



VERTIV WHITE PAPER

Choosing the Best Power Distribution Type for Your Data Centre

Remote Power Panels and Busways Help Data Centre Teams Standardise, Simplify and Scale

The data centre market is red-hot around the world, as enterprises enable hybrid work models and accelerate digital business initiatives. Hyperscalers, internal data centre teams and colocation providers are supporting this fast-paced growth by providing vital IT services.

Between 2020 and 2025, the colocation industry alone will add close to 2,000 MW of new data centre capacity each year. Asia-Pacific will lead, buying 38 percent of new colocation capacity, while North America will follow with 30 percent. Europe, Middle East and Africa (EMEA) will purchase 27 percent; and Latin America will obtain five percentⁱ.

So, what does this mean for data centre facility and IT teams, as well as the consultants that help them equip white space? It's clear that business growth will likely continue unabated, space is at a premium and speed of deployment is more important than ever. These teams are carefully considering the layout of data centre floor space and the design of IT and power distribution architectures to meet emerging business needs.

Emerging Data Centre Requirements – Why Is a Remote Power Panel or Busway Needed?

Market trends point to the need for a flexible remote power distribution system that can be consistently deployed in facilities and easily scaled across data centre networks and geographies. Data centre and IT teams can select from a standardised Remote Power Panel (RPP), custom-built RPP or a configurable busway for their power distribution needs. So, which solution should they choose? The answer will be driven by critical business and technical requirements, as well as teams' desire to future-proof their approach. While in some cases customisation will make sense, in many others standardised solutions will address teams' needs more consistently. Let's take a closer look.

Data centre and IT teams are operating in a complex market and business landscape. They need to:

Support growing compute demand

Enterprises, government agencies and other organisations are accelerating their race to the cloud to support unstoppable demand for all things digital. In the coming years, the Industrial Internet of Things (IIoT), smart systems of intelligence, digitised products and services, virtual reality and augmented reality will all require powerful computing resources. Meanwhile, 5G will make it easier to enable data-intensive automation and services and execute real-time analytics on vast data sets. That means more demand for data centre computing capabilities, whether they're run by the enterprises themselves or their colocation partners. It also means that power distribution is playing an even more important role, as racks densify to support mission-critical workloads.

Ensure continuous uptime

Digital businesses demand constant connectivity and availability of compute resources. Without it, workforce productivity and the customer experience suffers, negatively impacting brand reputations and revenues. Despite this fact, on-site power management issues still represent one out of three outages globally. For data centre teams, the pressure is on to ensure continuous power delivery and maintain the uptime of critical equipment. That's why data centre operators are increasingly building redundancy into their model. To do so, they're using dual power feeds, redundant uninterruptible power supply (UPS) and two-stage power distribution design. Remote power panels should not be confused with rack power distribution units, or rPDUs, which perform a separate and equally essential function.

Data centre teams can help deliver the uptime enterprises seek by selecting quality remote power distribution equipment that is built and certified by a global manufacturer.

Standardised remote power panels represent a proven alternative. They compartmentalise distribution between the UPS and the server to enable greater flexibility and scalability and more effective use of valuable data centre floor space. In addition, the new generation of standardised power distribution systems, manufactured in Europe and compliant with IEC standards hence available in EMEA, APAC and LATAM as well, provide intelligent monitoring and communication capabilities. That enables teams to respond faster to load imbalances, preventing issues that could harm valuable server equipment and cause unplanned outagesⁱⁱ.

Provide speed of deployment

As global colocation figures attest, the race is on to build and upfit new space. Across the Europe Middle East and Africa (EMEA) region, new facilities will need effective power distribution systems, while existing data centres will also typically refresh equipment every few years. While many data centre teams may have traditionally used purpose-built remote power panels to provide high-density power distribution, these solutions are entirely custom, requiring longer lead times. Data centre teams and their consultants must agree upon power capacity and establish row placement and length upfront, then hire a vendor to install branch breakers or power cable assemblies.

A remote power panel configurator enables data centre teams to meet most of their typical market applications with a low time investment. Employees don't even need to know what IT loads they'll be running, just the maximum IT load that is expected. They can leave the final setup to the system integrator who installs the unit onsite and populates circuit breakers and sensors. Quickly add or change breakers and measurement sensors using the touch-proof finger-safe panelboard, in combination with the circuit monitoring system (CMS).

