



AC POWER REQUIREMENTS: RETAIL POINT OF SALE & COMPUTER SYSTEMS

Preferred AC Power System. To ensure that electrical noise, produced by other equipment, does not create interference for the Retail POS system, **all power conductors and equipment grounding conductors must be isolated from other power circuits in the facility.** To accomplish this, the preferred method of providing power is the installation of a power distribution panel intended for the sole use of the Retail POS system and shall not be used to supply other electrical loads in the facility. The panel will be supplied by a feeder run directly from the main or source panel for the facility. **See Figure A (back page) for an illustration.** To determine the maximum number of POS Workstations, Computers, and/or Printer devices to be powered from a single circuit, contact the DCRS Customer Service Manager.

- Nothing in this document supplants national, state, or local electrical codes.
- Each Branch Circuit shall be installed in a **dedicated ferrous metal conduit** and have separate neutral and ground conductors. **Aluminum conduit is not acceptable.**
- If the length of a branch circuit exceeds 100 feet, increase all conductors (including ground) one wire size for each additional 100 feet of length.
- The neutral conductor from the main or source panel to the dedicated POS panel is two sizes larger than the phase conductors. Larger wire size is necessary to accommodate the third harmonic current caused by the switching power supplies in the POS equipment, and to minimize the possibility of common mode noise occurring on the power distribution circuits.
- All power distribution circuits shall be installed in a dedicated ferrous metal conduit that contains only the POS supply and ground conductors. **Network cables shall be installed in separate ferrous conduits. See the DCRS "Customer Information" document for more information on network cabling.**
- Approved Uninterruptible Power Supplies (UPS) are required for each Server. It is possible that power problems could be generated by the power company or by other equipment in the building. Approved Ground/Power Conditioners or some other corrective measures may be required.
- **Power Panel Grounding.** An insulated equipment grounding conductor (sized the same as the supply conductors) shall be installed in the same conduit as the supply conductors from the main or source panel to the dedicated POS panel and is to be terminated on the ground bus in the main panel. At the POS panel, install a ground bus that is electrically isolated from the panel frame and terminate the feeder equipment grounding conductor on this bus bar. The metallic feeder conduit will be used as the equipment grounding system for grounding the AC power panel frame, metallic conduit system, and metallic junction boxes.
- **Branch Circuit Grounding.** Each branch circuit from the dedicated power panel to the ALL POS device receptacles shall include a full size (same as supply conductors) insulated equipment grounding conductor installed in the same dedicated conduit as the supply conductors. This isolated grounding conductor shall be terminated on the isolated ground bus bar in the panel.
- **Receptacle Grounding.** Branch circuits from the POS power panels must be terminated with isolated ground receptacles. **No equipment bonding jumper is to be installed from the receptacle grounding terminal to the outlet box.** NOTE: NEC Article 250-74, Exception 4 permits installation of the isolated ground receptacles and isolated equipment grounding conductors specified in this section. **See additional information on back page.**
- Unused sockets should be disconnected. This is to prevent the temptation of using the outlet for equipment that may produce extraneous ground currents (e.g., floor buffers, blenders, vacuum cleaners, etc.). **The correct isolated ground receptacles are Simplex; NEMA P/N: IG5-15R1 or Duplex; NEMA P/N: IG5-15R2.**
- Failure to follow specifications may result in the voiding of hardware warranty and/or coverage under a support plan. DCRS Solutions is not liable under any circumstances for any damages, claims, losses or expenses, arising from, related to, or caused by AC Power related disturbances.

I have read and understand the above specifications and conditions, and I agree to comply with these requirements prior to any installation of any computer devices from DCRS Solutions. If clarification is needed, please contact the DCRS Customer Service Manager by calling 314-739-6666 or 1-800-231-0166.

COMPANY NAME _____ DATE _____

AUTHORIZED SIGNATURE _____ TITLE _____

National Electrical Code

NEC Article 250-74. Connecting Receptacle Grounding Terminal to Box. An equipment-bonding jumper shall be used to connect the grounding terminal of a grounding-type receptacle to a grounded box. *Exception No. 4: Where required for the reduction of electrical noise (electromagnetic interference) on the grounding circuit, a receptacle in which the grounding terminal is purposely insulated from the receptacle mounting means shall be permitted. The receptacle-grounding terminal shall be grounded by an insulated equipment-grounding conductor run with the circuit conductors. This grounding conductor shall be permitted to pass through one or more panelboards without connection to the panelboard grounding terminal as permitted in Section 384-20, Exception so as to terminate within the same building or structure directly at an equipment grounding conductor terminal of the applicable derived system or service.* (FPN): Use of an isolated equipment grounding conductor does not relieve the requirement for grounding the raceway system and outlet box.

