ELECTRONIC EQUIPMENT GROUNDING

To prevent electrical disturbances from affecting computers and other electrical equipment two entirely different and separate grounding systems are required. The power distribution system must be grounded, and the computer equipment and enclosures should be connected to a grounding grid or common bonding network.

The goals of the grounding system within a data center are to equalize electrical potentials and to create a low impedance path to ground. You want a grounding system that directs damaging currents away from the equipment. TIA-607-C requires each rack to bond directly to the grounding grid or common bonding network, directing current away from sensitive electronics.

TIA-607-C

TIA 607-C states that a computer room should contain a supplementary bonding network grounded to the secondary bonding busbar (SBB) or primary bonding busbar (PBB). Metallic components in need of bonding include racks, cabinets, ladders, surge protectors, cable trays, routers, switches and patch panels, each bonded to the SBB or PBB using a minimum size conductor of 6 AWG.

Clause 7.1.4 Cabinets and racks
Rack bonding busbars (RBBs) are recommended for cabinets and racks that need to support multiple unit (equipment) bonding conductors (UBC). Cabinets, racks, and other enclosures in computer rooms shall not be bonded serially; each shall have their own dedicated bonding conductor to the mesh-bonding network (mesh-BN), primary bonding busbar (PBB), secondary bonding busbar (SBB), or telecommunications equipment bonding conductor (TEBC).

Clause 7.1.5 Metallic pathways
To achieve the objective of potential equalization, all metallic telecommunications pathways, including cable ladders, cable runways, conduit, pipes and building steel shall be bonded to the PBB and SBB.

COMPUTERS & DATA INTEGRITY

Telecommunications equipment can be sensitive to stray currents, electromagnetic interference, electrostatic discharge, and other electrical disturbances “noise.”

While minimum grounding requirements within the power distribution system are designed for personal safety and fire prevention purposes, data center downtime and damage to equipment as a result of inadequate grounding can cost an organization millions of dollars.

Proper grounding is the most important factor in reliable network equipment performance. According to the IEEE, power distribution grounding is almost never sufficient to prevent damage to network equipment.

In a data center, electrical disturbances introduced on data cables, when not properly dissipated, through a signal reference grid, can result in faulty data signals, lost data and network inefficiencies.

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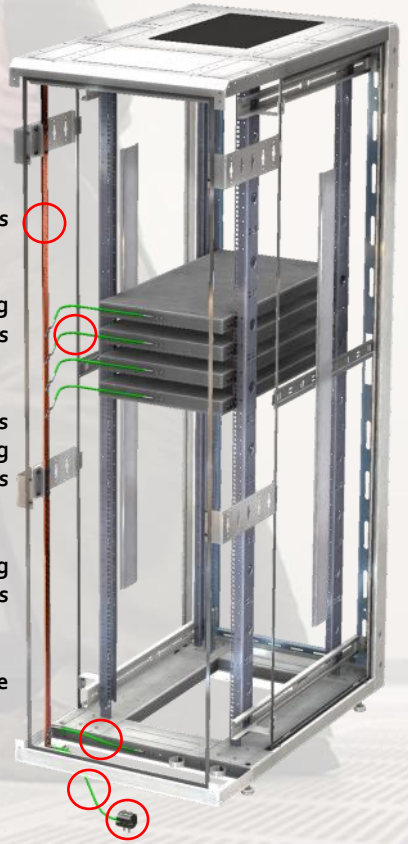
SURGGUARD™
GROUND BONDING KITS

DATA CENTER

Telecommunications Equipment Ground Bonding



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RACK BONDING BUSBARS

Rack bonding busbars (RBB) serve as a common and accessible ground bonding point for all telecommunications equipment mounted in a rack or cabinet. Vertical and horizontal rack bonding busbars provide a convenient ground path between equipment mounting in a rack and the telecommunications common bonding network.

Each piece of telecommunications equipment is bonded directly to the busbar with short flex unit bonding conductors (UBC).

Vertical rack bonding busbars run the lengths of the rack and are pre-drilled to accommodate up to 36 flex unit bonding conductors for rack mounted equipment.

Horizontal rack bonding busbars, either positioned at the top, center or bottom of the rack, are pre-drilled to accommodate up to 24 flex unit bonding conductors for rack mounted equipment.

Busbars are electro-tin plated for reduced corrosion and contact resistance. Each rack bonding busbar kit includes white Delrin insulators to insulate the busbar from the rack creating intermediate grounds and a set of #12 x 5/8” self-tapping zinc plated screws for mounting the busbars to the insulators.

BONDING CONDUCTORS

Bonding conductors serve as a connection point between telecommunications equipment, the physical rack or cabinet, and the rack bonding busbars. Bonding conductors also serve to bond busbars to the grounding grid or common bonding network as well as metallic pathways, including ladder racking and cable tray.

Unit bonding conductors (UBC) are used to bond telecommunications equipment to vertical or horizontal busbars. Each UBC is a flexible stranded 6 AWG green insulated cable with two, two-hole tinned copper compression lugs.

Telecommunications equipment bonding conductors (TEBC) connects the telecommunications equipment rack busbar to the common bonding networks primary or secondary bonding busbar. Each TEBC is a stranded 6 AWG green insulated cable with a single two-hole tinned copper compression lug at one end and a captive strip at the other.

Rack bonding conductors (RBC) are used to provide a bond between the rack or cabinet and the grounding busbar or the telecommunications equipment bonding conductor (TEBC). Each RBC is a flexible stranded 6 AWG green insulated cable with two, two-hole tinned copper compression lugs.

GROUND BONDING KITS

PDU Cables provides a complete ground bonding kit for every application. In addition to the horizontal and vertical rack bonding busbars with their insulators and zinc plated screws, Each ground bonding conductor kit includes a conductor utilizing flexible stranded 6 AWG green insulated cable with two, two-hole tinned copper compression lugs, with lug termination available in 45-degree, 90-degree and straight options.

Each lug is crimped using a pneumatic compression crimping tool to ensure the long-term integrity of the ground bonding system.

Each bonding conductor kit includes two thread bearing screws of each size; 10-32 x 1/2”, 12-24 x 1/2”, M4 x 8mm, M5 x 12mm, M6 x 12mm, and a tube of antioxidant to ensure a bond between the conductor and bonding busbar.

Bonding conductors can be purchased in standard lengths at 6” increments, and custom lengths are available upon request.

PDU Cables offers a selection of termination hardware used to terminate ground bonding conductors to grounding grid.