In addition, custom remote power panels are not pre-certified by original equipment manufacturers (OEMs), but instead are certified by the manufacturer of the final assembly at site, usually the system integrator or the panel builder in charge of electrical and mechanical installation. All of these issues could create complications when it comes time to service these remote power panels. Service will necessarily need to be tailored to custom-built units rather than maintained to OEM specifications.

Maximise valuable floor space

Within data centres, every foot of space is critical. Standardised remote power panels can be ordered and placed wherever power is needed, simplifying and speeding deployment. Facility and data centre teams are packing in equipment, while ensuring they adhere to industry best practices and fire codes and standards for how they are placed and used. Busways, sometimes called busbars, take no floor space, freeing up room for other equipment and enabling teams to maximise every inch of precious floor space.

While standardised remote power panels are placed on floors, they have a compact footprint. In addition, they can be positioned as standalone units, side-by-side, back-to-back, or as adjacent units in triple or quadruple formations. This flexibility allows data centre and IT teams to create the optimal power density configurations and install units in the back of servers. Similarly, there may be instances where end-user requirements are unknown, such as when colocation owners are building out data centres but haven't yet signed customer contracts. These data centre teams may not know where to place tap-off boxes for busways, how much cable will be required, and what power density is required at the rack level. In these scenarios, remote power panels are a more flexible choice.



Vertiv™ Liebert® RXA
single wall-mounted



Vertiv™ Liebert® RXA
double wall-mounted



Vertiv™ Liebert® RXA
quadruple free-standing

Future-proof technology architectures

The data centre of 10 years from now will be very different from the one of today, thanks to chip, server, power and cooling equipment, as well as AI advances. Data centre and IT teams will need flexibility to respond, by redesigning floor space, replacing and densifying equipment, and supporting greater power needs.

Standardised remote power panels support ratings from 160 amps to 1000 amps. Meanwhile, custom-built busways support ratings from 160 amps to 1000 amps. So, which solution should data centre and IT teams choose?

Relocating remote power panels is always possible as long as there is an electrician able to disconnect and move them safely, so that they may be readapted in case they're extended or placed in a new data centre layout.

For high-density applications, such as big-data analytics, custom-built busways are likely a better choice, as they can support more servers simply by adding additional tracking and tap-off boxes.

Scale solutions across geographies

As enterprise data centre teams and colocation providers scale their presence, standardisation is of growing importance. Maintaining consistency across facilities and regions means that data centre teams can simplify ordering, installation, monitoring and maintenance, upgrades and ultimately replacement of power distribution systems. For this requirement, standardised remote power panels are the right solution. Prebuilt and configured, certified and tested, standardised remote power panels provide out-of-the-box power distribution once connected to branch circuits. That simplifies both facility startup and expansion and overall management of larger data centre networks.

Ensure operator safety

When it comes to working with live voltage, technician safety is paramount. Custom remote power panels may not provide finger-safe capabilities, meaning that they will always need to be serviced by an electrician. Standardised remote power panels should provide a lockable door and second access door to minimise accidental contact with live parts under voltage. When doors are open, they should be rated IP20, which means that technicians can work safely and without risking any outage.

Finger-safe remote power panels provide heightened safety protections for operators, by separating energised parts of the panel from operators' touch. Similarly, finger-safe busways offer greater protection by connecting to the ground first, before being engaged.

Monitor power distribution

The market is moving to intelligent monitoring capabilities because they provide data centre and IT teams with an edge to resolve issues proactively before they harm equipment or cause downtime.

All remote power panels provide intelligent, integrated power monitoring, but their capabilities may vary. Standardised remote power panels should provide easy-to-use color touchscreens that simplify monitoring and management, by providing information about unit setup and operations. Technicians can immediately view text and graphics to determine if input power is connected, three-phased loads are balanced, there are any alarms, and breakers are open or closed. Alarms ideally should be both audible and visible, thanks to the speaker and LED-lit data on the frame of the display.



Vertiv™ Liebert® RXA
display screen

By monitoring this information, technicians can understand performance through the whole power chain, keeping availability high. For example, a technician can monitor the main input circuit breaker and output to the branch circuit level, evaluating current performance at a granular level.

