Rittal – The System.

Faster – better – everywhere.

Colocation Infrastructure Handbook

ENCLOSURES | POWER DISTRIBUTION | CLIMATE CONTROL | IT INFRASTRUCTURE | SOFTWARE & SERVICES

FRIEDHELM LOH GROUP

Rittal: The Future of Business Resides in Colocation Facilities

Data Growth Pushes More Companies to Colocation

According to recent research from Gartner, the global colocation market is expected to double by 2020 to $50B. MarketsandMarkets.com anticipates a compound annual growth rate (CAGR) of 14% through 2022.

Colocation, which is often called the future of data center design, encompasses every level of data center infrastructure, including enclosures, power, cooling, cable management, monitoring and security. To avoid the large capital outlay, Small- and Medium-Sized Enterprises (SMEs) are expected to transition a significant amount of their IT infrastructure into colocation services.

The main driver for additional IT infrastructure for companies is the explosive growth in data generated by enterprise business operations, research and development, and Industry 4.0 manufacturing processes. According to IDC Research, digital data will grow at a CAGR of 42% through 2020. Because it's far easier to produce terabytes, petabytes or exabytes of data than it is to store it, production is far outstripping capacity. This drives businesses to offload data to the cloud or colocation facilities.

Colocation Solves Key Growth Hurdles for Companies

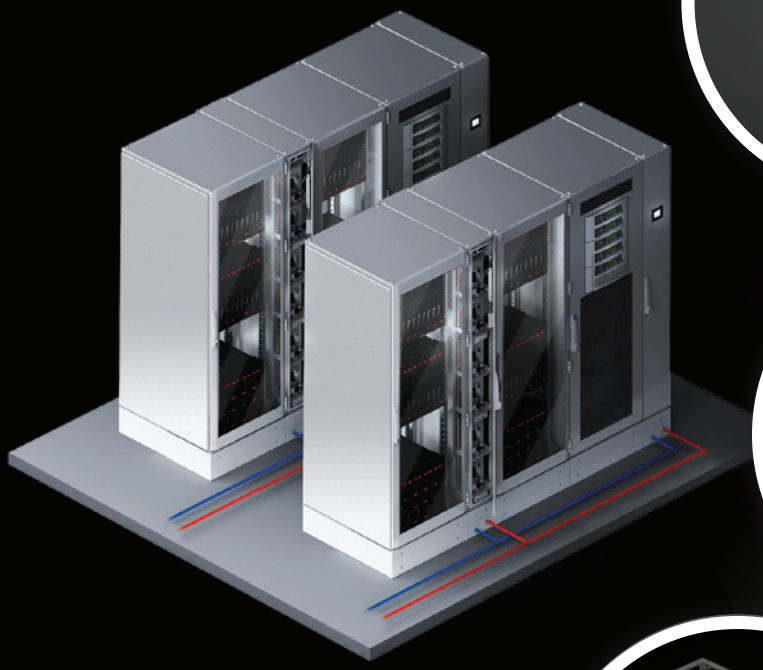
As data stockpiles expand and more infrastructure becomes necessary, SMEs are wary of taking on capital investment expenditures. A 3-to-5-year colocation contract is a better practical expenditure than a 15-to-20-year investment in greenfield or brownfield development.

Aside from monetary considerations, colocation providers deliver a number of quantifiable benefits to any business:

- Security: Colocation facilities deliver multi-factor physical and IT security for its customers, which can extend to specific customer enclosures or cages.
- Scalability: Growth requires space, power, bandwidth and staff, which may not be practical investments for many businesses. By working with colocation providers, businesses can add capacity and bandwidth without significant capital investment.
- Energy Efficiency: As data centers evolve both on premise and in third-party providers, energy efficiency and carbon reduction are becoming compliance issues. Colocation providers work to ensure compliance with ASHRAE standards to lower their Power Usage Effectiveness (PUE) factor and create greener data infrastructure.
- Connectivity: Unlike most on premise data centers, colocation facilities provide access to multiple networks. This enables businesses to gain better access to their customers and cloud providers.
- Risk Management: Moving data and mission-critical equipment offsite creates redundancies to mitigate operational downtime and ensure operations remain unaffected.

