



## ***DIVISION 16 - ELECTRICAL***

### ***SECTION 16xx0***

## **MANUFACTURED WIRING SYSTEM ACCESS FLOOR**

### **16xx0-1. GENERAL**

The modular convenience power system ensures the electrification and delivery of power from the power panels to required convenience power equipment. The modular wiring system shall be the Intelligent Floor™/Intelligent Ceiling™ power system manufactured by America Cable Systems, New Bedford, MA, or approved equal.

### **16xx0-2. SECTION INCLUDES**

1. Main Distribution Boxes
2. Secondary Distribution Boxes
3. Multi-Conductor Home Run Cables
4. Extender Cables
5. Whip End Extender Cables
6. Cable Accessories

### **16xx0-3. PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION**

Distribution panels, boxes, fixtures, supporting hardware, and devices are furnished, but not installed under this section.

### **16xx0-4. CODES AND STANDARDS**

#### **16xx0-4.1 National Fire Protection Association (NFPA)**

- 70, National Electrical Code (NEC)
- 101, Life Safety Code

#### **16xx0-4.2 Underwriters Laboratories (UL) Standards**

- UL 183, Modular Wiring Systems
- UL 1863, Communications Circuit Association.



**16xx0-5.      SUBMITTALS**

Specifications and catalog numbers for each cable and accessory type shall be available upon request.

**16xx0-6.      OPERATION AND MAINTENANCE DATA**

**16xx0-6.1      Maintenance Data**

A complete replacement parts list shall be provided with the as-built package.

**16xx0-6.2      Warranty Requirements**

Shall be provided, as applicable.

**16xx0-7.      PRODUCT DELIVERY, STORAGE AND HANDLING**

Deliver, store, handle and install all materials and equipment in such a manner as not to degrade quality, serviceability or appearance.

Store materials in secure and dry facility and in original packaging in a manner to prevent soiling, physical damage, wetting or corrosion prior to installation.

Materials shall be delivered in the manufacturer's original unopened, protective packages.

**16xx0-8.      GENERAL REQUIREMENTS**

The modular power system shall be based on zone wiring architecture. Power system cable management shall be achieved through the use of multi-conductor cables, run from the power panel to pre-wired Main Distribution Boxes. This method shall eliminate individual home run cabling. The Main Distribution Boxes shall branch out to feed Secondary Distribution Boxes in a hierarchy. From zone locations, factory-sized prefabricated multi-conductor extender cables shall send power to any point where convenience power is required.

The modular power system shall be in accordance with NEC Article 604 and all applicable UL standards. All components shall be labeled with both voltage ratings and installation information. The system shall be designed and keyed to prevent mismatching of different voltages. All devices and wiring shall be rated for 20 amperes.

The connector-grounding pin on each modular assembly shall be so designed that the grounding connection is made prior to the contact made within the current carrying conductors per NEC 410-58d.



**16xx0-9.      PRODUCTS**

**16xx0-9.1     Standard Products**

**16xx0-10.     ACCESS FLOOR / CEILING - MODULAR WIRING SYSTEM**

**16xx0-10.1    Home Run Cable**

The cable shall be metal clad cable (type “MC”) consisting of multiple #10 AWG, THHN 90°C insulation. The cable type shall be UL listed and recognized as outlined in Article #334 of the latest edition of National Electrical Code.

The cable can be equipped with super neutral conductors of # 8AWG, if required, for isolated-ground circuits.

**16xx0-10.2    Main Distribution Box**

A Main Distribution Box (MDB) with multiple ports (per project requirements) shall provide general-purpose and isolated-ground 3-phase, 120/208 volts power. The MDB shall include a home run as specified below. Ground conductors shall be added as required by National Electrical Code (NEC). An insulated green with yellow stripe grounding conductor shall be installed in the cable when an isolated-ground system is required.

The MDB shall be constructed of cold-rolled steel conforming to ASTM A596. Minimum thickness shall be 16 gauge or 0.060+/-0.005, with powder-coated finish, tamper proof screwed covers, and four leg mounting supports. The 5- or 10-pin bulkhead connectors shall be secured by rivets. Output ports can be single or double port configurations.

Each MDB shall be equipped with a mechanical type grounding lug for attachment of the equipment grounding conductor. The equipment grounding conductor shall be extended to each connector housing and connected to each ground pin position.

The MDB shall be UL-listed and identified as such on each cover. The MDB shall be acceptable for use in air-handling spaces other than ducts or plenums in accordance with NEC 300.22(c). Compliance with this requirement shall be marked on the cover.

