

SECTION _____

**ACS FLEX
MANUFACTURED WIRING SYSTEM
COMMERCIAL AND INDUSTRIAL LIGHTING**

1.01 GENERAL

The America Cable Systems Flex 3/4 wiring system ensures the electrification and delivery of power from the point of distribution (fed by conventional hardwiring methods from the Lighting Panel) to lighting fixtures in accessible ceiling areas.

1.02 SECTION INCLUDES

- A. Distribution Cable
- B. Lighting Cable
- C. Switch Modules
- D. Extender Cable
- E. Phase Selector
- F. Extender Cord Drop
- G. Whip End Extender Cord
- H. Accessory Components
- I. Flex 2/Flex 3⁺

1.03 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

Lighting panels, fixtures and switch devices

1.04 CODES AND STANDARDS

- A. National Fire Protection Association (NFPA)
 - a. 70, National Electrical Code (NEC) Article 604
 - b. 101, Life Safety Code
- B. Underwriter's Laboratory (UL) Standards
 - a. UL 183, Modular Wiring Systems

1.05 SUBMITTALS

A. Product Data

Specifications and catalog numbers for each cable and accessory type are available by request.

B. Record Drawings

Pre-installation and as-built drawings of all components associated with the manufactured wiring system for lighting.

1.06 OPERATION AND MAINTENANCE DATA

A. Maintenance Data

A complete replacement parts list will be provided upon request.

B. Warranty Requirements

Provided as applicable

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

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

B. 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.

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

1.08 GENERAL REQUIREMENTS

The America Cable Systems (ACS) manufactured flexible wiring system is based on modular wiring distribution achieved through the use of various cable sets with modular connections. This method simplifies manual terminations at each fixture and is capable of supporting various types of alternate switching.

The ACS manufactured flexible wiring system shall be in accordance with NEC Article 604 and all applicable UL standards. All components shall be labeled with both voltage ratings and catalog numbers. All devices and wiring shall be rated for 20 amperes. The system shall be designed to prevent mismatching of different voltages as follows:

- A) Labels must have separate color coding for the 277/480 and 120/208 volt system and have the voltage printed on each label.
- B) The plastic contact housing shall have separate and distinct key and keyways and shall be of different colors to identify voltage.
- C) The latching mechanisms shall be of a different design for each voltage so that engagement is not possible.

The connector grounding pin on each modular assembly shall be so designed that the grounding is made before the current carrying connections as per NEC connection 410-58d.

The system is acceptable for use in environmental air-handling spaces other than ducts or plenums per NEC 2002 Article 300-22(c).

PART 2 - PRODUCTS

2.01 MODULAR WIRING SYSTEM FOR LIGHTING

CABLE TYPE

The cable type used for the manufacturing of the flexible wiring system shall be type MC, UL listed as outlined in Article 334 of the 1996 edition of The National Electrical Code. The cable type shall be suitable for use in areas of public assembly of one hundred (100) people or more.

The conductors shall be solid copper #12 AWG with 90° insulation type THHN.

The grounding conductor within each cable shall be connected to the grounding pin, as well as to the body of the metal enclosure to ensure grounding continuity of each cable set. The manner in which this is accomplished shall be evident upon visual inspection without disassembly of the product. Conductors entering the wiring compartment of the lighting fixture shall be #18 AWG conductors with 105°C insulation type TFN. The manufacturer of the flexible wiring system shall be the producer of the MC cable.

CORD TYPE

Cord type used in manufacturing the Lighting "T" w/cord drop and the whip end extender cord shall be SJ cord, #12 AWG rated 120/208/277 volt. High voltage cord shall be SEOW type, #12 AWG, rated 480 volt.

CONSTRUCTION

The system shall be UL listed and in accordance with Article #604 of The National Electrical Code. The connectors shall be metal clad of thickness equivalent to a junction box (.060). The product shall be tamper proof, of riveted construction, and the voltage shall be permanently embossed in the metal, either 120 volt or 277 volt. The system shall be dual rated, 120/208 volt or 277/480 volt, and must be capable of having five pins for the distribution of three phase four wire and a separate internal #12 AWG grounding conductor.

The plastic which encases the contacts shall be color coded to identify voltage: 120/208 plastic shall be clear and 277/480 volt shall be black. The plastic shall be General Electric Lexan #141 with a UL standard rating of 94V2.

The contacts shall be a male pin and female receptacle type with a minimum conductivity of .60. Certification of conductivity shall be submitted prior to approval for use.

System components shall not exceed a depth of 2-1/2" so as not to create an installation problem in a shallow plenum area.

