

Special construction IBC Chapter 31

Kiosk

Definition:

A small structure with one or more open sides that is used to vend merchandise (such as newspapers) or services (such as film developing).

A small stand-alone device providing information and services on a computer screen.

UL Product iQ®

Refrigerated Vending Machines, SQMX Guide Information

Product Markings:

- Manufacturer's name
- Model number
- Electrical rating
- Design pressure
- Refrigerant type
- "For indoor use only"
- "Suitable for protected locations - see installation instructions"
- "Suitable for outdoor use"

UL Product iQ®

Custom-built kiosks, EMHH

Intended for:

- business applications
- electronic point-of-sale
- information and product exchange
- Internet access or ticket dispensing

May be a single assembly or subassemblies.

May include:

- computers
- monitors
- point of sales systems
- workstations
- or other information technology equipment

Kiosks may be cord-and-plug connected or configured for permanent wiring methods.

Modular data center

Definition (NEC):

Prefabricated units, rated 1000 volts or less, consisting of an outer enclosure housing multiple racks or cabinets of information technology equipment (ITE) (e.g., servers) and various support equipment, such as electrical service and distribution equipment, HVAC systems, and the like.

UL Product iQ®

Modular data centers, PQVA

MDCs are comprised of the enclosure, all equipment and components located within the enclosure, and all components mounted to the walls of the enclosure.

MDCs are investigated as complete equipment including subassemblies, power distribution, cabling, cooling system components, lighting and the like, installed within the enclosure.

Consideration has also been given to emergency egress of maintenance personnel and working space around equipment.

The basic requirements used to investigate products in this category are contained in UL Subject 2755, "Outline of Investigation for Modular Data Centers.

A typical construction may use a standard ISO shipping container or other structure as the outer enclosure, racks or cabinets of ITE, service-entrance equipment and power distribution components, power storage such as a UPS, and an air or liquid cooling system.

NFPA 75 Standard for the fire protection of information technology equipment

13.1 General. This standard applies to modular data centers (MDCs), except as modified by Chapter 13.

13.11 Utilities.

13.11.1 Heating, ventilation, and air conditioning and coolant systems shall comply with Sections 11.1 and 11.2.

13.11.2 Electrical service shall comply with NFPA 70, Article 646, Modular Data Centers.

NEC 646.1 Scope (Modular data centers)

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.

PQVA.Guideinfo - modular data centers

MDCs may be provided with integral support equipment such as power distribution units, HVAC equipment, standby power, illumination and the like, that are required for the operation of the ITE. In some cases, the support equipment may be housed in its own separate enclosure and certified as part of the MDC system.

MDCs may permit the temporary entry of authorized personnel within the enclosure for service, maintenance and upgrading of the ITE and associated support equipment. They are not intended to provide an occupied space (as in an office) for personnel.

MDCs are investigated as complete equipment including subassemblies, power distribution, cabling, cooling system components, lighting and the like, installed within the enclosure. Consideration has also been given to emergency egress of maintenance personnel and working space around equipment.

An MDC may be shipped from the factory unassembled, or disassembled to the degree necessary to facilitate shipment. In some cases, subassemblies may be shipped separately for final assembly at the installation site. In these cases, the following apply:

1. All of the parts are furnished or specified by the manufacturer.
2. The specific location of the assemblies in the MDC and their methods of installation are predetermined by the manufacturer and are not dependent upon installation personnel.
3. Electrical connections used to connect the field-installed components within the cabinet are accomplished by means of plugs and receptacles, or other means that are in compliance with the NEC.
4. Detailed step-by-step installation instructions are provided in the form of installation instructions or a detailed installation practice.
5. Parts and subassemblies are marked with the assembly manufacturer's company name or logo, and a part number (P/N) or other type designation.

An MDC may be constructed with empty space or bays or empty shelf or rack space for the installation of ITE that is not specifically defined by, or under the control of, the MDC manufacturer.

MDCs are intended for fixed installation. Unless otherwise identified, MDCs are intended for indoor installation. MDCs intended for outdoor use are marked "Outdoor Use," "Raintight" or "Rainproof," or are provided with a NEMA environmental class rating.

MDCs are intended for installation subject to approval by the Authority Having Jurisdiction (AHJ). AHJs should also be consulted if installation requires structural loading considerations. Working space within an MDC is evaluated as part of the equipment investigation. Access and working space around electrical equipment that is accessible from the outside of the MDC is intended to comply with the applicable requirements in 110.26 of the NEC after the installation of one or more MDCs at a site.

Fire-resistance ratings

A fire-resistance rating for the MDC enclosure is not required but may be provided. When provided, all parts of the outer enclosure are rated based on testing as a nonbearing wall in accordance with UL 263, "Fire Tests of Building Construction and Materials." The rating, if provided, is included in the individual certifications.

Intermodal shipping containers

History

Over thirty million International Organization for Standardization (ISO) intermodal shipping containers are in use around the world today. New or used, containers are being repurposed at a pace where container repurposing is now a multi-billion-dollar global industry. Containers are regularly repurposed and converted into International Residential Code (IRC) and International Building Code (IBC) occupancy uses.

Challenges

General lack of information on material properties and specifications for the steel elements of a container.

Compliance with building envelope, fire resistance and energy code requirements.

IBC Chapter 31 special construction

- Chapter 31 provides regulations for unique buildings and building elements including:
- Membrane structures
- Greenhouses
- Relocatable buildings
- Special elements include:
- Pedestrian walkways and tunnels
- Awnings
- Canopies and marquees
- Vehicular gates
- Solar energy systems
- Public use restrooms in flood hazard areas
- Intermodal shipping containers.