

## ARTICLE

## 646

## Modular Data Centers

## Part I. General

Δ **646.1 Scope.** This article covers modular data centers.

Informational Note No. 1: Modular data centers include the installed information technology equipment (ITE) and support equipment, electrical supply and distribution, wiring and protection, working space, grounding, HVAC, and the like, that are located in an equipment enclosure.

Informational Note No. 2: See NFPA 75, *Standard for the Fire Protection of Information Technology Equipment*, which covers the requirements for the protection of information technology equipment and systems in an information technology equipment room.

Informational Note No. 3: See UL 60950-1, *Information Technology Equipment — Safety — Part 1: General Requirements*, and UL 62368-1, *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements*, for information on listing requirements for both information technology equipment and communications equipment contained within a modular data center.

Informational Note No. 4: *Modular data centers* are sometimes referred to as containerized data centers.

Informational Note No. 5: Equipment enclosures housing only support equipment (e.g., HVAC or power distribution equipment) that are not part of a specific modular data center are not considered a modular data center.

A modular data center (MDC) is similar to an information technology equipment (ITE) room, which is covered under Article 645. The distinction between the two is that the MDC is a preassembled and packaged enclosure delivered with the ITE installed, while the ITE room is built and equipped on site. The MDC can be supplied through the premises wiring system or through a separate MDC enclosure. Data, fire alarm, communications, control, audio, and visual circuits from the MDC typically are brought outside the MDC and into the facility. An MDC is large enough for personnel to enter; therefore, access, working space, and emergency lighting are specifically addressed.

**646.3 Other Articles.** Circuits and equipment shall comply with 646.3(A) through (M) as applicable. Wherever the requirements of other articles of this *Code* and Article 646 differ, the requirements of Article 646 shall apply.

**(A) Spread of Fire or Products of Combustion.** Sections 300.21, 770.26, and 800.26 shall apply to penetrations of a fire-resistant room boundary, if provided.

Δ **(B) Wiring and Cabling in Other Spaces Used for Environmental Air (Plenums).** The following sections and tables shall apply to wiring and cabling in other spaces used for environmental air (plenums) within a modular data center space:

- (1) Wiring methods: 300.22(C)(1)
- (2) Class 2, Class 3, and PLTC cables: 722.135(B)

- (3) Fire alarm systems: 760.53(B)(2) and Table 760.154
- (4) Optical fiber cables: 770.113(C) and Table 770.154(a)
- (5) Communications circuits: 800.113(C) and Table 800.154(a)
- (6) CATV and radio distribution systems: 800.113(C) and Table 800.154(a)

Informational Note: Environmentally controlled working spaces, aisles, and equipment areas in an MDC are not considered a plenum.

Δ **(C) Grounding and Bonding.** The non-current-carrying conductive members of optical fiber cables in an MDC shall be grounded in accordance with 770.114. Grounding and bonding of communications protectors, cable shields, and non-current-carrying metallic members of cable shall comply with Part IV of Article 805.

Δ **(D) Electrical Classification of Data Circuits.** Section 725.60(A)(4) shall apply to the electrical classification of listed information technology equipment signaling circuits.

**(E) Fire Alarm Equipment.** Parts I, II, and III of Article 760 shall apply to fire alarm systems, cables, and equipment installed in an MDC, where provided. Only fire alarm cables listed in accordance with Part IV of Article 760 and listed fire alarm equipment shall be permitted to be installed in an MDC.

Δ **(F) Cable Routing Assemblies and Communications Wires, Cables, Raceways, and Equipment.** Sections 800.110, 800.113, and 800.154 shall apply to cable routing assemblies and communications raceways. Parts I, II, III, IV, and V of Articles 800 and 805 shall apply to communications wires, cables, and equipment installed in an MDC. Only communications wires and cables listed in accordance with 800.179, cable routing assemblies and communications raceways listed in accordance with 800.182, and communications equipment listed in accordance with 800.171 shall be permitted to be installed in an MDC.

Informational Note: See Article 100 for a definition of *communications equipment*.

**(G) Community Antenna Television and Radio Distribution Systems Cables and Equipment.** Parts I, II, III, IV, and V of Articles 800 and 820 shall apply to community antenna television and radio distribution systems equipment installed in an MDC. Only community antenna television and radio distribution cables listed in accordance with 800.179 and listed CATV equipment shall be permitted to be installed in an MDC.

**(H) Surge-Protective Devices (SPDs).** Where provided, surge-protective devices shall be listed and labeled and installed in accordance with Part II of Article 242.

**(I) Lighting.** Lighting shall be installed in accordance with Parts I through XIV of Article 410.

**(J) Power Distribution Wiring and Wiring Protection.** Power distribution wiring and wiring protection within an MDC shall comply with Parts I, II, and III of Article 210 for branch circuits.