Key Trends Driving Colocation Growth

Companies ranging from the Fortune 500 down to small businesses are turning to colocation providers to help them manage their data. For businesses, colocation companies provide all of the benefits of proprietary data centers without the capital investment and logistical challenges of owning and managing their own facility. As data centers are tasked with handling an unprecedented amount of data, colocation providers are leveraging:

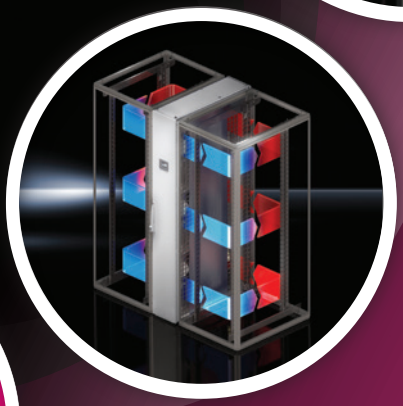


Security

Colocation centers provide multi-factor physical and data security, including biometric entry, CCTV monitoring and monitoring at the rack level. Data security is monitored in real time, and can be remotely monitored by the enterprise.

Hyperconvergence

As data architecture moves towards hyperconvergence, companies are turning to hybrid colocation models that integrate cloud computing and data storage.



Cooling

Hot/cold aisle containment can handle thermal loads in aggregate across a whole room, but each row can offer unique challenges across tiered customers. In-row cooling solutions can effectively address localized hot spots.

Efficiency

Many companies find it difficult to address energy efficiency while also addressing day-to-day operational demands. Colocation operations are focused on PUE and reducing their carbon footprint. Facilities that drive down their energy costs are able to pass along the savings to customers through aggressive pricing models.

Turnkey Solutions. Ready to Deploy.

Your Business Is Ready for Colocation. Rittal Makes It Easy.

Businesses looking to implement their own solution at colocation facilities are often challenged with product complexity and interoperability issues. From cabinets to power, cooling and security, customers can be overwhelmed with vendors, manufacturers and technologies. Rittal is here to help by reducing complexity and implementation cost thorough feature-rich, configured infrastructure solutions.

Rittal's modular enclosures are integral to the calculation and serve as building blocks to meet data growth challenges now and well into the future. Security, power, cable organization, air flow/thermal management and remote monitoring can be integrated into your solution. And, with global certifications and installations around the world, corporate IT managers can rest assured their solution is field-proven and scalable globally.

Rittal supports colocation growth with:

- TS IT modular enclosures
- High density cooling technologies
- Monitoring and security solutions
- A wide range of power solutions

Why Choose Rittal? Maximum Flexibility Delivers Maximum Cost-Efficiency

Rittal solutions help to keep data centers running at peak performance. For IT professionals responsible for system availability, our comprehensive rack systems offer innovative cooling technologies, reliable security and remote system monitoring. Our flexible, modular systems save precious floor space, and our tool-less accessories make IT easy.

- Enclosures designed for easy moves, adds and changes
- Products that conform to global certification standards
- Cooling systems that scale with your application
- Wide range of PDU options to meet current and future needs
- Security configured for one enclosure or an entire row: alarms for high temp, air flow interruptions, fire/smoke and unauthorized entry

Modular Enclosures Grow with your Infrastructure Needs

Making IT Fast and Simple

The Future of Productivity: TS IT™ Enclosures

How TS IT Makes IT Fast

- Design flexibility allows integration of converged solutions.
- Reduced complexity saves time from the planning stage onward.
- Flexible modular designs reduce complexity and simplify moves, adds and changes.

Design, build and management time at the colocation facility adds costs to businesses implementing cage solutions. For smaller customers who are leasing equipment, these costs are built into pricing plans and service contracts and tiered service contracts. Less time spent in set up and management reduces fees and improves scalability for colocation customers

Save Time. Your Money.

At the cabinet level, the Rittal TS IT rack is designed to allow a single person to install it simply and quickly without the need for tools or specialized training. Quick fastenings, integrated locks and additional internal latching speed the installation of side panels.

As your equipment needs evolve, so should your cabinet. The dimensional flexibility of the TS IT supports the integration of a variety of IT solutions to support numerous network configurations. The EIA rails can easily be adjusted for different depths using quick-release fasteners, then slide and lock the mounting angles at the required depth. Lateral offset positioning allows for asymmetrical interior installations and makes it easy to select mounting widths greater than 19 inches.

The side panels' quick-action fastenings have optional integrated locks and additional internal latching mechanisms to enhance security.

TS IT has room for everything. Migration to 10 and 40 Gigabit Ethernet (with their high port counts) is easily supported. Cable routing can readily be accommodated in all dimensions.

