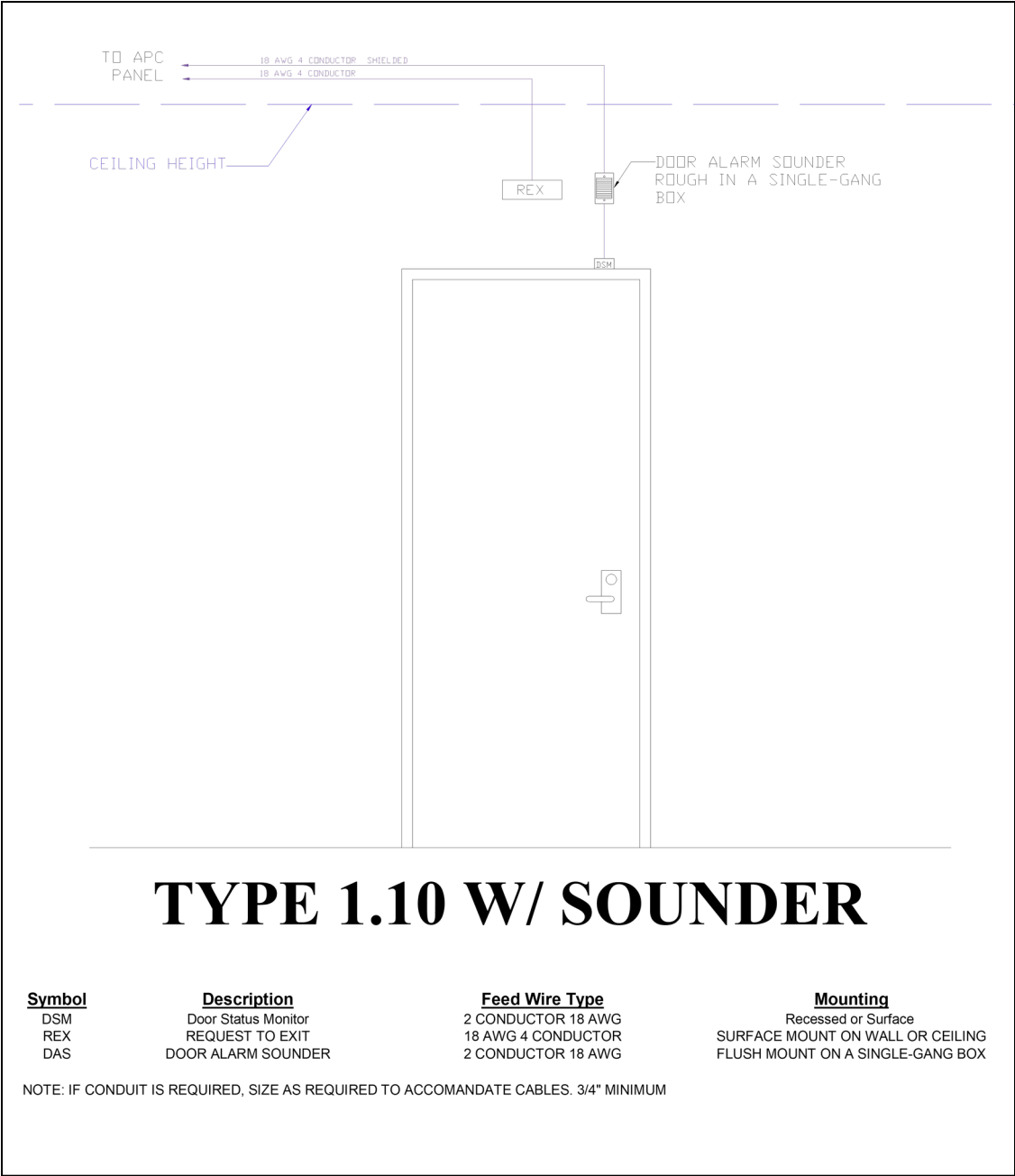
This form shall include separate sections for each device/panel/unit as well as a column indicating the manufacturer's performance allowance/margin, a column indicating the result of the testing performed by the contractor (pass/fail), and an empty column for recording findings during the walkthrough.

