



VERTIV™

Liebert®

DCL

up to 35 kW

Modular Rack Cooling



Vertiv™

Vertiv designs, builds and services mission critical technologies that enable the vital applications for data centers, communication networks, and commercial and industrial environments. We support today's growing mobile and cloud computing markets with our portfolio of power, thermal, infrastructure management products, software and solutions, all complemented by our global service network. Bringing together global reach and local knowledge, and our decades-long heritage including brands like ASCO®, Chloride®, Liebert®, NetSure™ and Trellis™, our team of experts is ready to take on your most complex challenges, creating solutions that keep your systems running—and your business moving. Together, we're building the future of a world where critical technologies always work.

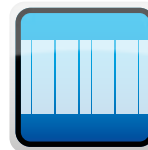
YOUR VISION, OUR PASSION.

VertivCo.com

Liebert® DCL, Granting Continuous Availability for Modular Rack Cooling

The Liebert DCL is the Thermal Management unit for lateral attachment to server cabinets offering a wide range of features designed specifically for data center applications.

The unit is available in two different architectures, closed or hybrid loop, and in multiple combinations of up to four server racks to match any customer needs.



Modularity

- Two cooling architectures for medium to high heat-load density
- Easy to retrofit on site
- Multiple combinations of up to four server racks.



Reliability

- N +1 fan redundancy
- Multi-level “fail-safe” controller
- Comprehensive alarm and monitoring functions
- Automatic emergency door opening.



Energy Efficiency

- Minimized power consumption through EC fans and dynamic fan control
- Long freecooling times thanks to a generously dimensioned heat exchanger.

Liebert® DCL, a New Step Ahead in Energy Savings



Liebert® DCL Closed Loop Cooling Architecture

Modular Combination Possibilities

- Fully contained airflow inside the cabinet or the cabinet row
- No heat load, no airflow in the room, significant noise attenuation
- Complete separation of IT equipment from room, accurately controlled cooling air temperature
- No special requirements for the room - raised floor is not required.

**Liebert® DCL with one
Vertiv™ Knürr® DCM Heavy-Duty Rack**



2-1 combination



**High-density Server Rack
cooled by two Liebert DCL**



4-1 combination



Liebert® DCL Hybrid Cooling Architecture

Modular Combination Possibilities

- “Hybrid” configuration - airflow is contained in the cabinet or cabinet row and room
- Cooling units and cabinets are open at the front and closed at the back
- No heat load in the room, warm air remains inside cabinets
- Distribution of cold air throughout the room, cold air reserve in case of cooling system failure
- Better alternative to hot aisle containment
- No raised floor required.

1 Vertiv™ Knürr® DCM rack cooled by 1 Liebert® DCL cooling unit



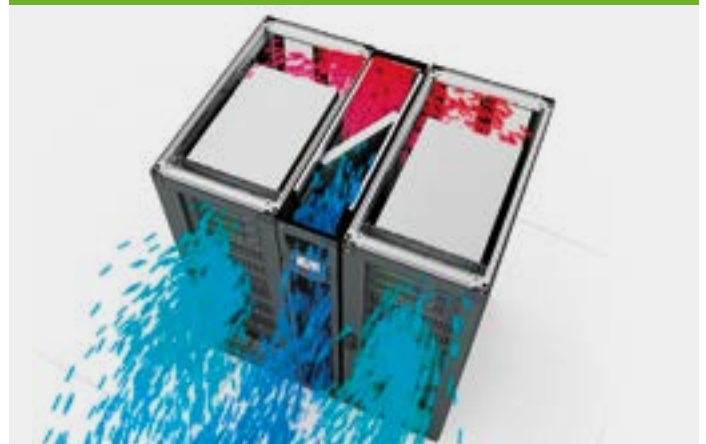
2-1 combination



1 Vertiv Knürr DCM rack cooled by 2 Liebert DCL cooling units



2-1 combination



Liebert® DCL, Ensuring Endless Availability Under All Working Conditions

An essential requirement for data center operators which is ensuring uninterrupted availability Liebert DCL guarantees by means of:

- "Fail-safe" functioning ("safe despite faults") in the event of a controller failure, the control valve switches the full volume of the chilled water flow to heat exchangers and the fans to full speed
- With integrated Vertiv™ ICOM™ Control, the Liebert DCL is able to monitor variations in temperature and humidity, instantly adapting its performance to meet variations in heat load
- Access control and data security guaranteed by HTTPS and SNMP V3
- Local and remote (via BMS) alarm management
- Fan speed automatically adjusted in real time to follow changing airflow requirements of IT equipment
- Even air distribution to all internal IT components
- Even temperature profile in the air supply
- n+1 fan redundancy means that the remaining fans support the volume flow required for cooling in the event of a fan failure
- Non return flaps to avoid bypass of cold air through stand-by unit or through a failed fan
- Redundant A/B power supply with automatic operation
- Dual-circuit heat exchanger option ensures redundancy of the water supply if two independent chilled water circuits are installed
- Automatic door opening provides additional overheating protection in case of cooling system failure.



Automatic emergency door opening option for server rack



System with Liebert DCL unit for highest availability

Liebert® DCL, Top-Tier Efficiency and Adaptability

Considering today's competitive market, no data center operator can ignore the issue of costs. Anyone who only thinks about the upfront costs or who wants to cut costs at the expense of reliability will be left dealing with unpleasant surprises later on.

Clever decision-makers will consider Vertiv's experience of ensuring low running costs with maximum availability.

