

DRIVING ENERGY EFFICIENCY IN INTELLIGENT BUILDINGS

HOW CONNECTING DC POWER FROM THE GRID TO THE DESKTOP WILL DELIVER COST SAVINGS TO BUILDING OWNERS.

Today we live in an AC (alternating current) world where commercial buildings consume up to 50% of the electricity produced and distributed by public utilities. Electricity demands within these buildings are increasingly DC (direct current) based as the adoption of solid state lighting and DC-powered data centers grows. By eliminating the AC to DC conversion, there can be significant reduction in the complexity of equipment design and energy savings of 15%.



DC power generated from renewable energy sources like hydroelectric, solar, and wind must be converted to be compatible with existing AC distribution methods. These conversions result in significant losses of electricity and wasted energy. An energy efficient trend in commercial buildings is the use of solid state lighting

to cut operational and maintenance costs over the lifetime of a product. The Light Emitting Diode (LED) technology in solid state lighting utilizes DC power which can also be easily controlled to reduce the overall load on our energy resources. The same type of savings can be seen inside of the servers in data centers, which are now using DC power on the printed circuit boards and cooling fans.

THE CONNECTIVITY CHALLENGE

So how do you safely distribute DC power to these new lighting systems and data centers? One open industry association, the EMerge Alliance, is leading the adoption of safe low-voltage DC power distribution in commercial buildings. This alliance is a collaboration of industry leaders, including Armstrong World Industries, Royal Philips Electronics and TE Connectivity. As part of this alliance, our mission is to develop DC voltage standards for 24Vdc and 380Vdc, and to provide the plug-and-play connectivity for the 24Vdc standard.

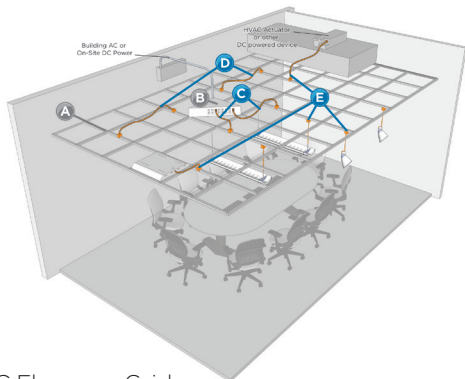
Aside from the energy savings, one exciting result of these systems is the ability to integrate the management and control of solid state lighting systems. Broad application of these new standards globally could end the “plug and socket dilemma” by providing standardized voltages for equally standardized applications. That means no more transformers—and no more travel adaptors for users’ electronic devices.



THE DC POWER INNOVATION

The engineers at TE Connectivity developed a system of connectors and cable assemblies that allowed the safe transfer of power from a DC-powered ceiling grid to lighting fixtures and other electrical devices used in the system. All interconnects meet the requirements of the EMerge Alliance standard.

The ceiling system design dramatically improves the flexibility of lighting designs inside workspaces and retail environments. Now, lighting fixtures and electrical devices can be added, modified and relocated around the room quickly and easily—without the need for trained electricians to perform hard-wire changes, or even shutting off the room’s power. The polarized cable assembly housings feature releasable latching for quick installation. Retail environments can be quickly adjusted from season to season. And workspaces can be reconfigured to meet occupants’ changing needs.



Key:

- A: DC Flexzone Grid by Armstrong Worldwide Industries, Inc.
- B: Power Server Module by Nextek Power Systems
- C: Power Feed Cable Assembly by TE Connectivity
- D: Main Beam to Main Beam Cable Assembly by TE Connectivity
- E: Device Connectors and Cable Assemblies by TE Connectivity

APPLICATION NOTE

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TURNING CONNECTIVITY INTO COMPETITIVE ADVANTAGE

By leveraging our experience in both high-voltage and low-voltage connectivity, TE Connectivity is helping to make the solid state lighting revolution a reality. Soon, intelligent buildings will become more flexible work environments, quickly adapted for new tenants and new uses. But, more importantly, these office environments and their buildings will become a more energy-efficient piece of an increasingly Smart Grid.

MAKE EVERY CONNECTION COUNT

Companies around the globe count on TE Connectivity to design and manufacture the critical connections that make their buildings safe, comfortable, energy efficient and reliable.

Visit us today to learn more about [TE's Low Voltage DC Interconnects](#), [and TE Intelligent Buildings](#), and [TE Connectivity's broad range of industry solutions](#).

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