How TS IT Makes IT Simple

- High load carrying capacity—up to 3,300 lbs
- Intelligent cable management system
- Extensive range of accessories

Adding equipment to an enclosure shouldn't add risk of collapse. The TS IT can handle a total load of 3,300 lbs. without any additional bracing, a capability made possible by the depth stay design that transmits loads to the enclosure frame. The quick-release fasteners with snap-in technology simplify initial assembly, any subsequent modifications, and installation of accessory components.

For added safety, some of the tool-free installation accessories (cable duct, air baffle plate, cable route and floor plate) have integrated holes to allow optional screw fastening. Slide rails, component shelves, telescopic slides and more simply snap into the rear sections and hook into the front sections.

The TS IT supports a wide range of accessory options that make it easy to customize to the needs of your specific application.

Choose the best: Accessories deliver more custom design options

System accessories

Viewing and vented doors

Choose glass for rack climate control or vented for room climate control.

Sidewall and partition walls

Split side walls simplify one-person installation.

Air flow options

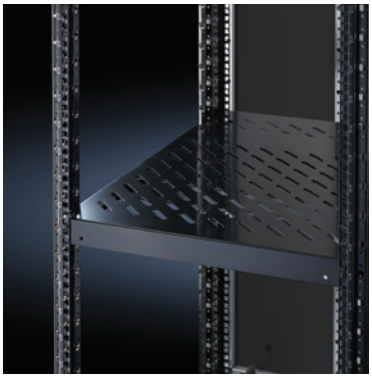
Baffles, gland plates and blanking panels work together to route cooling air through your enclosure efficiently.

Security options

Flexible access, either 3-digit code keyless or master control functionality.

Cable management

Cable ducts, fingers, cable management panels and walls and D-rings keep cables organized.

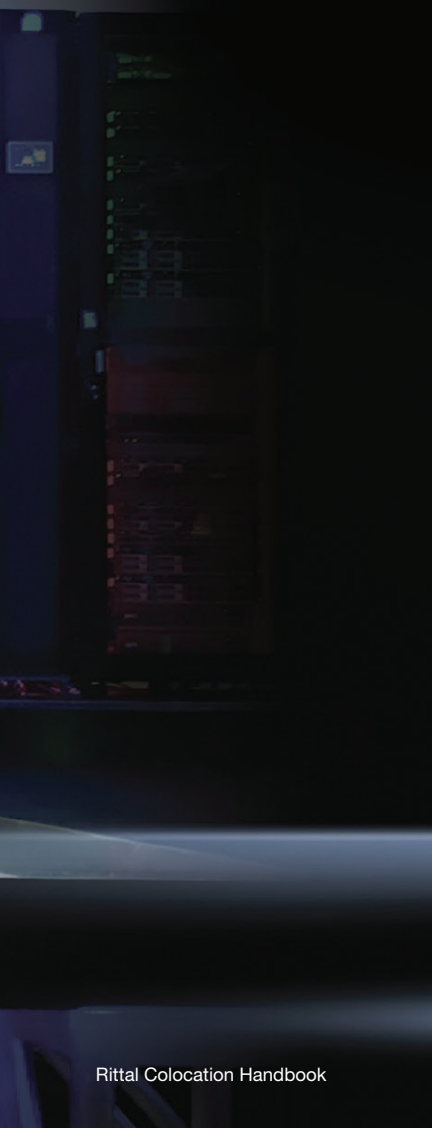


Shelving and system chassis

Mount heavy equipment securely within 19" EIA rails.

Liquid cooling improves energy efficiency and reduces environmental impact

Rittal Cooling Solutions Scale to Fit Business Challenges



IT Cooling Solutions

Growth and scalability come at a cost. As businesses lean on colocation facilities to meet growing data demands and enterprise challenges, more equipment is concentrated into existing footprints. This can lead to significant thermal management issues, potentially equipment failure, downtime and lost business revenue. Recent estimates put the cost of downtime at from $300K up to $1 million per hour, not including the future loss of customers, regulatory fines and other staff costs.

Although most businesses find it difficult to quantify the value of thermal management, they do understand the cost of service failure. In most data center environments, an aisle containment solution is an accepted approach to thermal management. But as businesses add more equipment, the added thermal density can create hot spots that are difficult to manage simply by increasing airflow. Therefore, an aisle containment solution is an accepted approach to thermal management. One option for businesses looking to increase rack density is to consider a localized cooling solution. Designed in a closed loop configuration, cooling can be supplied precisely as required, eliminating the need to adjust the entire data center.

