



# Rittal — IT Liquid Cooling Packages



Higher Efficiency & Performance  
Optimized for Today's Data Centers

# IT Liquid Cooling Packages

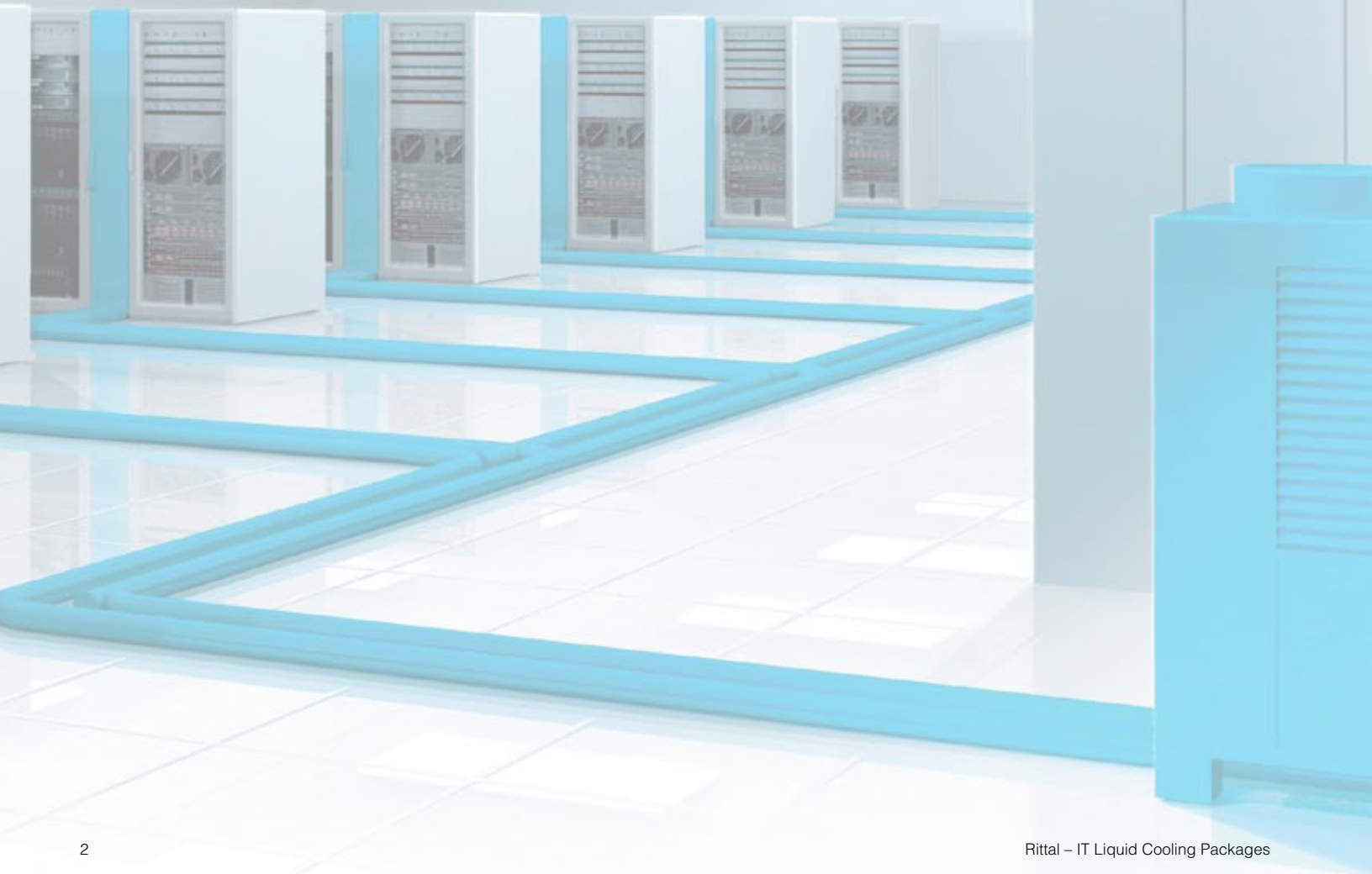
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## **High Efficiency. High Performance. High Density.**

Rittal leads the industry in developing high density cooling solutions that maximize performance while reducing energy consumption, utility costs, and negative impacts on the environment.