#### 4.5 Commissioning

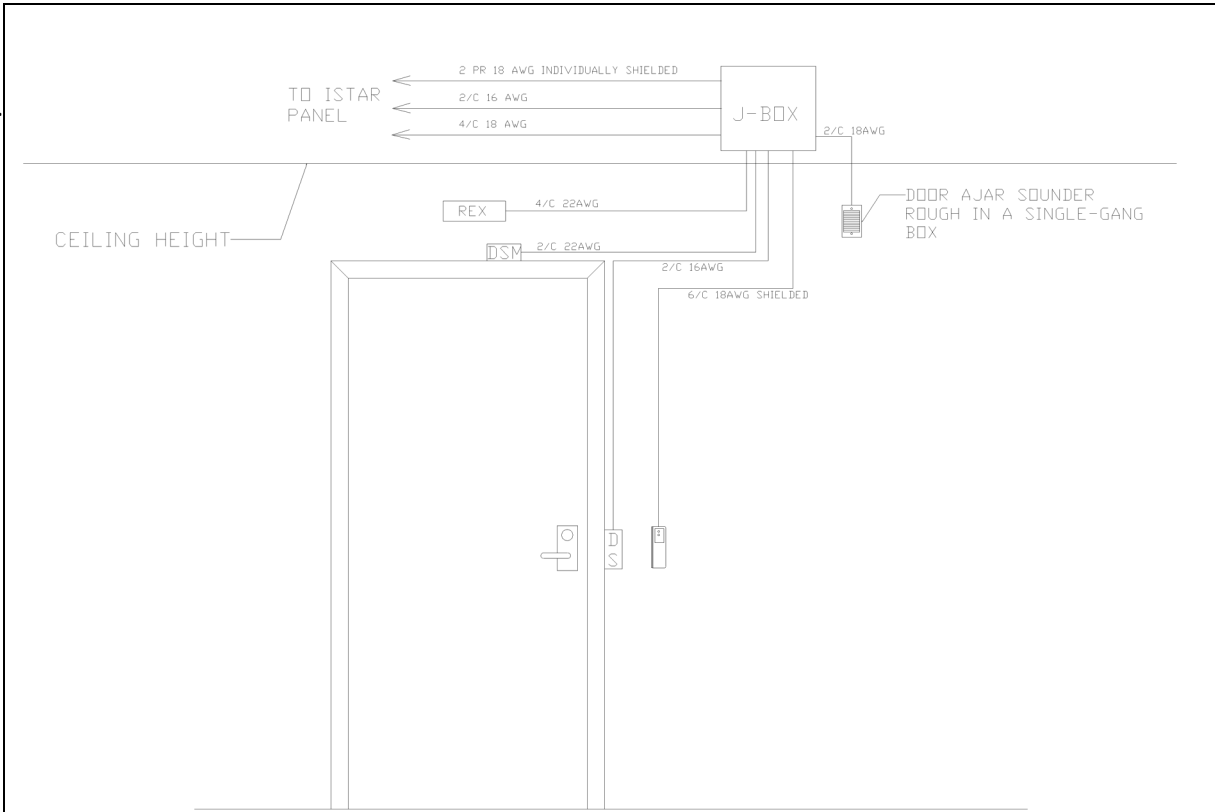
The Contractor shall certify completion in writing and schedule the commissioning walk-through. The contractor shall provide all the tools and personnel needed to conduct an efficient commissioning process.

All doors commissioned in any project, must have a Journal read sent to The Physical Security Office advising of the operation of the commissioned doors.