After remaining steady for many years, rack power densities have begun to climb. Although 3 kW per rack was fairly common, 5–8 kW is now becoming the norm and can approach upwards of 25 kW in specialized applications. With these increased rack densities comes a corresponding increase in cooling needs. Matching the cooling capacity to the source of the heat is extremely efficient and scalable.

An important consideration for colocation customers to know is the impact of ASHRAE TC 9.9 standards that recommend that facility managers operate at higher server inlet temperatures and adjust humidity ranges to save energy. This can increase the risk that localized heat loads exceed the operating parameters of the IT equipment. Temperature spikes that exceed acceptable levels shorten equipment life and increase the risk of downtime to the business.

The Rittal Solution

Rittal thermal management products answer your thermal management demands. Rittal offers a comprehensive range of data center cooling solutions for row-based cooling in mid- and high-density applications.

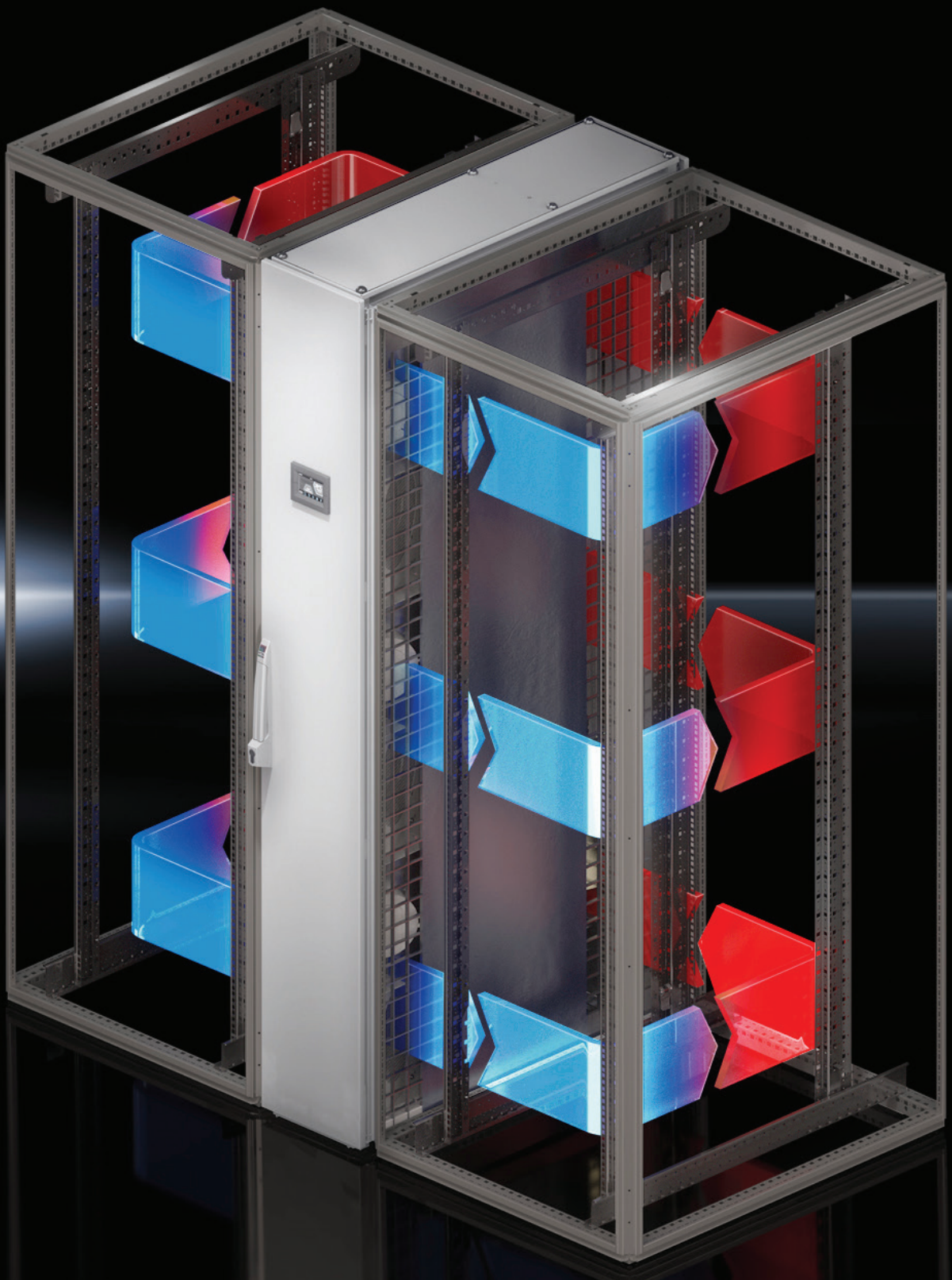
Our Data Center cooling solutions

- Direct expansion, close-coupled cooling in in-rack or in-row versions
- Chilled water, close-coupled cooling in in-rack or in-row versions

