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Access Control Hardware

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A. Definitions:

1. **Controlled Door**– Any door consisting of electrified door hardware which can be controlled by the CBORD system but without a card reader at the door.
2. **Card Reader Door**- Any door consisting of at least (1) card reader and electrified door hardware which can be controlled by the CBORD system.
3. **Power Transfer** – Device connected to the door, on hinged side, and to the door frame for the purpose of transferring wires from the door frame to the door for monitoring and controlling the latches.
4. **Electric Hinge** – Door hinge with integrated wiring harnesses which can pass signals from the door frame to the electrified hardware.
5. **Secure side** – The secure side of a controlled opening is the side which cannot be accessed unless a valid credential is presented.

B. Quality Assurance:

1. **Single Source Responsibility:** Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) From a single manufacturer.
2. Specify mechanical and electronic hardware in Division 08 Section “Door Hardware”. Coordinate references and requirements between both sections.
3. Specify coordination of electrically powered hardware, power requirements, and raceways with the Door Frame, Doors, and Electrical drawings and specifications.

C. Qualifications

1. **Products Requiring Electrical Connection:** Listed and classified by testing firm acceptable to authority having jurisdiction as suitable for purpose specified and indicated.
 - a. Hardware Installers shall be factory trained and certified by manufacturers of electronic door hardware.

D. Pre-Installation Meetings

1. **Access Control Hardware:** Access Control and Hardware Suppliers shall meet with electrical installer and University Electronics Shop representatives early during the construction period to coordinate requirements for power and for low voltage conduit/chases. Hardware supplier and electrical installer shall communicate continually during construction as necessary to coordinate power with low voltage



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E. Extra Materials

1. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - a. Card Readers: Furnish quantity equal to ten (10) percent of quantity installed, but not fewer than one

F. System Requirements

1. All new components shall be fully compatible with the existing Ball State University CBORD access control system. Coordinate the features of materials and equipment to form an integrated system. Match components and interconnections for optimum performance of specified functions.
2. Resistance to Electrostatic Discharge: System, components, and cabling, and the selection, arrangement, and connection of materials and circuits, shall be protected against damage or diminished performance when subjected to electrostatic discharges of up to 25,000 V in an environment with a relative humidity of 20 percent or less.
3. Equipment: Solid state, modular.
4. Wall-Mounted Component Connection Method: Components connect to system wiring in back boxes with factory-wired plug connectors.

G. Access Control Software

1. All new controllers installed as part of this project shall be incorporated into the existing Ball State University CBORD access control software.

H. Access Control Power Supply

1. Contractor shall provide power supplies within each telecom room as required to provide power for CBORD controller and interface modules, electric strike devices, and other low current draw electronic hardware. Contractor shall coordinate with door hardware provider to ensure appropriate quantity of power supplies is provided as necessary for proper operation of electrified locking components, as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams.
2. Power supplies shall be installed within a separate, dedicated enclosure adjacent to the access control enclosure. Enclosure shall be from the same manufacturer as the power supply.
3. Shall be UL listed.
4. Power supplies shall supply 12/24 VDC output, field selectable, or shall be capable of providing both.
5. Input shall be 120-240 VAC.
6. Shall include monitoring for input and outputs.
7. All power supplies shall be of the following manufacturer:



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- a. Altronix (No exceptions).
8. All power supplies shall include the following options:
 - a. Battery backup option.
- I. Access Control System Enclosure
 1. Contractor shall provide and install enclosures as shown on the drawings and as required to house all new access control system modules.
 2. All new enclosures shall be the following manufacturer and model:
 - a. Altronix TROVE Series enclosures (No exceptions).
 3. Submit enclosure cut sheets as required in the submittal section of this specification.
- J. Networked Access Controller
 1. Contractor shall provide and install networked access controllers as required to support all interface control boards.
 2. Networked access controllers shall be the following make and model:
 - a. CBORD V1000 (No exceptions).
- K. Door / Reader Interface
 1. Contractor shall provide and install one (1) door / reader interface module per two (2) access control openings.
 2. Door / reader interface modules shall be the following make and model:
 - a. CBORD V100 (No exceptions).
- L. Input Monitor Interface
 1. Contractor shall provide and install input monitor interface modules as required.
 2. Input monitor interface modules shall be the following make and model:
 - a. CBORD V200 (No exceptions).
- M. Output Control Interface
 1. Contractor shall provide and install output control interface modules as required.
 2. Output control interface modules shall be the following make and model:
 - a. CBORD V300 (No exceptions)



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N. Access Control Card Readers

1. Contractor shall provide and install card readers at locations shown on the drawings.
2. Card readers shall meet the following minimum requirements:
 - a. Shall be fully compatible with the existing CBORD system.
 - b. Shall be available in, at minimum, single gang, mullion and integrated keypad form factors.
 - c. Shall utilize 125 kHz transmit frequency.
 - d. Shall be compatible with Wiegand communication protocol.
 - e. Shall be suitable for both indoor and outdoor installation.
 - f. Colors shall be confirmed by the Architect prior to ordering.
3. Acceptable models shall be as follows:
 - a. Wall mounted locations
 - 1) a. HID Thinline II
 - 2) b. Or approved equal
 - b. Mullion mounted locations
 - 1) a. HID MiniProx
 - 2) b. Or approved equal
 - c. Integrated keypad locations
 - 1) a. HID EntryProx
 - 2) b. Or approved equal
4. Submit reader cut sheets as required in the submittal section of this technical specification.