# Appendix



**Type 1.10**

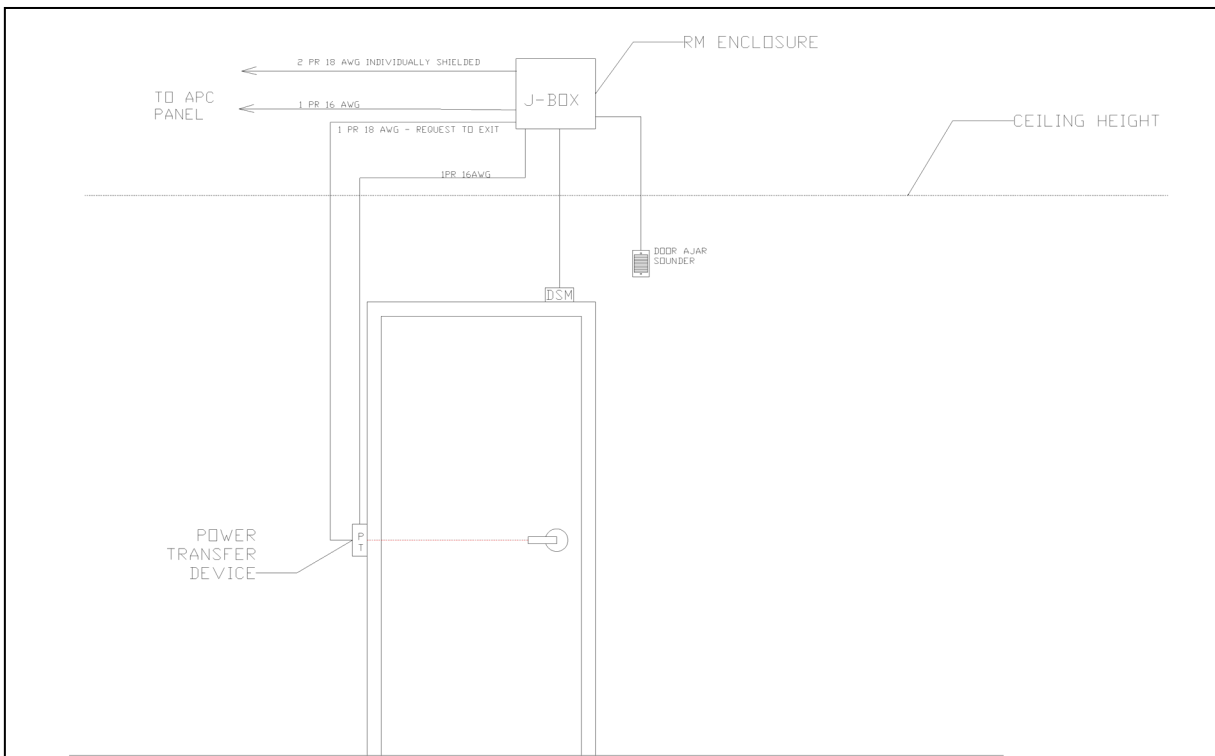


## TYPE 1.30 CR

Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
REX	REQUEST TO EXIT MOTION DETECTOR	2 PAIR 18 GAUGE	SINGLE GANG BOX HORIZONTAL ABOVE DOOR OR IN CEILING
DS	ELECTRIC DOOR STRIKE	1 PAIR 16 GAUGE	
CR	MAG STRIPE CARD READER	6 CONDUCTOR 22 GAUGE SHIELDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
DAS	DOOR AJAR SOUNDER	2/C 18AWG	SURFACE OR RECESSED
RM-4 ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD HOUSING	2 PAIR 18 GAUGE INDIVIDUALLY SHIELDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE INSIDE SECURED AREA MUST BE MOUNTED WITHIN 25' OF DOOR
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" MINIMUM			

## TYPE 1.30 CR



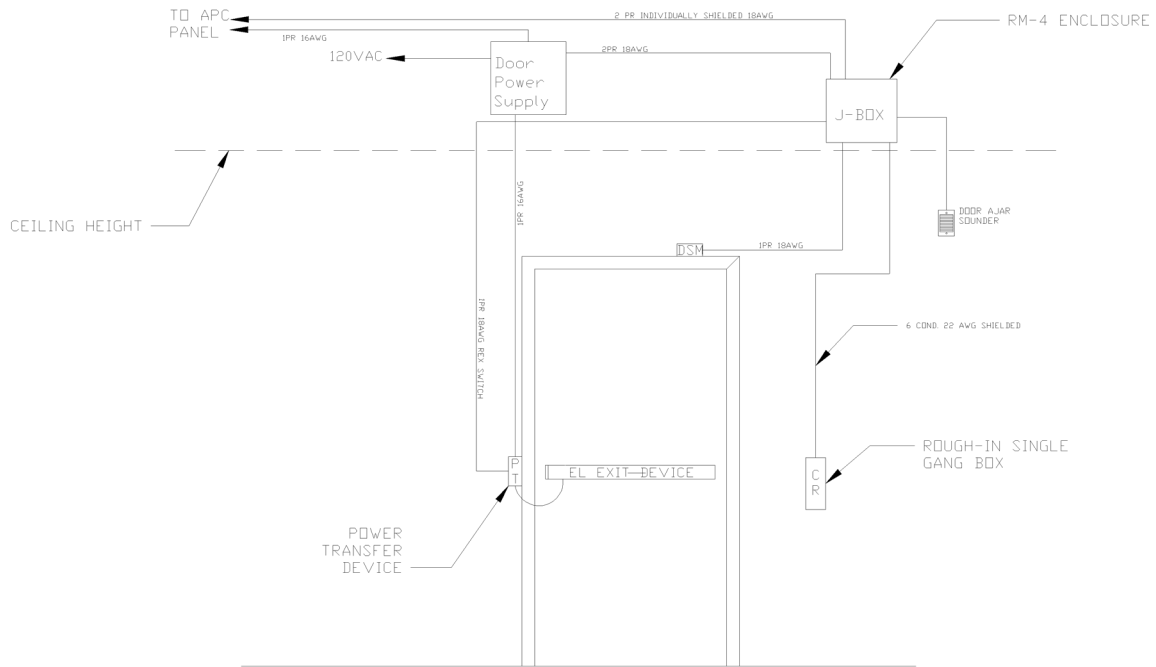


## TYPE 1.34 with ELECTRIC MORTIS LOCK

Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
REX	REQUEST TO EXT SWITCH	1 PAIR 18 GAUGE	SINGLE GANG BOX HORIZONTAL ABOVE DOOR OR IN CEILING
DS	ELECTRIC DOOR STRIKE	1 PAIR 16 GAUGE	
RM ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHEILDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURE SIDE OF DOOR
PT	POWER TRANSFER HINGE	2 PAIR 16 AWG	
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT AS MINIMUM			