Rittal Is the leading manufacturer of closed-loop cooling, eliminating the need for aisle containment

Understanding Rittal LCP rack cooling

Closed-loop climate control systems like the Rittal LCP Inline DX supplies cool air from top to bottom in the front section of the enclosure. Hot exhaust air at the rear of the enclosure is drawn through the heat exchanger, where it is cooled before returning to the front again. Liquid cooling systems can remove large amounts of heat efficiently and address individual enclosure requirements without adjusting room parameters.



Closed-loop and in-row cooling solutions

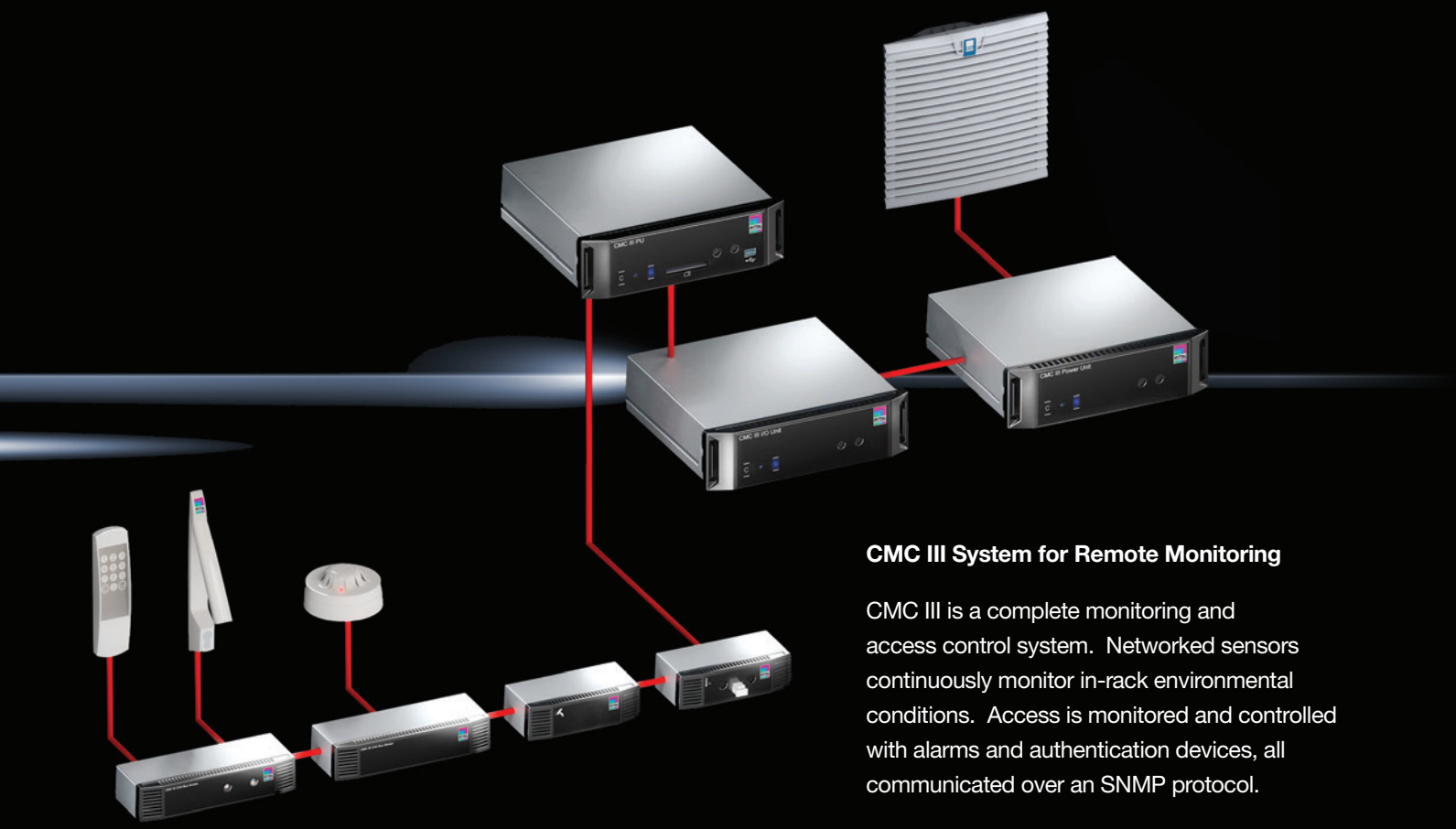
LCP Rack CW

The closed-loop LCP Rack CW units give you total control over the air path. Using a compact 12-inch-wide footprint, this next-generation system may even double your cooling capacity while occupying minimal additional floor space. The high-efficiency fans are located at the front of the LCP – on the cool side away from the highest level of heat – to extend fan life.

LCP Inline CW

In a bayed enclosure suite, LCP Inline CW creates a cold curtain down a row, maximizing efficient cooling. Optimized for aisle containment, in-line systems are available in two configurations: flush, in which moving air flows into the cold aisle, and protruding, where cold air flows from both sides laterally across the face of nearby enclosures. A higher water inlet temperature increases the proportion of free cooling, reducing operating costs.

Essential IT
Monitoring & security tools



CMC III System for Remote Monitoring

CMC III is a complete monitoring and access control system. Networked sensors continuously monitor in-rack environmental conditions. Access is monitored and controlled with alarms and authentication devices, all communicated over an SNMP protocol.

Colocation customers may have limited resources on staff to monitor conditions in their cage. Many businesses rely on their provider for security and maintenance of a stable environment. However, visibility into actual conditions can sometimes be difficult.

Data infrastructure equipment is subject to an array of physical threats, in addition to the danger of network intrusions and Distributed Denial Of Service (DDoS) attacks. As with any physical asset, it is important to manage risks associated with fire, theft or vandalism. Rittal offers a comprehensive range of monitoring and access solutions to provide peace of mind over assets in remote locations.

Computer Multi Control (CMC) III Comprehensive Monitoring Systems