O. Cables

1. Contractor shall provide, install and terminate all required cables to complete the scope of the Access Control System installation.
2. Access Control Cabling from CBORD control modules to components at access controlled openings shall be a four-element, composite multi-conductor cabling designed specifically for access control system wiring. At minimum, the cabling shall consist of the following elements:
 - a. 8 conductor, 18 AWG, stranded, foil shielded with drain wire.
 - b. 6 conductor, 18 AWG, stranded, non-shielded.
 - c. 4 conductor, 18 AWG, stranded, non-shielded.
 - d. 4 conductor, 22 AWG, stranded, non-shielded.
 - e. Acceptable manufacturers:
 - 1) Windy City Wire
 - 2) Belden
 - 3) West Penn Wire
 - 4) Or Owner approved equal



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3. Access Control Cabling interconnecting CBORD control modules shall be RS-485 cabling meeting the following minimum requirements:
 - a. Shall be low capacitance shielded cable with two (2) twisted pairs
 - b. Individual conductors shall be minimum 24 AWG stranded tinned copper
 - c. Minimum 24 AWG tinned copper drain wire
 - d. Nominal Impedance 120 Ohm
 - e. Shall be plenum rated as required
 - f. Approved products
 - 1) Belden 82842
 - 2) Windy City Wire 042003
 - 3) Or Owner approved equivalent

4. Power Supply Cable

- a. Where door hardware is powered by a dedicated local power supply, provide power cable from Von Duprin power supply to solenoid in the panic bar.
- b. Power supply cabling shall meet the following minimum requirements:
 - 1) Shall consist of a minimum of two (2) conductors
 - 2) Minimum 18 AWG unshielded twisted pair polyolefin insulated stranded conductors
 - 3) Overall chrome PVC jacket
 - 4) UL CMG rated
 - 5) Approved Manufacturers:
 - a) Belden
 - b) Windy City Wire
 - c) West Penn Wire
 - d) Or Owner approved equal

P. Electronic Locking Hardware – Provided by Division 08

1. Coordinate the placement of required electronic locking hardware between Work under this Section and with the door hardware specified in Division 08. The door contractor will provide and install all electronic locking hardware. Power supplies for high current electrified hardware and ADA operator hardware shall also be provided under Division 08 Section “Door Hardware”. Requirements for these devices shall be specified in Division 08. Work under this section will include providing all necessary wire and cable, low voltage power supplies, termination of all connections, and interface of this equipment with the integrated security system.

Q. Field Quality Control

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field assembled components and testing and adjusting of system.
2. Test Procedure: Comply with the following:
 - a. Schedule tests a minimum of seven days in advance of performance of tests.



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- b. Report: Submit a written record of test results.
- c. Operational Test: Perform an operational system test to verify compliance of system with these Specifications.
- 3. Retesting: Rectify deficiencies indicated by tests and completely retest work affected by such deficiencies at Contractor's expense. Verify by the system test that the total system meets these Specifications and complies with applicable standards. Report results in writing.
- 4. Inspection: Verify that units and controls are properly labeled and interconnecting wires and terminals are identified.
- 5. System Testing:
 - a. All Controlled doors shall be tested for proper operation as follows:
 - 1) With door(s) closed and locked, verify all switches are closed, zero resistance, and multiplexer board is indicating inactive status, green LED (on) for the particular point.
 - 2) With door(s) closed and locked, push each panic bar or handle without opening door to verify LX switches open, infinite resistance, and board is indicating active status, green LED (off) for the particular point. Release bar or handle to verify status changes back to inactive and LX switch(s) close, zero resistance.
 - 3) With door(s) closed and locked, open each door individually to verify door switches open, infinite resistance, and board is indicating active status, green LED (off) for particular point. Close door to verify status changes back to inactive.
 - 4) Contact Owner's representative to verify computer control of door location.
 - b. All Card Reader doors shall be tested for proper operation as follows:
 - 1) With door(s) closed and locked, verify all switches are closed, zero resistance.
 - 2) With door(s) closed and locked, push each panic bar or handle without opening door to verify
 - 3) LX switches are opening, infinite resistance. Release bar or handle to verify LX changes back to a closed state, zero resistance.
 - 4) Contact Owner's representative to verify computer control door location and confirm unit is online.
- R. Swipe valid card through read-head to verify door unlocks, opens, and closes.Finishes
 - 1. Finishes: ANSI A156.18; furnish following finishes except where otherwise indicated in Schedule.
 - 2. Finishes:
 - a. Satin chrome (626/652 or US26D) or satin stainless steel (630 or US32D). Painted exit devices to match are 789.
 - b. For work in existing buildings, match existing hardware finishes unless otherwise instructed by the Owner.

END OF SECTION