Rittal's scalable Liquid Cooling Packages (LCPs) can handle high heat densities (up to 44 kW per rack) and adapt to changing requirements as quickly as needed—all while reducing energy consumption and costs by up to 30-45%. At their core, Rittal LCPs are air-to-water heat exchangers that operate simply with connections to facility chiller systems that, in many cases, already exist on-site (Rittal can provide chiller systems if necessary). Heat energy from installed IT equipment is absorbed and removed from the rack, at the rack level, by water (which has a 3,500 times greater thermal capacity than air), and then fan modules circulate the cooled air created by this exchange through the equipment. Once the cycle is complete, the process is repeated.

Rittal LCPs are available in a variety of different styles that are intended to provide users with a tremendous amount of flexibility that allows for creative, efficient, and effective solutions that deliver unmatched returns for investment (many installations pay for themselves within two years of deployment via saved utility costs). Rittal Liquid Cooling Packages can be used in open or closed loop and hybrid configurations, with or without hot aisles and containment systems, and can either be designed into a new deployment or retrofitted to expand the efficiency of existing installations.



### Rittal LCP: Quick Facts

- Remove up to 44 kW of heat from the rack enclosure.
- Reduce energy consumption by up to 30-45%—better for the environment and your bottom line.
- Flexible and scalable—suitable for any size installation and can be easily retrofitted. Pay as you grow.
- Allow for maximum cooling economization—can effectively utilize higher temperature inlet water (59°F or warmer) than competitor offerings.

### Rittal vs Competition

- Can handle higher density loads more effectively.
- More efficient.
- Unmatched ROI—Thanks to utility savings, many installations pay for themselves within 2 years of deployment.
- Ability to use substantially warmer inlet water provides greater opportunities for economizing or “Free Cooling.”

### About Free Cooling

Free cooling refers to the hours of operation when a data center can be cooled effectively without using components of a facility's cooling system that consume large amounts of energy (usually the chiller compressor). When employing liquid cooling solutions, the closer the temperature of acceptable inlet water gets to that of the ambient air, while still removing the necessary heat from rack enclosures, the higher the potential for extended periods free cooling.

### About Closed & Open Loop Configurations

Data centers are typically organized in closed or open loop cooling configurations. In some cases, hybrid configurations utilizing both strategies, such as those made possible by Rittal's specialized LCP Hybrid with Perforated Front Door & Rear Aisle Containment, can be used. Generally speaking, closed loop systems are completely self-contained and consist of enclosures with solid external surfaces and integrated cooling units. This approach allows higher density loads to be handled, and for temperature-neutral expansion of the data center. In open loop configurations, rack enclosures with perforated front and rear doors are often employed, and the cooling solutions require some degree of interaction with the ambient data center environment in order to function properly.



### Available Models

- LCP+ (Closed Loop)
- LCP T3+ (Closed Loop)
- LCP Inline (Open Loop)
- LCP Extend (Open Loop)

All LCP units available in either RAL 7035 light gray or in sand texture black. LCP Hybrid systems w/ Perforated Front Door & Rear Aisle Containment also available upon request.

Shown at left—LCP Inline

# IT Liquid Cooling Packages

## Closed Loop - LCP+



The LCP+ is ideal for high density data center environments, as well as the natural environment—effectively handling loads of up to 44 kW while reducing energy consumption by up to 45%.

### LCP+ Part Numbers

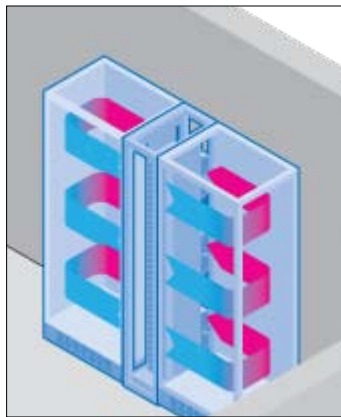
RAL 7035 light gray	<b>3301.480</b>
Sand texture black	<b>3301.485</b>

\*See specifications below.