Each cover of the MDB shall have a label indicating the circuit number at each bulkhead connector.



### **16xx0-10.3 Secondary Distribution Box**

A Secondary Distribution Box (SDB) with multiple ports (per project requirements) shall provide general-purpose and isolated-ground 3-phase, 120/208 volts power. Ground conductors shall be added as required by National Electrical Code (NEC).

The SDB shall be constructed of cold-rolled steel conforming to ASTM A596. Minimum thickness shall be 16 gauge or 0.060+/-0.005, with powder-coated finish, tamper proof screwed covers, and four leg mounting supports. The 5- or 10-pin bulkhead connectors shall be secured by rivets. Output ports can be single or double port configurations.

Each SDB shall be equipped with a mechanical type grounding lug for attachment of the equipment grounding conductor. The equipment grounding conductor shall be extended to each connector housing and connected to each ground pin position.

The SDB shall be UL listed and identified as such on each cover. The SDB shall be acceptable for use in air-handling spaces other than ducts or plenums in accordance with NEC 300.22(c). Compliance with this requirement shall be marked on the cover.

Each cover of the SDB shall have a label indicating the power flow at each bulkhead connector.

### **16xx0-10.4 Extender Cables**

Extender cables, as required, shall interface with the Main Distribution Box and feed to the Secondary Distribution Boxes.

Extender cables shall be type "MC" consisting of 90° C insulated, #12 AWG solid copper conductors, accompanied by a #12 AWG solid copper ground conductor.

The extender cable shall have line side (power out) and load side (power in) connectors. The connectors shall be capable of having 5 pins for the distribution of 3-phase, 4 wire, 120/208 volt general-purpose power or 10 pins for the distribution of both 3-phase, 4 wire, 120/208 volt general-purpose and isolated-ground power.

The contacts shall be male pin and female receptacle type with minimum conductivity of .60. The contacts shall be manufactured of .016 tinned copper alloy #194.

The plastic that encases the contacts shall be General Electric Lexan #141 with a UL standard rating of 94V2. The plastic shall be keyed differently to prevent mismatching of system voltages and uses.

The plastic shall be color coded to identify voltage and use.

- a. Clear – 120/208V General-purpose Power
- b. Orange - 120/208V Isolated-ground Power



The latching mechanisms shall be of a different design so that engagement of dissimilar voltages is not possible.

Labels shall be permanently attached to both the load (power in) side connector and the line (power out) side connector. The labels shall be color coded to differentiate the general-purpose power and the isolated-ground power.

### **16xx0-10.5 Whip End Extender Cables**

Whip end extender cables shall extend from the Secondary Distribution Boxes to individual convenience power modules.

Whip end extender cables shall be type “MC” consisting of 90°C insulated, #12 AWG solid copper conductors, accompanied by a #12 AWG solid copper ground conductor.

The whip end extender cable shall have a load side (power in) connector. The connector shall be capable of having 5 pins for the distribution of 3-phase, 4 wire, 120/208 volt general-purpose power or 10 pins for the distribution of both 3-phase, 4 wire, 120/208 volt general-purpose and isolated-ground power.

The line side (power out) conductors extending into the convenience power module for hardwire connection shall be eight inches in length.

The contacts for the load side (power in) shall be male pin type with minimum conductivity of 60% IACS (International Annealed Copper Standard). The contacts shall be manufactured of .016 tinned copper alloy #194.

The plastic that encases the contacts shall be General Electric Lexan #141 with a UL94 flamability rating of V2. The plastic shall be keyed differently to prevent mismatching of voltages.

The plastic shall be color coded to identify voltage and use.

- a. Clear – 120/208V General-purpose Power
- b. Orange - 120/208V Isolated-ground Power

The latching mechanism shall be of a different design so that engagement of dissimilar voltages is not possible.

A label shall be permanently attached to the load side (power in) side connector. The label shall be color coded to differentiate the general-purpose power and the isolated-ground power.



### **16xx0-10.6 Custom Products**

The Main Distribution Box and Secondary Distribution Box described in the Standard Products section shall also be available as customized products. These units shall be deliverable with a size and port count capacity different from the standard capacities.

The associated horizontal cabling shall be provided to support the customized product.

### **16xx0-11. EXECUTION**

#### **16xx0-12. GENERAL**

Install the complete modular wiring system in accordance with manufacturer's recommendations and system design drawings.

Coordinate with the general contractor or owner so as not to interfere with other work in progress.