Reduce total cost of ownership

Building and equipping data centres is a capital-intensive enterprise. As a result, data centre teams seek cost advantages when it comes to purchasing and operating equipment. They will consider power architectures, distribution voltage and power density at the rack level in making their decisions. Data centre operators will also need to weigh cost, safety and other business considerations as they make their purchasing decisions. Standardised solutions may provide compelling advantages that help focus these decisions.

Ensure quality of solutions

So, how do standardised versus custom-built remote power panels differ when it comes to quality? Standardised solutions are typically higher quality and more reliable, due to the fact that they're constantly innovated and upgraded. In addition, pre-tested and pre-certified solutions are easier to

sell to customer decision makers. They're also easier to install. The solution manufacturers of these standardised units provide drawings and technical documentations to streamline deployment, avoiding the work and expense of a custom-build solution.

Data centre teams also acquire a device that works from day one and is easy to maintain. If they purchase standardised remote power panels directly from a solution manufacturer, then they also benefit from single-point accountability, which simplifies troubleshooting and resolution, should potential issues arise in the future.

Maintain solutions easily

Data centre teams want to adopt easy and efficient processes that streamline daily operations and result in low or no downtime. Custom-built busways are commonly advertised as maintenance-free, but new advances are making standardised remote power panels a lower maintenance choice, as well.

With standardised remote power panels, operators can set up a device, save configurations to a USB and then use that USB to service similar devices. In addition, hot-swappable capabilities mean that operators can replace or add a branch circuit in less than 20 seconds while other branches remain live.

Finally, OEMs offer maintenance contracts with standard and extended warranties, enabling buyers to obtain rapid service when and where they need it. All of these capabilities translate to lower ongoing maintenance requirements than is achievable with custom-build remote power panels.

Access global service capabilities

Data centres are being placed anywhere and everywhere. Business needs, bandwidth requirements, tax breaks, power reliability and costs, good infrastructure and access to a skilled workforce, are just some of the considerations buyers make when breaking ground on new facilities. Here is another: easy access and global support from the OEMs that provide and service critical equipment. As data centre operators scale across regions, they will want to ensure that equipment can be serviced locally and replaced easily. Partnering with a global OEM like Vertiv future-proofs these service operations.



Choosing Between Busways and Standardised Remote Power Panels: Two Good Choices for Different Goals

When it comes to high-density power distribution, data centre and IT teams have two good choices. The traditional choice, custom-built busways, are installed over server equipment to conserve valuable floor space and are available in multiple power ratings. Busbars are designed to allow an easy integration into almost any data centre layout. They can be customised to each and every facility and can be easily reconfigured to meet business needs. However, they do take time and planning to install.

Vertiv offers **Vertiv™ Powerbar iMPB**, a customisable, modular solution with integrated finger-safe capabilities that is available in 160, 250, 400, 630, 800 and 1000 Amps ratings. Teams can use Vertiv Powerbar iMPB to provide reliable power distribution at any sized data centre with raised or non-raised floors, keep valuable floor space open for equipment, and accommodate frequent hardware refreshes.

Data centre and IT teams also have another choice: standardised remote power panels. This solution is easy to order, install and service and can be flexibly placed in spaces ranging from server rooms and network closets to open data centre floor space.

Vertiv™ Liebert® RXA, certified under IEC regulations and available in EMEA, APAC and part of LATAM regions, meets data centre and IT teams' demands for high-density power distribution. It provides a compact footprint, flexible installation options, optional finger-safe capabilities, integrated intelligent monitoring available in 250 and 400 A ratings with 84P panelboard available and a low total cost of ownership (TCO). Data centre and IT teams can use Liebert RXA to standardise, streamline and scale their operations across the EMEA region—and beyond.

[Learn more about Vertiv™ Liebert® RXA](#)

[Learn more about Vertiv™ Powerbar iMPB?](#)

¹ "Jabez Tan on the Global Data Centre Market," Structure Research, Data Centre Knowledge/The Data Centre Podcast", reprinted on Structure Research website, January 13, 2021, <https://structureresearch.net/blogs/jabez-tan-on-the-global-data-centre-market/>

² Annual outage analysis 2021, report, Uptime Institute, <https://uptimeinstitute.com/annual-outage-analysis-2021>



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