

ELECTRO/CONNECT SYSTEM

Electro/Connect System

Section

I. General Provisions

1.1 General Notes

- A. This specification describes the Electro/Connect Prefabricated Wiring System as manufactured by Day-Brite of Tupelo, Mississippi.
- B. The system and its components shall comply with the requirements of Underwriters Laboratories, Inc. and shall be UL listed.
- C. The system shall be Union fabricated and wired and shall be so labeled.

1.2 Scope of Work

- A. The contractor performing the work under this specification shall furnish and install all components and accessories required to make the system complete and workable in accordance with the drawings and specifications.
- B. This contractor shall be responsible for properly interfacing the system with out-of-system components, conduit and conductors from the panelboards.
- C. This contractor shall be held to have checked all plans and specifications for possible interference with other trades before installing any system components.
- D. The system manufacturer shall furnish adapters without cost to the manufacturers of lighting fixtures, power poles, poke-thru devices, and access floor panel service boxes for installation into those items specified for use with the flexible wiring system. It shall be the responsibility of those manufacturers to obtain a UL listing when combining Electro/Connect adapters with their product.

1.3 Codes, Permits and Inspections

- A. All work, material, and equipment shall comply with requirements of the latest editions and interim amendments of the National Electrical Code, National Electrical Safety Code, National Fire Protection Association, OSHA, and all local or state codes and ordinances which apply.
- B. This contractor shall secure all permits and inspections required for the Electrical work specified herein.

1.4 Interpretation of Drawings and Specifications

- A. The location of system components, including cable routings shown on the plans, are approximate, and workmen should use good judgement in their placement to eliminate all interference with ducts, piping, etc.
- B. All cable routing shall be done in a neat and workmanlike manner consistent with recognized good practice and in accordance with the manufacturer's instructions.

Section

II. Basic System

1.1 General

- A. The prefabricated wiring system shall be an assembly of distribution units, cable sets, adapters, switch control units, circuit routers, power poles and poke-thru devices. All units must be suitable for use in accessible areas, return air spaces above hung ceilings, or accessible flooring in accordance with N.E.C. Sections 300-22 (c) and 604.3. The system shall distribute branch circuits for 120v and 277v normal and emergency lighting, 120v equipment ground and 120v isolated ground receptacle power.
- B. The prefabricated wiring system shall be rated for 20 amps maximum per circuit.
- C. The hermaphroditic connectors of the system shall be of five-position unit construction, color coded and so keyed that only units of the same service and voltage can be physically mated and electrically connected.
- D. Male and female terminals shall be tin plated copper or copper alloy with crimp type application to conductors.

- E. The system construction shall be such that when installation complete all system components shall be metal encased forming a fully grounded system. All spare and unused connectors in the system shall be covered with metal caps provided for this purpose.
- F. A separate equipment grounding conductor shall be carried throughout all system components except those which are serving only low-energy power circuits, or other remote control circuits.
- G. The integrity of the system shall be maintained throughout each circuit, from interface unit to end-of-line, or to taps at specified device boxes, and shall not be interrupted by out-of-system wiring, boxes, of fittings without written approval of the Architect-Engineer.

Section

II-A Distribution Units

1.1 General

- A. All distribution units shall be factory assembled and clearly marked for voltage, service, function, and catalog number.
- B. Two different circuits of the same electrical phase shall not be connected to the same connector sharing a common neutral conductor.
- C. Distribution units for lighting and power branch circuits shall be for interfacing the system with out-of-system circuit conductors and equipment to provide for the distribution of up to three system branch circuits per connector.
- D. All connectors of line voltage branch circuit interface units shall be prewired with No. 12 AWG stranded copper tap conductors, type THHN, 600 volts. Tap conductors of each connector shall be color-coded as follows: 120v lighting-white, black, red, blue, green; 277v lighting-white, orange, brown, yellow, green; 120v power equipment ground-white, black, red, blue, green; or 120v power isolated ground-white, black, red, green, green with yellow stripes.
- E. Each connector shall be flush mounted into individual metal cavities. The metal cavities shall receive the metal jackets of cableheads by mating engagement.

1.2 Interface Units-Distribution of Branch Circuits

- A. Branch circuit interface units shall have three power-out connectors factory assembled to a 16 gauge steel screw cover plate with baked enamel finish for mounting to 4-11/16" square x 2-1/8" deep conduit boxes and extension rings(furnished by others).

1.3 Distribution Boxes-Power

- A. Distribution box for receptacle power circuits shall be for 120v multi-wire branch circuits with equipment ground only, or with equipment ground only, or with equipment and isolated ground as required.
- B. Distribution boxes shall be 8-1/8" x 6-1/8" x 2-1/4" and shall be of 16 gauge steel construction with baked enamel finish and shall have a screw cover.
- C. Boxes shall have four power-out connectors, two on each 8-1/8" side.
- D. Boxes shall have two 3/4" conduit knockouts (1-1/8" diameter), one on each 6-1/8" side.
- E. Boxes shall have keyhole slots for mounting to the structure.

