



Knürr CoolLoop®

Side-mounted modular
cooling unit for all server racks

from 10 to 30 kW

1.64 to 1.65



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for all server racks from 10 to 30 kW*

Knürr CoolLoop® is the world's first solution for data center server cooling that can be operated as both an open and closed system.

The system can be set to either pass the cooling power directly to the adjacent rack, or to supplement the data center's cooling. An elaborate system of valves ensures that the right cooling power is provided for every server.



The Knürr CoolLoop® is a water-cooled rack unit for smart, side-mounting on server racks.

It is a closed system with warm air suction from the rear and cool air expulsion at the front – both vertical over the entire rack height.



**made
in
Germany**

Modularity

The Knürr CoolLoop® is a modular setup that can be equipped with one to four fan units, so that the cooling can always be adapted to the actual requirement in the data center. The cooling power increases with the actual requirement and can be selected between 10kW and 30 kW per Knürr CoolLoop®. This ensures investment security for the data center operator, and always only requires input relative to the heat load that the data center develops.

Energy efficiency

Knürr CoolLoop® represents the highest standards in data room cooling. The center of focus here is on selecting the methods and procedures that save the most energy and using the most modern components, which is why the tried, tested and proven EC fan technology is used consistently. The lowest pressure loss in the air path is constantly optimized with the selection of the heat exchanger and moisture eliminator, which results in minimum energy consumption in the fans.

The Knürr CoolLoop® doesn't just set pressure loss standards. The relatively high cold water prerun temperature for optimum server cooling also ensures improved use of the cold water system with a high coefficient of performance (COP).

The design also enables a high level of free cooling, which facilitates significant savings potential with cold water generation.

Short air paths and the arrangement of the fans after the heat exchanger also help reduce energy consumption. This arrangement not only has a positive effect on the useful lifetime of the fans, it also increases the cooling airflow volume as a result of the higher air density. This in turn conserves resources and further reduces energy consumption.

Reliability

Knürr CoolLoop® makes no compromises when it comes to availability, reliability and safety. The fans can always be configured in n+1 redundancy. Two Knürr CoolLoops® can be positioned on one server rack to meet the highest requirements of a tier 4 data center. This then ensures complete 2n redundancy of the server rack cooling.

Control

The Knürr CoolLoop® sets new standards in controlling and monitoring. A regulating valve for adjusting the cooling water volume to the actual cooling requirement allows optimum server input air temperatures, which the user can set. The speed of the fans is also adjusted to the actual air volumes of the servers, whereby the server power loss can fluctuate from 0% to 100%.



A number of sensors ensure the highest level of safety. The following are monitored via a color display:

- Server input air temperatures
- Server output air temperatures
- Relative humidity
- Cold water prerun and postrun temperatures
- Cold water flow rate
- All doors monitored
- Water sensors in the collecting tray
- Smoke detector
- Warning lights on the rack
- Optional earliest smoke detection system and fire extinguisher system

All control and monitoring functions can be retrieved via an Ethernet interface. Integration into higher level network management systems is possible at no significant expense.

Variants

Knürr CoolLoop®

The cooling power can be set between additional data center cooling and direct cooling of the server rack beside the Knürr CoolLoop®.

CoolLoop®T

The cooling power is only available as a supplement to the data center cooling, thereby supporting the cooling power of the air circulation equipment. Together with the Knürr CoolFlex®, this combination presents the ideal addition for optimum medium power range server cooling.

CoolLoop®L

The most energy saving method of server cooling in data centers is cooling with closed air circuits inside the server rack. Knürr CoolLoop® enables implementation of this cooling principle, and especially with restrictions in the data center's structure heights, or with the required division of the rack access between IT and facility management. Closed solutions also boast very low noise generation levels.

Effective Cooling power*	Number of fans	Width	Height	Depth	Useable height	Weight (empty)	Electrical connection data
10 kW	1	300 mm	2000 mm 2200 mm 2400 mm	1200 mm / 1300 mm	42 U 46 U 50 U	127 kg	200 – 264 VAC 50/60 Hz 410 watt
20 kW	2	300 mm	2000 mm 2200 mm 2400 mm	1200 mm / 1300 mm	42 U 46 U 50 U	138 kg	200 – 264 VAC 50/60 Hz 820 watt
30 kW	3	300 mm	2000 mm 2200 mm 2400 mm	1200 mm / 1300 mm	42 U 46 U 50 U	149 kg	200 – 264 VAC 50/60 Hz 1230 watt
30 kW	3 + 1 (n + 1)	300 mm	2000 mm 2200 mm 2400 mm	1200 mm / 1300 mm	42 U 46 U 50 U	160 kg	200 – 264 VAC 50/60 Hz 890 watt

As at: 02/2008

Possible cooling water prerun temperatures: 4 to 20°C
 * Given nominal cooling power: with 12/18°C cooling water and 20 - 25°C server input air
 Cooling water requirement: 1.43 - 4.29 m³/h
 Pressure loss: 0.05 - 0.39 bar
 Number of fans: max. 4
 Input air temperature: 20 - 25°C (front)

Ambient temperature: up to 35°C
 Water amount: 8.6 l
 Cooling water connection: G 1 1/4" male thread, flat sealing
 condensation connection: 5/8" tube connector
 Max. operating pressure: 10 bar

Standard colors: RAL 7021 or RAL 7035

Knürr Server Racks and Knürr CoolLoop® (Super Computer Center Shenzhen, China)