<b>System Capacity</b>	Typical: 30 kW Maximum: 44 kW
LCP+ can support multiple cabinets with a variety of heat loads. Capacity is based on the following parameters: flow rate, $\Delta P$ , $\Delta T$ , Server $\Delta T$ , and desired air temperature.	
<b>Input specifications</b>	
AC input nominal voltage	208 V, single-phase, 3-wire, 60 Hz Frequency 50/60 Hz
Chilled water supply temperature	45°F to 70°F (Typical Range)
Maximum water flow rate	26 gpm
<b>Physical characteristics</b>	
Dimensions (HxWxD): 2000 x 300 x1200 mm	80 x 12 x 48 inches
Weight	506 lb / 230 kg
<b>Additional parameters</b>	
Airflow volume	2800 cfm
Cold air supply temperature	50°F to 85°F (Typical Range)
Fans	Standard Fans: 10.4A, 2.4 kW EC fan option: 1.2 kW
Water supply pressure	24.5 to 116 PSI
System noise	64 dBA (free field on reflective floor)
Water system connections	1-inch external thread connection; bottom or rear connection points for both chilled water supply and warm water lines.
Water supply quality	Purified cooling water. No lime scale or loose debris. Low hardness and low conductivity.
<b>Software Connectivity</b>	
Software compatibility	Compatible with the following operating systems: Microsoft Windows 2000 (Server, Advanced Server, Professional) Windows XP Home, Windows XP Professional, Windows 2003 Server (Web, Small Business), Windows 2003 Server (Standard, Enterprise), Windows 2003 Server R2 (Standard Enterprise), Windows Vista (Ultimate, Home Premium, Business), Windows XP on 64-bit architecture.
Support for multiple systems in the data center	Optional data center, Windows-based client/server software package (RiWatchIT) that provides real-time monitoring of critical conditions for the entire enterprise.
<b>Certifications</b>	
Certifications and Approvals	UL, CUL, CE, TÜV
<b>Country of Origin</b>	Manufactured in USA

# IT Liquid Cooling Packages

## Closed Loop - LCP T3+



The LCP T3+ provides a level of redundancy in high density cooling by combining the functionality of two independent LCP+ systems in a single unit to ensure availability while conserving valuable floor space.

### LCP T3+

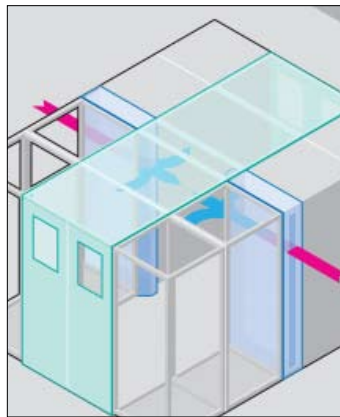
To order in either RAL 7035 light gray or sand texture black, please contact your Rittal representative or call 1-800-477-4000 to inquire.

\*See specifications below.

<b>System Capacity</b>	Typical: 20 kW Maximum: 30 kW
LCP+ can support multiple cabinets with a variety of heat loads. Capacity is based on the following parameters: flow rate, $\Delta P$ , $\Delta T$ , Server $\Delta T$ , and desired air temperature.	
<b>Input specifications</b>	
AC input nominal voltage	208 V, single-phase, 3-wire, 60 Hz Frequency 50/60 Hz
Chilled water supply temperature	59°F to 70°F (Typical Range)
Maximum water flow rate	26 gpm
<b>Physical characteristics</b>	
Dimensions (HxWxD): 2000 x 300 x1200 mm	80 or 87 x 12 x 48 inches
Weight	440 lb at 80" or 475 lb at 88" / 200 kg or 230 kg
<b>Additional parameters</b>	
Airflow volume	2800 cfm
Cold air supply temperature	59°F to 85°F (Typical Range)
Fans	Standard Fans: 10.2A, 2.3 kW EC fan option: 1.2 kW
Water supply pressure	24.5 to 116 PSI
System noise	64 dBA (free field on reflective floor)
Water system connections	1-inch external thread connection; bottom or rear connection points for both chilled water supply and warm water lines.
Water supply quality	Purified cooling water. No lime scale or loose debris. Low hardness and low conductivity.
<b>Software Connectivity</b>	
Software compatibility	Compatible with the following operating systems: Microsoft Windows 2000 (Server, Advanced Server, Professional) Windows XP Home, Windows XP Professional, Windows 2003 Server (Web, Small Business), Windows 2003 Server (Standard, Enterprise), Windows 2003 Server R2 (Standard Enterprise), Windows Vista (Ultimate, Home Premium, Business), Windows XP on 64-bit architecture.
Support for multiple systems in the data center	Optional data center, Windows-based client/server software package (RiWatchIT) that provides real-time monitoring of critical conditions for the entire enterprise.
<b>Certifications</b>	
Certifications and Approvals	CE, TÜV
<b>Country of Origin</b>	Manufactured in Germany