The manufacturer of the flexible wiring system shall produce evidence in the submittal that the above specifications can be met with standard catalogued materials and that special modifications will not be required to meet the specifications. The system shall be manufactured by America Cable Systems, or approved equal.

STANDARD PRODUCTS

A. Distribution Cable

The distribution cable functions as the starting point from which the system components are connected in both the FLEX³ and FLEX⁴ systems.

Each distribution box cable is manufactured from type MC cable and is equipped with an MC connector to fit in a 1/2" knock-out. The conductors extending into the distribution box for connections to the hardwired system are six inches long. They consist of 90°C insulated, #12 AWG solid copper conductors and a #12 AWG insulated, solid copper ground.

All distribution box cables are rated for use on 20 ampere branch circuits, and are dead fronted for safety. To eliminate inter-voltage connection, each distribution box connector is keyed and color-coded to meet specific voltage requirements.

B. Lighting Cable

Once installed, the lighting cable delivers locally or panel-controlled branch circuit power to a lighting fixture in an accessible ceiling – without the use of a factory-installed fixture receptacle. This is accomplished simply by joining the lighting fixture leads to the lighting cable leads via the push-in fixture connectors supplied – then plugging the cable into the 1/2" knockout in the fixture access plate.

Lighting cables are rated for use on 20 ampere branch circuits and are dead fronted for safety. All lighting cables are keyed and color-coded according to specific voltage requirements.

C. Switch Modules

Designed to provide locally-controlled switching of a room or other indoor area as desired, the Flex 4 switch module comes factory pre-wired with a “power-in”, “power-out”, and “switched power-out” tap. An extender cable, or a distribution box cable plugged into the switch module’s “power-in” tap supplies the switch module with unswitched power. To complete the installation, simply plug the “switched power-out” tap into the first lighting cable being controlled—and make the proper terminations at the switch or switches.

Switch modules are manufactured with type MC cable having six inch leads for termination at the switch or switches. The type MC cable features 90°C insulated, #12 AWG, solid copper conductors and a #12 AWG, insulated solid copper ground. Switch modules are rated for use on 20 ampere branch circuits and are dead fronted for safety. All switch modules are keyed and color-coded according to specific voltage requirements.

D. Extender Cable

The extender cable is used primarily to carry branch circuit power to a switch module for a locally-switched application or to a fixture location in high bay applications. It can also be used to extend the length of other cables.

Manufactured from type MC cable, extender cables feature 90°C insulated, #12 AWG, solid copper conductors and a #12 AWG, solid copper ground.

All extender cables are rated for use on 20 ampere branch circuits and are dead fronted for safety. All extender cables are keyed and color-coded according to specific voltage requirements.

E. Phase Selector

The phase selector is used in conjunction with the extender and/or distribution cable in the Flex 3^{PS} system to deliver power to the next fixture via the extender cable and to deliver the designated phase to the fixture tap (the whip end extender cable).

F. Extender Cord Drop

The extender cord drop plugs into the lower part of the phase selector. It delivers branch circuit power to a high or low bay lighting fixture. It can be

unplugged in order to service or replace the fixture without interrupting power to other fixtures in the run.

Extender cord drops can be either field-wired or factory installed and shipped with the fixtures.

G. Whip End Extender Cord

The whip end extender cord is used in conjunction with the phase selector, the extender cable and the distribution cable in the Flex 3^{PS} system. This component enables the removal of a particular fixture without interrupting power flow down line.

Manufactured from SEOW or SJ cord, the whip end extender cord contains TFN 105°C insulated #12 AWG stranded copper conductors and a #12 AWG stranded copper ground. All fixture cord drops are rated for use on 20 ampere branch circuits.

H. Accessory Components

The terminator, splitter, and reverse splitter, whip end lighting cable and whip end extender cable are accessories to the flexible wiring systems. They are used, respectively, to terminate fixture runs, split a single cable run in two directions, or carry branch circuit power to a non-accessible ceiling area.

I. Flex 2/3⁺

Flex 2 is an alternate to the Flex 4 system. Flex 3⁺ is alternate to Flex 3^{PS}. Call factory for clarification at (800-426-3170).

PART 3 - EXECUTION

3.01 GENERAL

- A. Install the complete modular wiring system in accordance with manufacturer's recommendations and system design drawings.
- B. Coordinate with the general contractor or owner, so as not to interfere with other work in progress.

NOTE: *This specification can be obtained by calling the Sales Department at America Cable Systems (800) 426-3170 or by visiting our website www.afcweb.com/acs.*