

Knürr CoolLoop®

Side-mounted cabinets unit for highly efficient cooling in server cabinets from 10 to 30 kW – with significant reductions in data centre energy costs



Knürr CoolLoop® –

*side-mounted modular cooling unit
for all server racks from 10 to 30 kW*

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

The system can be set to either directly cool the adjacent cabinet (closed system), or to supplement the data centre cooling (open system). A system of valves ensures that the correct cooling level is provided for every server.



The Knürr CoolLoop® is a water-cooled cabinet unit for side mounting on server cabinets.

It is a closed unit with warm air suction from the rear and cool air expulsion at the front – blown vertically over the entire height of the cabinet.



**made
in
Germany**

Modularity

The Knürr CoolLoop® has a modular setup that can be equipped with one to four fan units. Cooling is therefore adapted to suit the actual requirement within the data centre. The cooling range per Knürr CoolLoop® is 10 – 30 kW. Selection of the required capacity can be determined by the data centre operator. This ensures investment security for the data centre operator, and only provides the required cooling power relative to the heat load produced by the data centre.

Energy efficiency

The Knürr CoolLoop® represents the highest standards in data room cooling capacities. The main focus is selecting the methods and procedures that save the most energy by using the most modern components. This is why the tried, tested and proven EC fan technology is used consistently.

The air path is constantly monitored and adjusted through the heat exchangers and moisture eliminators, which results in minimum energy consumption by the fans.

The Knürr CoolLoop® not only sets standards with regard to pressure loss, but relatively high cold water pre run 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 to reduce energy consumption.

This arrangement not only increases 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

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

Control

The Knürr CoolLoop® sets new standards in control and monitoring. A regulating valve is used to adjust the cool water volume to optimise server input air temperature, which can be regulated by the operator. The speed of the fans is also adjustable to match the required air volume of the servers which can fluctuate between 0 – 100 percent.



Rear view with water connections

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

- Server input air temperatures
- Server output air temperatures
- Relative humidity
- Cold water prerun and postrun temperatures
- Cold water flow rates
- All doors
- Water sensors in the collecting tray
- Smoke detectors
- Warning lights on the cabinets
- Optional early smoke detection and fire extinguisher system

All control and monitoring functions can be retrieved via an Ethernet interface.

Integration into higher level network management systems is also possible at no significant expense.

Variants

Knürr CoolLoop®

The cooling power can be divided between additional data centre cooling and direct cooling of the server cabinet adjacent to the Knürr CoolLoop®.

CoolLoop®T

The cooling power is only available as a supplement to the data centre cooling, supporting the computer room air conditioning units (CRAC). Together with the Knürr CoolFlex®, cold aisle containment system, 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 centres is cooling with closed air circuits inside the server cabinet. Knürr CoolLoop® enables the implementation of this cooling principle, and especially with restrictions in the data centre's structure heights, or with the required division of the cabinet access between IT and facility management. Closed solutions also generate very low noise 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 HE 46 HE 50 HE	127 kg	200 – 264 VAC 50/60 Hz 410 watts
20 kW	2	300 mm	2000 mm 2200 mm 2400 mm	1200 mm / 1300 mm	42 HE 46 HE 50 HE	138 kg	200 – 264 VAC 50/60 Hz 820 watts
30 kW	3	300 mm	2000 mm 2200 mm 2400 mm	1200 mm / 1300 mm	42 HE 46 HE 50 HE	149 kg	200 – 264 VAC 50/60 Hz 1230 watts
30 kW	3 + 1 (n + 1)	300 mm	2000 mm 2200 mm 2400 mm	1200 mm / 1300 mm	42 HE 46 HE 50 HE	160 kg	200 – 264 VAC 50/60 Hz 890 watts

Last revision: 02/2008

Possible cooling water prerun temperatures:
* Given nominal cooling power:

4 to 20°C
With 12/18°C cooling water
and 20 - 25°C server input air

Cooling water requirement:
Pressure loss:
Number of fans:
Input air temperature:

1,43 - 4,29 m³/h
0,05 - 0,39 bar
max. 4
20 - 25°C (front)

Ambient temperature:
Water amount:
Cooling water connection:
Condensation connection:
Max. operating pressure:

Up to 35°C
8,6 l
G 1 1/4" male thread, flat sealing
5/8" tube connector
10 bar

Standard colors:

RAL 7021 or RAL 7035

Emerson Network Power is a consistent global technology leader and recognised expert that helps to secure business-critical processes, and by doing so contributes to a “business-critical continuity”.

A series of the most diverse applications, including the tried, tested and proven Knürr rack system solutions and the thermal management connected with them, ensure the required network stability with the highest technological adaptability at the same time.

Knürr system solutions in the world of information and network technology are part of an adaptive Emerson Network Power architecture, which flexibly adjusts to all changes concerning security/safety, high-density and all associated capacities. Companies profit in a sustainable and long-term way from the high IT availability, operative flexibility and impressive reduction in investment and operating costs.

Knürr AG is recognised around the world as one of the leading developers, manufacturers and distributors of rack and enclosure platforms in the indoor and outdoor area, including all relevant active/passive components of 19” structures and the technologies connected with them.

Knürr is certified in accordance with EN ISO 9001 and the EN ISO 14001 standard. Knürr’s quality management continuously guarantees the highest level of quality in all areas of the company.

Emerson Network Power

The global leader in enabling business-critical continuity

- | | | | |
|--------------------|--------------------------------|------------------------------|-----------------------------|
| ■ AC Power Systems | ■ Embedded Power | ■ Power Switching & Controls | ■ Site Monitoring |
| ■ Connectivity | ■ Integrated Cabinet Solutions | ■ Precision Cooling | ■ Surge & Signal Protection |
| ■ DC Power Systems | ■ Outside Plant | ■ Services | ■ Rack & Enclosure Systems |

Knürr logo, Emerson Network Power and the Emerson Network Power logo are trademarks and service marks of Emerson Electric Co. ©2008 Emerson Electric Co.

Knürr AG Global Headquarters

Mariakirchener Straße 38
94424 Arnstorf • Germany
Tel. +49 (0) 87 23 / 27 - 0
Fax +49 (0) 87 23 / 27 - 154
info@knuerr.com

Local contacts, please visit:

www.knuerr.com
www.emerson.com

While every precaution has been taken to ensure accuracy and completeness in this literature, Knürr AG assumes no responsibility, and disclaims all liability for damage resulting from use of this information or for any errors or omissions.

©2008 Knürr AG. All rights reserved throughout the world. Specifications subject to change without notice.

All names referred to are trademarks or registered trademarks of their respective owners.

®Knürr and the Knürr logo are registered trademarks of Knürr AG.

EmersonNetworkPower.com