# IT Liquid Cooling Packages

## Open Loop - LCP Inline



The LCP Inline comes equipped with variable speed fans and a high efficiency heat exchanger coil to remove heat from the hot aisle and provide cool air to the cold aisle in a way that reduces energy consumption and utility costs.

### LCP Inline Part Numbers

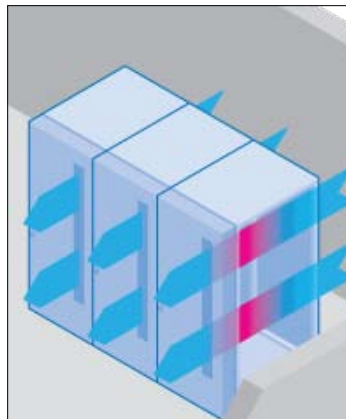
RAL 7035 light gray	<b>3301.470</b>
Sand texture black	<b>3301.475</b>

\*See specifications below.

<b>System Capacity</b>	Typical: 30 kW Maximum: 44 kW
LCP Inline can support multiple cabinets with a variety of heat loads. Capacity is based on the following parameters: flow rate, $\Delta P$ , $\Delta T$ , Server $\Delta T$ , and desired air temperature.	
<b>Input specifications</b>	
AC input nominal voltage	208 V, single-phase, 3-wire, 60 Hz Frequency 50/60 Hz
Chilled water supply temperature	45°F to 70°F (Typical Range)
Maximum water flow rate	26 gpm
<b>Physical characteristics</b>	
Dimensions (HxWxD): 2000 x 300 x1050 mm	80 x 12 x 42 or 48 inches
Weight	475 lb - 42" or 506 lb - 48" 215 kg / 230 kg
<b>Additional parameters</b>	
Airflow volume	2800 cfm
Cold air supply temperature	50°F to 85°F (Typical Range)
Fans	Standard Fans: 10.4A, 2.4 kW EC fan option: 1.2 kW
Water supply pressure	24.5 to 116 PSI
System noise	70 dBA (free field on reflective floor)
Water system connections	1-inch NPT external thread connection; bottom or rear connection points for both chilled water supply and warm water lines.
Water supply quality	Purified cooling water. No lime scale or loose debris. Low hardness and low conductivity.
<b>Software Connectivity</b>	
Software compatibility	Compatible with the following operating systems: Microsoft Windows 2000 (Server, Advanced Server, Professional) Windows XP Home, Windows XP Professional, Windows 2003 Server (Web, Small Business), Windows 2003 Server (Standard, Enterprise), Windows 2003 Server R2 (Standard Enterprise), Windows Vista (Ultimate, Home Premium, Business), Windows XP on 64-bit architecture.
Support for multiple systems in the data center	Optional data center, Windows-based client/server software package (RiWatchIT) that provides real-time monitoring of critical conditions for the entire enterprise.
<b>Certifications</b>	
Certifications and Approvals	UL, CUL, CE, TÜV
<b>Country of Origin</b>	Manufactured in USA

# IT Liquid Cooling Packages

## Open Loop - LCP Extend



The LCP Extend is perfect for retrofitting existing deployments to easily eliminate hot spots, conserve space, and enhance efficiency & performance by simply mounting the unit on the rear of an enclosure (in place of the door).

### LCP Extend Part Numbers

RAL 7035 light gray	<b>3301.490</b>
Sand texture black	<b>9960.627</b>

\*See specifications below.