Section

II-B Cables

1.1 General

- A. All cables shall be clearly marked and color-coded for designation of voltage, service, function, and catalog number. Cable length shall be clearly identified in the catalog number.
- B. All cables shall have factory prewired connectors encased within an assembly of two 18 gauge zinc plated steel covers. The two covers shall securely grip the cable.

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- C. Cable sets shall have a male configuration power-in head on one end and a female power-out head on the opposite end.
 - D. The male cablehead shall have a pair of positive-acting spring steel latches. The latches do not have to be depressed to automatically engage the metal opening around connectors in system components.
 - E. The spring steel latches of the male cablehead shall provide grounding of noncurrent-carrying metal equipment by bonding mated components of the system.
 - F. Line voltage branch circuit cable sets shall have two, three, or four No. 12 AWG stranded copper conductors, type THHN, 600 volts, plus a bare tinned No. 12 AWG solid copper equipment grounding conductor with galvanized steel armor interlocked overall. The equipment grounding conductor shall be in contact with armor over the length of the cable. The equipment grounding conductor shall terminate in connectors at both ends of cable sets and shall be bonded to the steel cover of the male head.
- 1.2 Cables Standard
- A. Cables shall be prewired for distribution of one, two, or three circuits with a common neutral. An insulated grounding conductor shall be provided as required.
- 1.3 Cross-Over Cables
- A. Cross-Over Cables shall be identical to two circuit branch cables in every respect except that the circuit conductors in the female power-out connector head shall be prewired in reverse position. Cross-Over cables shall be used at locations in branch circuits where a change in function is designated.
- 1.4 Reddy-Connect Cables
- A. Reddy-connect cables shall be identical to two circuit cables except that the female power-out head shall have a snap in clip for mounting to the fixture. It shall have four No. 18 AWG solid copper, type TFN, 600v, tap conductors to the fixture leads.
- 1.5 HID Auto-Phase Cable
- A. Cables shall be pre-wired for distribution of one, two, or three circuits and provide a second power-out connector for supplying a fixture tap feed at each fixture location.

Section

II-C Adapters

- 1.1 General
- A. All adapters shall be clearly marked and color-coded for designation of voltage, service, function, and catalog number. Tap cable length shall be clearly identified in the catalog number.
 - B. The adapter assembly head shall be a die cast aluminum or zinc housing with a zinc plated steel cover plate.
- 1.2 Adapters-Lighting Fixtures, Other Equipment
- A. Lighting fixtures and/or other equipment shall be factory prewired with system adapter assemblies and shipped to the job site ready for connection with the system.
 - B. The adapter assembly shall have a male configuration power-in head and female configuration power-out head to mate with line voltage cable sets for through circuiting of one, two, or three branch circuits.
 - C. Adapters shall be directly mounted external in equipment housings of enclosures through standard 1/2" K.O. (7/8" diameter) or Day-Brite standard access plate and shall receive the metal jackets and spring steel latches of cableheads by mating engagement.
 - D. Tap conductors of all lighting adapters shall be prewired with three or four NO. 18 AWG solid copper conductors, type TFN, 600 volts, or No. 12 AWG solid or stranded copper conductors, type THHN, 600 volts. Receptacle power equipment adapters shall be wired with No. 12 AWG solid copper conductors, type THHN, 600 volts. Tap conductors of each connector shall be color-coded white, black, red, and green; and green with yellow stripe as required. The green conductors shall be grounded to the equipment housing or enclosure. Other equipment manufacturers shall be responsible for proper equipment wiring connections and for through circuiting connections where system power-in and power-out connectors are specified in accordance with instructions of the system manufacturer.

- 1.3 Tap Cable Adapters
 - A. The tap cable adapter head shall have a male power-in and female power-out configuration and be thru wired.
 - B. The tap cable portion shall have No. 12 solid copper conductors, type THHN, 600 volts plus a bare tinned No. 12 AWG solid equipment grounding conductor with galvanized steel armor interlocked overall. The cable shall have 6" pigtail leads for field terminations within device boxes. The equipment grounding conductor shall be in contact with armor over the entire length of the cable. An insulated isolated grounding conductor shall be provided as required. The grounding conductor shall terminate in the connector at one end of the tap cables and shall be bonded to the steel stamping of the connector head. This conductor shall be connected to the device enclosure on the pigtailed end of the cable. All conductors on the pigtailed end of the cable shall be color-coded or labeled.