250-75. Bonding Other Enclosures. Metal raceways, cable trays, cable armor, cable sheath, enclosures, frames, fittings, and other metal noncurrent-carrying parts that are to serve as grounding conductors with or without the use of supplementary equipment grounding conductors shall be effectively bonded where necessary to ensure electrical continuity and the capacity to conduct safely any fault current likely to be imposed on them. Any nonconductive paint, enamel, or similar coating shall be removed at threads, contact points, and contact surfaces or be connected by means of fittings so designed as to make such removal unnecessary.

Exception: Where required for the reduction of electrical noise (electromagnetic interference) on the grounding circuit, an equipment enclosure supplied by a branch circuit shall be permitted to be isolated from a raceway containing circuits supplying only that equipment by one or more listed nonmetallic raceway fittings located at the point of attachment of the raceway to the equipment enclosure. The metal raceway shall comply with provisions of this article and shall be supplemented by an internal insulated equipment grounding conductor installed in accordance with Section 250-74, Exception No. 4 to ground the equipment enclosure. (FPN): Use of an isolated equipment grounding conductor does not relieve the requirement for grounding the raceway system.

384-20. Grounding of Panelboards. Panelboard cabinets and panelboard frames, if of metal, shall be in physical contact with each other and shall be grounded in accordance with Article 250 or Section 384-3(c). Where the panelboard is used with nonmetallic raceway or cable or where separate grounding conductors are provided, a terminal bar for the grounding conductors shall be secured inside the cabinet. The terminal bar shall be bonded to the cabinet and panelboard frame, if of metal, otherwise it shall be connected to the grounding conductor that is run with the conductors feeding the panelboard. *Exception: Where an isolated equipment grounding conductor is provided as permitted by Section 250-74, Exception No. 4, this insulated equipment grounding conductor that is run with the circuit conductors shall be permitted to pass through the panelboard without being connected to the panelboard's equipment grounding terminal bar.* Grounding conductors shall not be connected to a terminal bar provided for grounded conductors (may be neutral) unless the bar is identified for the purpose and is located where the interconnection between equipment grounding conductors and grounded circuit conductors is permitted or required by Article 250.

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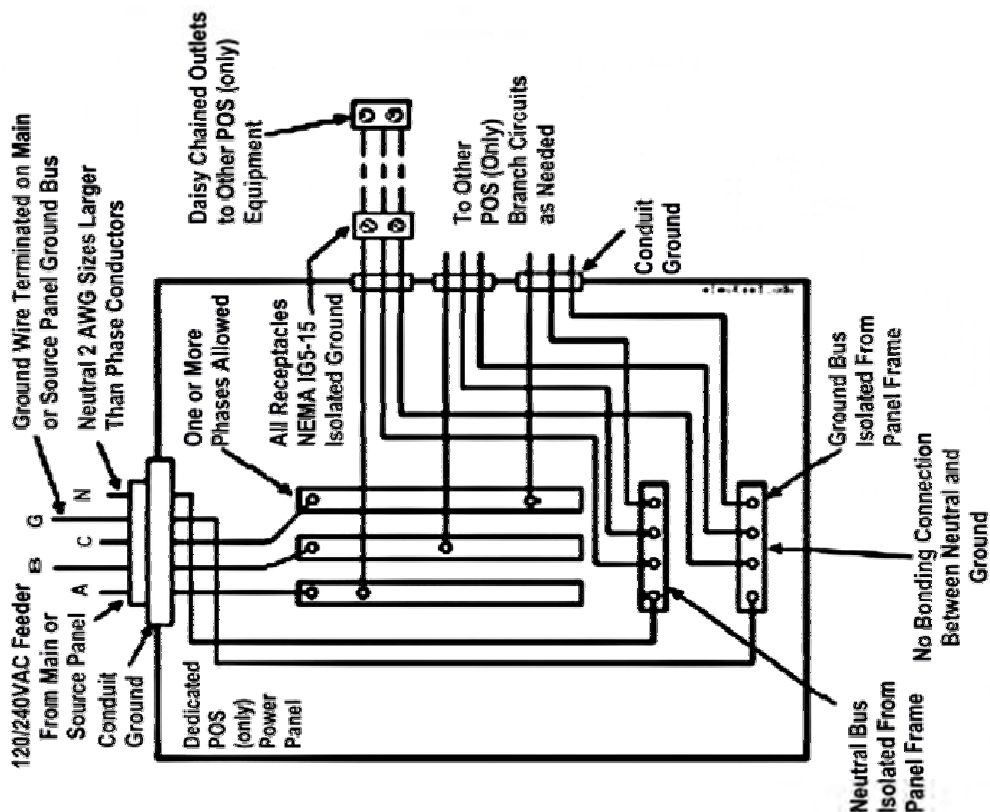


Figure A: Preferred AC Power Panel Wiring