<b>System Capacity</b>	Typical: 10 kW Maximum: 15 kW
LCP Extend can support multiple cabinets with a variety of heat loads. Capacity is based on the following parameters: flow rate, $\Delta P$ , $\Delta T$ , Server $\Delta T$ , and desired air temperature.	
<b>Input specifications</b>	
AC input nominal voltage	208 V, single-phase, 3-wire, 60 Hz Frequency 50/60 Hz
Chilled water supply temperature	59°F to 70°F (Typical Range)
Maximum water flow rate	12 gpm
<b>Physical characteristics</b>	
Dimensions (HxWxD): 2000 x 300 x1200 mm	80 x 24 x 6 inches
Weight	286 lb /130 kg
<b>Additional parameters</b>	
Airflow volume	1780 cfm
Cold air supply temperature	59°F to 85°F (Typical Range)
Fans	Standard Fans: 5.6A, 1.2 kW EC fan option: 1.2 kW
Water supply pressure	24.5 to 116 PSI
System noise	79 dBA (free field on reflective floor)
Water system connections	3/4-inch external thread connection; bottom or rear connection points for both chilled water supply and warm water lines.
Water supply quality	Purified cooling water. No lime scale or loose debris. Low hardness and low conductivity.
<b>Software Connectivity</b>	
Software compatibility	Compatible with the following operating systems: Microsoft Windows 2000 (Server, Advanced Server, Professional) Windows XP Home, Windows XP Professional, Windows 2003 Server (Web, Small Business), Windows 2003 Server (Standard, Enterprise), Windows 2003 Server R2 (Standard Enterprise), Windows Vista (Ultimate, Home Premium, Business), Windows XP on 64-bit architecture.
Support for multiple systems in the data center	Optional data center, Windows-based client/server software package (RiWatchIT) that provides real-time monitoring of critical conditions for the entire enterprise.
<b>Certifications</b>	
Certifications and Approvals	UL, CUL, CE, TÜV
<b>Country of Origin</b>	Manufactured in Germany

# Rittal — Your Choice for Comprehensive Cooling & Physical IT Infrastructure System Solutions

Rittal has everything you need to create efficient and reliable physical IT infrastructure systems that can expand performance, ensure availability, and help you to save money. We offer a wide range of rack enclosures, cooling, power management, security and monitoring products that are proven every day in data centers around the world—from small and medium deployments all the way to large, enterprise-level installations. Utilizing a modular architecture, we excel at delivering flexible, scalable solutions tailored to the specific needs of our customers. Whether you're looking for a simple rack enclosure, efficiency enhancements like aisle containment, or a complete infrastructure system to support high density loads, we have the products, service, and expertise to get your operations optimized and moving in the right direction.

Find out how Rittal can help you create the ideal solution for your needs. You can contact Rittal:

- By phone: 1-800-477-4000
- By visiting our website: [www.rittal-corp.com](http://www.rittal-corp.com)
- By email: [rittal@rittal-corp.com](mailto:rittal@rittal-corp.com)
- By Fax: 1-800-477-4003

## Related Rittal Literature

Please visit [www.rittal-corp.com/literature](http://www.rittal-corp.com/literature) to view in-depth product information and informative white papers that can help you get the most out of your applications.



### RimatriX5 IT Solutions Catalog

Everything for today's physical IT infrastructure including rack enclosures, high density cooling, power, security and monitoring products.



### CMC-TC Wireless Sensor Network

Security & monitoring for even the most complex IT infrastructures.



### Rittal White Paper 506: Cold Aisle Containment for Improved Data Center Cooling Efficiency

This paper documents the testing of a cold aisle containment system in a "live" data center.



### Rittal White Paper 507: Understanding Data Center Cooling Energy Usage & Reduction Methods

This white paper provides a clear understanding of the cooling and heat removal infrastructure requirements for high density data centers.

*The Rittal Corporation is the U.S. subsidiary of Rittal GmbH & Co. KG and manufactures the world's leading industrial and IT enclosures, racks and accessories, including climate control, power management and electronic packaging systems for industrial, data center, outdoor and hybrid applications. For more information about Rittal Corporation and its products, please visit [www.rittal-corp.com](http://www.rittal-corp.com) or call 1-800-477-4000.*

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