

NATIONAL ELECTRIC CODE - ARTICLE 645 INFORMATION TECHNOLOGY EQUIPMENT

645-1. Scope. This article covers equipment, power-supply wiring, equipment interconnecting wiring, and grounding of information technology equipment and systems, including terminal units, in an information technology equipment room.

645-2. Special Requirements for Information Technology Equipment Room.

This article applies, provided all the following conditions are met:

- (1) Disconnecting means complying with Section 645-10 are provided.
- (2) A separate heating/ventilating/air-conditioning (HVAC) system is provided that is dedicated for information technology equipment use and is separated from other area of occupancy. Any HVAC system that serves other occupancies shall be permitted to also serve the information technology equipment room if fire/smoke dampers are provided at the point of penetration of the room boundary. Such dampers shall operate on activation of smoke detectors and also by operation of the disconnecting means required by section 645-10.
- (3) UL Listed information technology equipment is installed.
- (4) Occupied only by those personnel needed for the maintenance and functional operation of the installed information technology equipment.
- (5) The room is separated from other occupancies by fire-resistant-rated walls, floors, and ceilings with protected openings.
- (6) The building construction, rooms, or areas and occupancy comply with the applicable building code.

645-5. Supply Circuits and Interconnecting Cables.

- (a) **Branch Circuit Conductors.** The branch circuit conductors supplying one or more units of a data processing system shall have an ampacity not less than 125 percent of the total connected load.
- (b) **Cord-and Plug Connections.** The data processing system shall be permitted to be connected to a branch circuit by any of the following means listed for the purpose:

- (1) Flexible cord and attachment plug cap not to exceed 4.5m (15ft.)
- (2) Cord set assembly. Where run on the surface of the floor, they shall be protected against physical damage.

- (c) **Interconnecting Cables.** **Separate data processing units shall be permitted to be interconnected by means of listed cables and cable assemblies.** Where exposed to physical damage, the installation shall be protected by approved means.

- (d) **Under Raised Floors.** Power cables, communications cables, connecting cables, interconnecting cables, and receptacles associated with the data processing equipment shall be permitted under a raised floor, provided:

- (1) The raised floor is of suitable construction and the area under the floor is accessible.
- (2) The branch-circuit supply conductors to receptacles or field-wired equipment are in rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, electrical metallic tubing, metal wireway, surface metal raceway with metal cover, flexible metal conduit, **liquidtight flexible metal or nonmetallic conduit**, Type MI cable, Type MC cable, or Type AC cable. These supply conductors shall be installed in accordance with the requirements of Section 300-11.
- (3) Ventilation in the underfloor area is used for the data processing equipment and data processing area only, except as provided in 645.4(2). The ventilation system shall be so arranged, with approved smoke detection devices, that upon the detection of fire or products of combustion in the underfloor space the circulation of air will cease.
- (4) Openings in raised floors for cables protect cables against abrasions and minimize the entrance of debris beneath the floor.
- (5) Cables, other than those covered in (2) above, shall be listed as Type DP cable having adequate fire-resistance characteristics suitable for use under raised floors of a computer room.

- (b) Interconnecting cables listed with equipment manufactured prior to July 1, 1994, being installed with that equipment.

- (6) **Abandoned cables shall be removed unless contained in metal raceways.**

(E) **Securing in Place.** Power cables, communications cables, connecting cables, interconnecting cables, and associated boxes, connectors, plugs, and receptacles that are **UL listed** as part of, or for, information technology equipment **shall not be required to be secured in place.**

645-6. Cables Not in Computer Room. Cables extending beyond the computer room shall be subject to the applicable requirements of this Code.

645-7. Penetrations. Penetrations of the fire-resistant room boundary shall be in accordance with Section 300-21.

645-10. Disconnecting Means. A means shall be provide to disconnect power to all electronic equipment in the information technology equipment room. There shall also be a similar means to disconnect the power to all dedicated HVAC systems serving the room and cause all required fire/smoke dampers to close. The control for these disconnecting means shall be grouped and identified and shall be readily accessible at the principal exit doors. A single means to control both the electronic equipment and HVAC systems shall be permitted.

645-11. Uninterruptible Power Supplies (UPS). UPS systems installed within the information technology room, and their supply and output circuits, shall comply with Section 645-10. The disconnecting means shall also disconnect the battery from its load.

645-15. Grounding. All exposed noncurrent-carrying metal parts of an information technology system shall be grounded in accordance with Article 250 or shall be double insulated. Power systems derived within UL listed information technology equipment that supply information technology systems through receptacles or cable assemblies supplied as part of this equipment shall not be considered separately derived for the purpose of applying Section 250-5(d).

645-16. Marking. **Each unit of an information technology system supplied by a branch circuit shall be provided with a manufacturer's nameplate, which shall also include the input requirements for voltage, frequency, and maximum rated load in amperes.**

645-17. Power Distribution Units. Power distribution units that are used for information technology equipment shall be permitted to have multiple panelboards within a single cabinet, provided that each panelboard has no more than 42 overcurrent devices and the power distribution unit is utilization equipment listed for information technology.

All power distribution cable assemblies manufactured by The Power Cabling Corporation are UL Listed. This makes them exempt from being secured in place. Any non-listed assembly must be "securely fastened in place by an approved means within 12in. (305 mm) of each box, cabinet, conduit body, or other conduit termination and shall be supported and secured at intervals not to exceed 4 ½ ft (1.37 m). Article 351-8.

Avoid costly installation errors and Code violations by making certain that all of your power distribution cable assemblies are UL LISTED and bear the UL Mark.

- *Please note that this does not represent the National Electric Code in its entirety. There are applicable Articles and Exceptions that may apply to your specific requirement. For any questions or comments regarding the interpretation of these Articles or to obtain a complete copy of the most recent edition of the National Electric Code Handbook, please contact the National Fire Protection Association, Inc.*

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