As a data center's size grows, so can the complexity of the equipment needed to monitor environmental conditions and control access. Rittal's CMC III system solves this problem by using a CAN bus to support serial connection of multiple monitoring sensors to a central point.

The system collects numerous essential statistics, making them available for further processing by the network management system. In addition, the system allows IT managers to monitor all data center environmental conditions from a centralized position. This data stream can be monitored in real time via SNMP alerts, or aggregated for analysis and reporting to review performance for the business.

However, the CMC III can also act proactively, automatically initiating countermeasures and triggering alarms and sending notifications to designated parties, for example. CMC III systems can handle large-scale IT applications; a compact version is also available for use in smaller systems and single-enclosure applications. CMC III provides the visibility and control to manage remote access requirements, track environmental conditions and alert personnel to any threats to the valuable equipment contained in the enclosures.

Sensors ensure systems are protected & secure

CMC III system sensor options

Two important sensors are integrated as standard equipment into the CMC III Processing Unit: an infrared sensor that monitors the enclosure door and a temperature sensor that measures the temperature of the inflowing ambient air.

CMC III system configurations can also accommodate up to 32 other sensors, including sensors for:

- Temperature
- Humidity
- Vandalism
- Air flow
- Air pressure
- Smoke
- Water leaks
- Access
- Motion
- Active power
- Apparent power
- Supplied energy

Rittal – The System.

Faster – better – everywhere.

- TS IT Enclosures
- IT Cooling
- Monitoring & Security

Rittal North America LLC
Woodfield Corporate Center
425 North Martingale Road, Suite 400 • Schaumburg, Illinois 60173 • USA
Phone: 937-399-0500 • Toll-free: 800-477-4000
Email: rittal@rittal.us • Online: www.rittal.us

Rittal Systems Ltd.
6485 Ordan Drive • Mississauga, Ontario L5T 1X2 • Canada
Phone: 905-795-0777 • Toll-free: 800-399-0748
E-Mail: marketing@rittal.ca • Online: www.rittal.ca

Rittal Mexico
Dr. Roberto Gayol 1219–1B • Col. Del Valle Sur, 03100 • Mexico, D.F.
Phone: (+52) (55) 5559-5369 • Toll-free: 01 800 8 Rittal (748.825)
E-Mail: info@rittal.com.mx • Website: www.rittal.com.mx

www.rittalenclosures.com

US407 • 3/18

ENCLOSURES | POWER DISTRIBUTION | CLIMATE CONTROL | IT INFRASTRUCTURE | SOFTWARE & SERVICES

FRIEDHELM LOH GROUP