Section

II-D Switching Control Units

- 1.1 General
 - A. All switching control units shall be factory prewired and assembled and shall be clearly marked and color coded for designation of voltage, service, function, and catalog number. Tap cable length shall be clearly identified in the catalog number.
 - B. The switching control assembly head shall be a die cast aluminum or zinc housing with a zinc plated steel cover plate.
 - C. The internal conductors of the switching control units shall have No. 12 AWG, type THHN, 600 volt stranded copper conductors.
- 1.2 Single-Level, Multi-Level, First Three-Way and Two Circuit Switching Control Units
 - A. The single-level, multi-level, first three-way and two circuit switching control units shall have one power-in connector, one power-out connector, one switched power-out connector and a switch tap cable. The female switched and unswitched power-out connectors are located at opposite ends to mate with line voltage lighting cable sets for through circuiting of one, two, or three circuits.
 - B. Single-level and first three-way switching control units are internal wired to carry the switched leg of the circuit to the fixture. The multi-level switching control unit is internal wired to carry two switched legs of the same circuit to the fixture. The two circuit switching control unit is internally wired to carry a switched leg of two separated circuits to the fixture. These switching control units shall have one, two, or three circuits to the unswitched power-out connector.
- 1.3 Second Three-Way and Four-Way Switching Control Units
 - A. The second three-way and four-way switching control units are internally wired to carry the switched leg of the circuit to the fixture.
- 1.4 Tap Cable Portion Wiring
 - A. The line voltage switch tap cable of the switching control units shall have two, three, or four No. 12 AWG solid copper conductors, type THHN, 600 volts, plus a bare tinned No. 12 AWG solid equipment conductor with galvanized steel armor interlocked overall and 6" pigtail leads. The equipment ground conductor shall be connected to the junction box on the pigtailed end of the cable. All conductors on the pigtailed end of the cable shall be color-coded or labeled.

Section

II-E Circuit Routing Units

- 1.1 General
 - A. All circuit routing units shall be factory prewired and assembled and shall be clearly marked and color coded for designation voltage, service, function, and catalog number.

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- B. The circuit routing assembly head shall be a die cast aluminum or zinc housing with a zinc plated steel cover plate.
- C. The internal conductors of the circuit routing assembly shall have No. 12 AWG, type THHN, 600 volt, copper conductors.
- 1.2 Circuit Splitter
 - A. Circuit splitters shall have a male power-in and two female power-out configuration to mate with line voltage cables for through circuiting of one, two, or three branch circuits.
- 1.3 Cross-Over Couplers
 - A. Cross-Over couplers shall have circuit conductors in the female power-out connector head pre-wired in reverse positions for two or three circuit use. Cross-Over couplers shall be used at locations in branch circuits where a change in function is desired.

Alternate Specifications to Conventional Wiring

Section A

A. General Provisions

- 1.1 General Notes
 - a. Flexible wiring systems for lighting, emergency lighting, and receptacle power shall be furnished in lieu of conventional branch wiring, and associated switched and receptacles.
- 1.2 Scope of Work
 - a. All circuiting shall remain as shown on the drawings.
- 1.3 Codes
 - a. The flexible wiring system and its components shall comply with the requirements of Underwriters Laboratories, Inc. and shall be UL listed.
- 1.4 Drawings
 - a. The manufacturer shall provide working drawings for that portion using the flexible wiring system.

Section B

A. Materials

- 1.1 Intent
 - a. All conventional circuit wiring shall terminate in the system distribution units, converting the conventional wiring into flexible wiring.
- 1.2 General
 - a. All connectors and cables shall be factory prewired and assembled and shall be clearly labeled and color coded for designation of voltage and function.
- 1.3 Distribution Interface Units
 - a. Distribution interface units shall have three power-out connectors flush mounted to a 4-11/16" cover plate. Each connector shall be prewired with five No. 12 AWG THHN stranded copper wire conductors.

- 1.4 Branch Cable Sets
 - a. Branch cable sets shall have a male configuration power-in head and female configuration power-out head with two, three, four, or five No. 12 AWG type THHN stranded copper conductors, 600v, for single circuit, two circuits, or three circuits with a common neutral, plus a bare tinned No. 12 AWG solid copper equipment grounding conductor. An insulated isolated grounding conductor shall be provided as required. There shall be a cablehead with spring steel latched at each end of the cable.

- 1.5 Adapters
 - a. The manufacturer shall furnish adapters to the manufacturers of lighting fixtures, raised floor components, power poles, and poke through devices, without cost to those manufacturers, for installation into those items specified for use with the flexible wiring system.

- 1.6 Tap Cable Shall Be Similar to Branch Cable
 - a. Tap Cables shall have a male power-in and female power-out cablehead configuration at one end and 6" pigtail leads at the opposite end for field terminations within device boxes.

- 1.7 Lighting Fixture Switching
 - a. Line voltages or low voltage switching for single-level, multi-level, two circuit, and three-way shall be provided by the system components.