### Type 1.34 EL





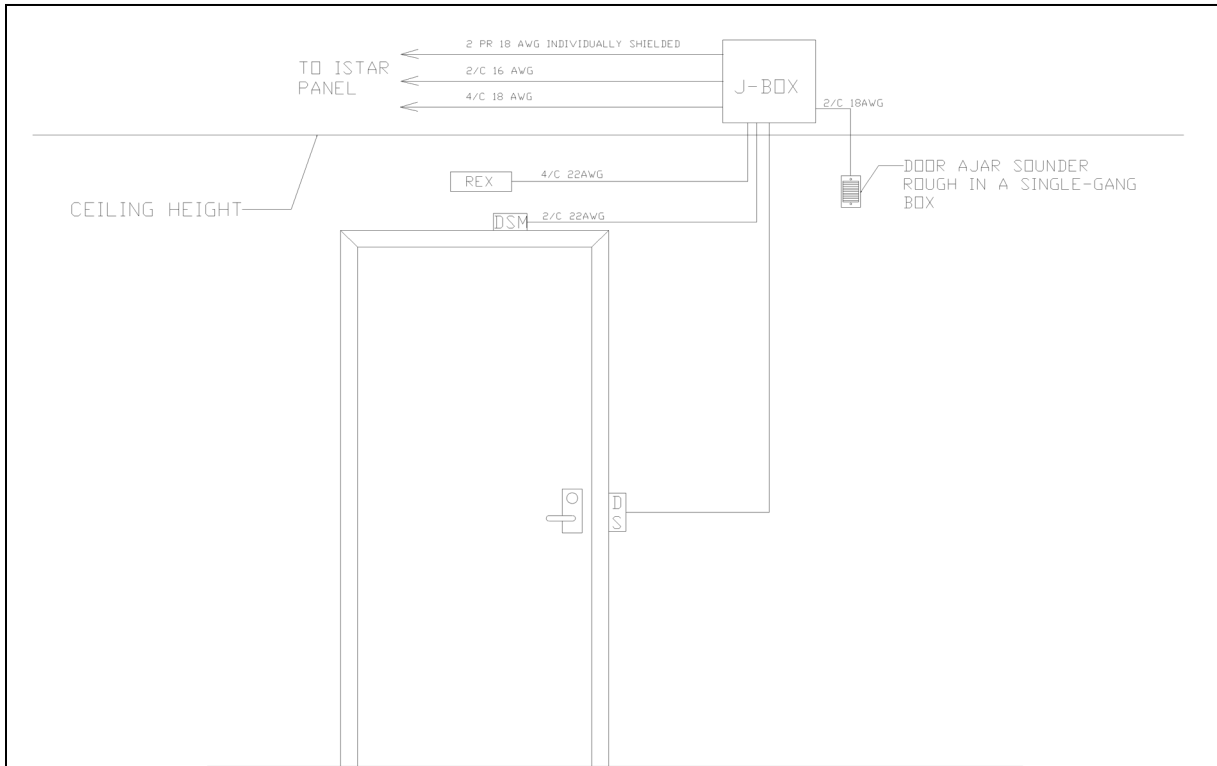
## TYPE 1.35 CARD READER DOOR

<u>Symbol</u>	<u>Description</u>	<u>Feed Wire Type</u>	<u>Mounting</u>
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
EL	ELECTRIC LATCH RETRACTION WITH BUILT-IN REQUEST TO EXIT SWITCH	1 PAIR 16 GAUGE	
CR	MAG STRIPE CARD READER	6 CONDUCTOR 22 GAUGE SHEILDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
RM-4 ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHEILDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR
DAS PT	DOOR AJAR SOUNDER POWER TRANSFER DEVICE	2/C 18AWG 4 CONDUCTOR MINIMUM	FLUSH RECESSED

NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT MINIMUM

## TYPE 1.35 CR



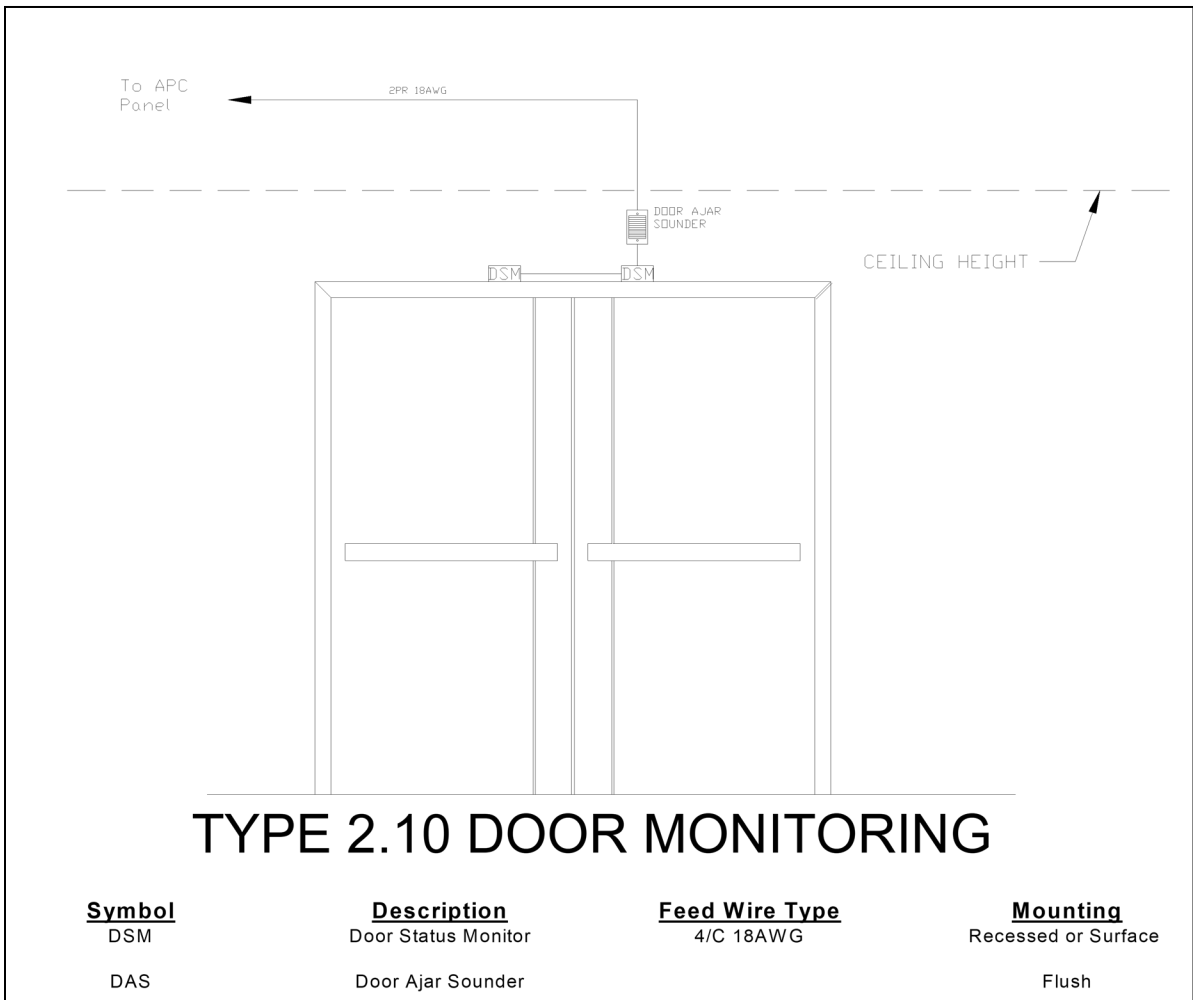


## TYPE 1.41 ELECTRIC LOCKING DOOR

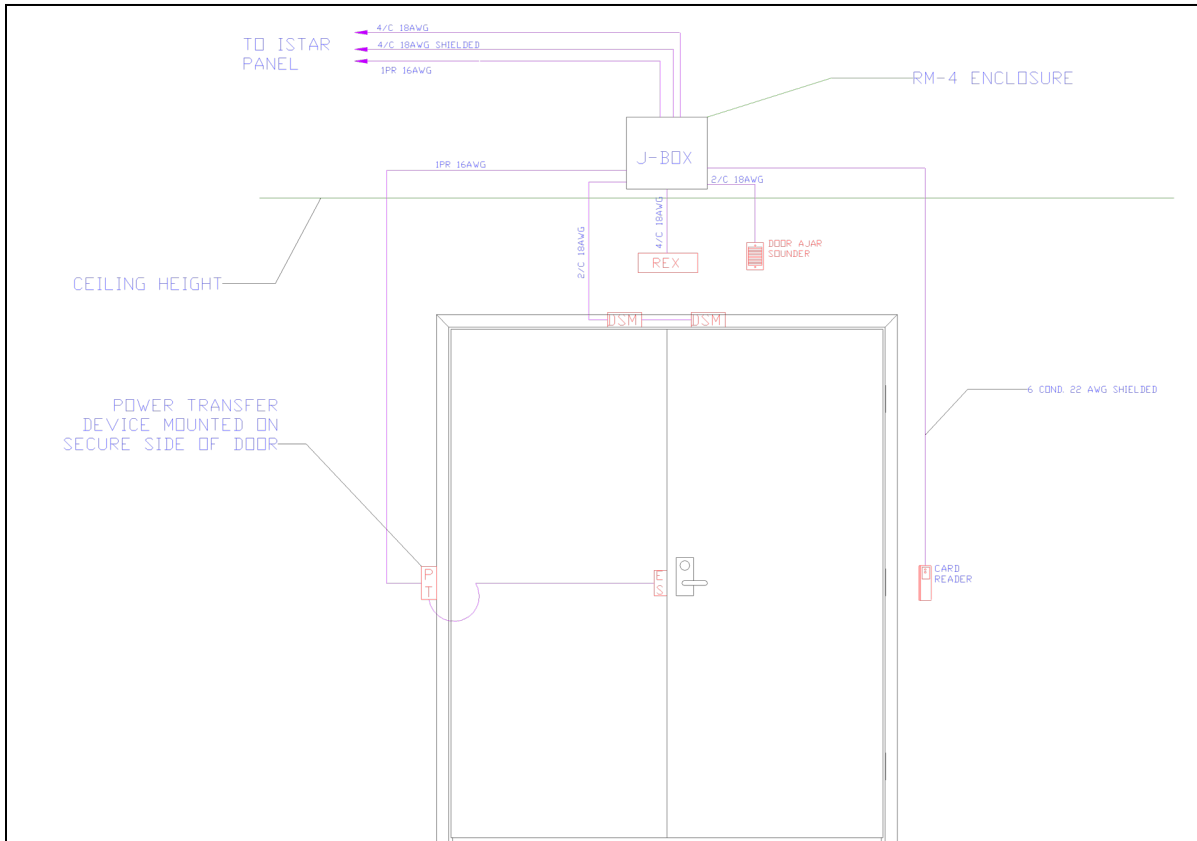
<u>Symbol</u>	<u>Description</u>	<u>Feed Wire Type</u>	<u>Mounting</u>
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
REX	REQUEST TO EXIT MOTION DETECTOR	2 PAIR 18 GAUGE	SINGLE GANG BOX HORIZONTAL ABOVE DOOR OR IN CEILING
DS	ELECTRIC DOOR STRIKE WITH LATCH MONITOR SWITCH	1 PAIR 16 GAUGE & 1 PAIR 18 GAUGE	
DAS	DOOR AJAR SOUNDER	2/C 18AWG	FLUSH
RM-4 ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD HOUSING	2 PAIR 18 GAUGE INDIVIDUALLY SHEILDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE INSIDE SECURED AREA

NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMMODATE CABLES. 2 1/4" MINIMUM

### Type 1.41 EL



**TYPE 2.10 DSM**

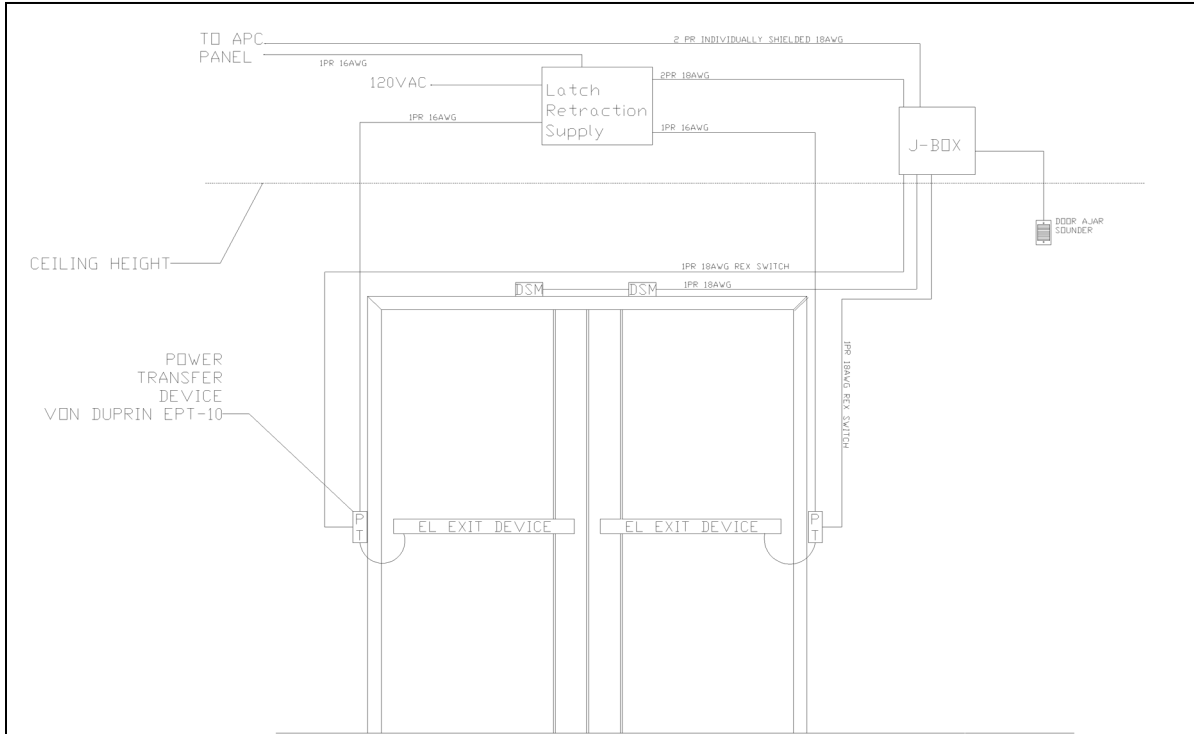


## TYPE 2.30 DOUBLE W/ INACTIVE LEAF

<b>Symbol</b>	<b>Description</b>	<b>Feed Wire Type</b>	<b>Mounting</b>
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
REX	REQUEST TO EXIT MOTION DETECTOR	2 PAIR 18 GAUGE	SINGLE GANG BOX HORIZONTAL ABOVE DOOR OR IN CEILING
ES	ELECTRIC DOOR STRIKE	1 PAIR 16 GAUGE	
CR	MAG STRIPE CARD READER	6 CONDUCTOR 22 GAUGE SHIELDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
RM ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHIELDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURE SIDE OF DOOR
PT	POWER TRANSFER DEVICE	2 PAIR 16 AWG	

NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT AS MINIMUM

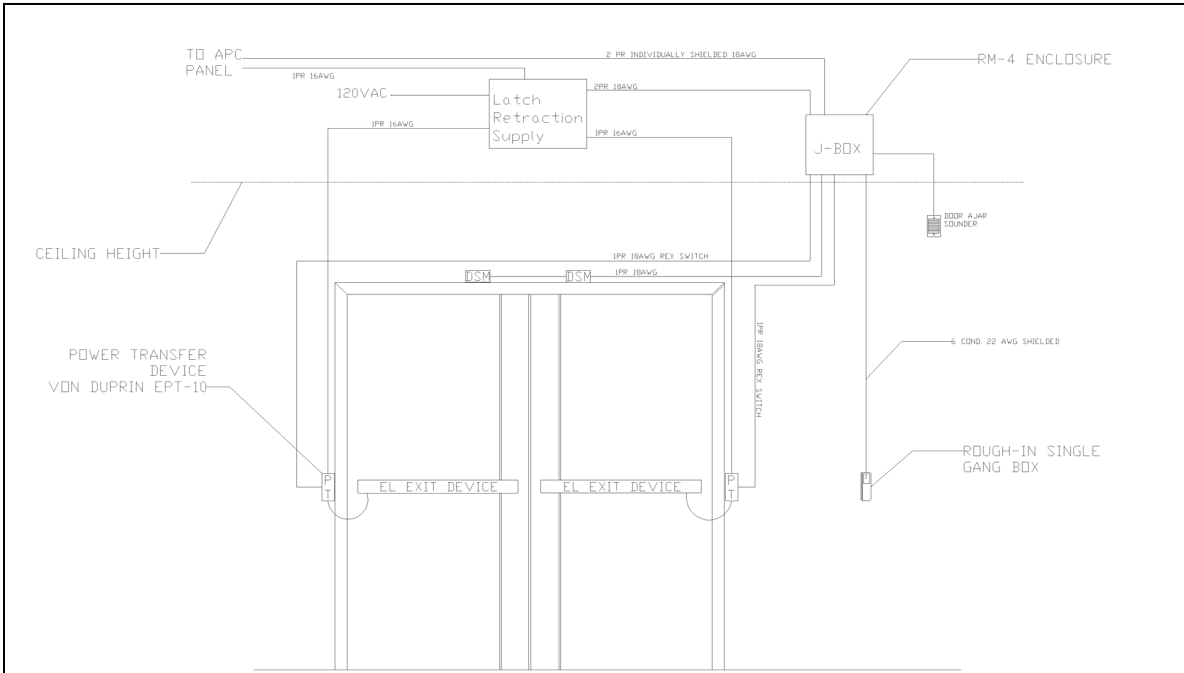
## Type 2.30



## TYPE 2.33 ELECTRIC LOCKING (DOGGING)

Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
EL	ELECTRIC LATCH RETRACTION WITH BUILT-IN REQUEST TO EXIT SWITCH	1 PAIR 16 GAUGE	
DAS	DOOR AJAR SOUNDER	2/C 18AWG	RECESSED
RM-4 ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHEILDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR
PT	POWER TRANSFER DEVICE	4 CONDUCTOR MINIMUM	RECESSED
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT MINIMUM			

### Type 2.33 EL

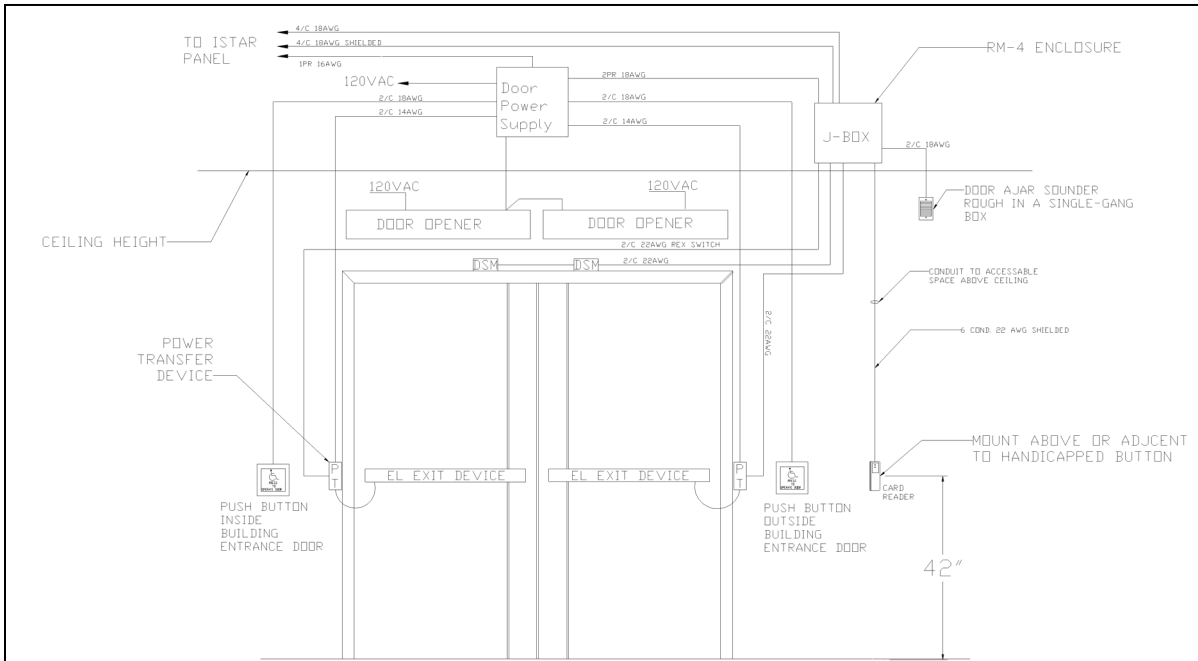


### TYPE 2.35 CARD READER DOOR

Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
EL	ELECTRIC LATCH RETRACTION WITH BUILT-IN REQUEST TO EXIT SWITCH	1 PAIR 16 GAUGE	
CR	MAG STRIPE CARD READER	6 CONDUCTOR 22 GAUGE SHEILDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
RM-4 ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHEILDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR
DAS	DOOR AJAR SOUNDER	2/C 18AWG	RECESSED
PT	POWER TRANSFER DEVICE	4 CONDUCTOR MINIMUM	RECESSED

NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT MINIMUM

### Type 2.35 CR



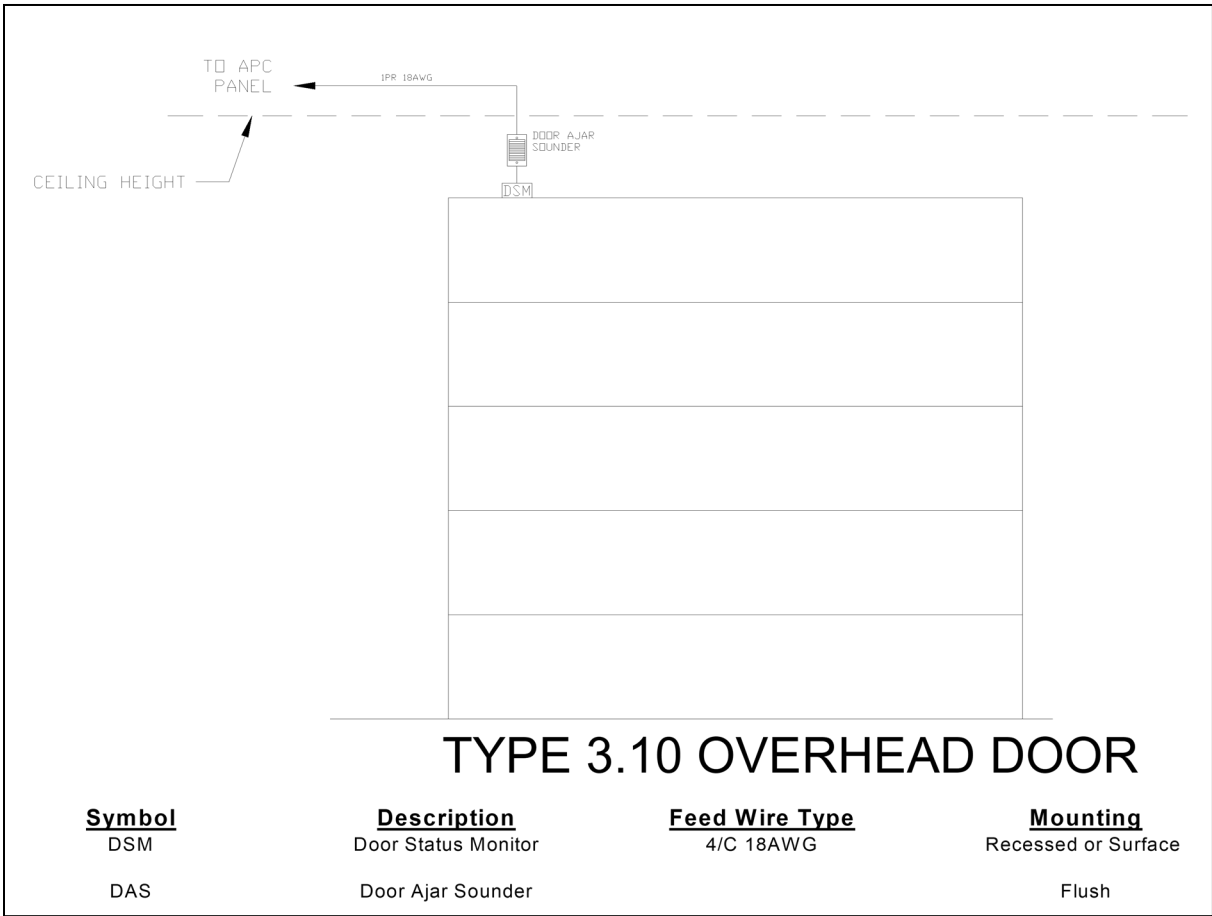
## TYPE 2.00 ADA

EL	ELECTRIC LATCH RETRACTION WITH REQUEST TO EXIT SWITCH	EL 2/C 14 AWG - RX 2/C 22AWG	
CR	MAG STRIPE CARD READER	6/C 22AWG SHIELDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
RM-4 ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHEILED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSIBLE SPACE ON SECURED SIDE OF DOOR
DSM	DOOR STATUS MONITOR	2/C 22AWG	RECESSED OR SURFACE MOUNT
PT	POWER TRANSFER DEVICE	10/C 18AWG	RECESSED
EXOB	HANDICAPPED EXIT BUTTON		
ENOB	HANDICAPPED ENTRY BUTTON		
DO	DOOR OPENER		

NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMMODATE CABLES. 3/4" EMT MINIMUM

## TYPE 2.00 ADA - CR





**TYPE 3.10 DSM**