- Greater power density in the data center results in better utilization of space and reduced building costs
- Reduced running costs due to customized operation
- High chilled water supply temperature increases the proportion of freecooling during refrigeration and improves the energy efficiency rating (EER) of the chiller
- The control valve adjusts cold water volume flow for the current operational situation

- Low water-side pressure drop leads to reduced pump power consumption
- Energy cost savings by adjusting the fan speed to the airflow level actually required using the embedded controller
- Low air pressure drop leads to the fans using less power
- EC fans guarantee energy efficient operation with maximum performance over the entire range of fan speeds
- Optional cooling capacity meter to inform the operator about cooling output of the unit (kW)
- Minimum possible investment for cooling components thanks to the

option to use up to four server racks for each Liebert® DCL

- Facilitates data center upgrade through its gradual expansion with no need to invest further in different cooling infrastructures
- Can be adapted to different shapes and spaces
 - Heights 2000 mm and 2200 mm
 - Depths 1200 and 1300 mm
- 2 cooling versions - Hybrid or Closed Loop - to meet cooling requirements of various end users
- Simple switchover between 2-way and 3-way valve by means of a ball valve in the bypass line.



Vertiv™ Knürr® DCM Heavy-Duty Rack server rack for cooling with Liebert DCL, Liebert power distribution modules and integrated cable management

Liebert DCL with Vertiv Knürr® DCM Rack

Liebert® DCL Performance Data, Features and Options

STANDARD FEATURES AND OPTIONS

- Field adjustable 2 way / 3 way valve
- 0-10V valve actuator
- Top / Bottom piping connections
- Energy efficient EC Fans
- Vertiv™ ICOM™ Control with large coldfire display "Fail Safe" design
- Unit provided with castors and levelling feet
- Return and supply air temperature sensors
- Rack temperature sensors
- Alarms monitoring.



ADDITIONAL OPTIONS

- Smoke detection
- Leak detection
- Automatic door release in case of cooling failure
- Door status monitoring
- Double CW feed version
- Condensate pump
- Double Power Supply
- BMS monitoring via multiple communication protocols
- Cooling capacity meter

	DC032	DC038
Net Sensible Cooling Capacity (kW)	30.0	34.6
Airflow (m³/h)	4850	6000
Number of Fans	4	6
Vertiv Knürr® DCM Units Height	42 U / 47 U	
Unit Height (mm)	2000 / 2200	
Unit Width (mm)	300	
Unit Depth (mm)	1200 / 1300	

Note: The performances shown above refer to an air inlet temperature of 37°C and chilled water temperature of 10/15°C for a closed loop configuration with racks on both sides

Customer Experience Center

Thermal Management

The Thermal Management Customer Experience Center located in Tognana (Padova - Italy), is specifically designed for customers to interact with our data center technologies. The center gives our customers the unique opportunity to witness pre-installation demonstrations, covering technical performance, interoperability and efficiency of Thermal Management solutions under a broad range of real field conditions. Customers visiting the center may also benefit from a comprehensive consultation from our R&D, engineering and application specialists.



R&D Validation Areas

Our Customer Experience Center features a dedicated area to test the state-of-the-art Liebert® DCL unit.

The scope of the Validation Areas is to provide customers, consultants and data center specialists with the most complete testing area to experience the capabilities of our technology at peak conditions.

All our measuring tools are also periodically tested to adhere to the current international quality procedure ISO9001. This guarantees that all our measurements are in line with the metrological laboratories' standards (Accredia/EA/ILAC) and that our equipment precision level is also compliant with the European EN14511 standard. Every customer visit is accompanied by a complete final report which includes each and every tested parameter. Customers are guided through a first-hand experience with full transparency and flexibility enabling them to achieve the highest standards of technical excellence.



Thermal Management Data Center Infrastructure for Small and Large Applications



Liebert® HPC

Wide range of high efficiency Freecooling Chillers from 40 kW to 1600 kW

- Designed specifically for data center applications and to work with Vertiv™ SmartAisle™
- Premium energy efficiency version
- Unique control capabilities with the Vertiv ICOM™ Control.

Liebert PDX Liebert PCW

Available from 5-220 kW

- Premium energy efficiency
- Eurovent certified performance
- Unique control capabilities with the Vertiv ICOM Control
- Liebert® EconoPhase™ available for the direct expansion system.



Liebert EFC

Indirect evaporative freecooling unit leveraging on data center know-how. Available from 100 to 350 kW

- Unique control capabilities optimizing water and energy costs
- Substantial reductions and savings in terms of electrical infrastructure.

Vertiv™ Trellis™ Platform

Vertiv's Trellis™ platform is a real-time infrastructure optimization platform that enables the unified management of data centre IT and facilities infrastructure. The Vertiv Trellis platform software can manage capacity, track inventory, plan changes, visualize configurations, analyze and calculate energy usage, and optimize cooling and power equipment. The Vertiv Trellis platform monitors the data center, providing a thorough understanding of system dependencies to help IT and facilities organizations keep the data center running at peak performance. This unified and complete solution, delivers the power to see the real situation in your data center, make the right decision and take action with confidence.



Liebert AFC

The Adiabatic Freecooling Chiller available from 500-1450 kW

- Integrated adiabatic pad system
- High freecooling capacity
- 100% compressor back up.

Vertiv SmartAisle™

- Aisle containment
- Provides highest energy efficiency
- Works with any Liebert Thermal Management unit.



Liebert CRV

Row-based high efficiency cooling units available from 10-60 kW in DX and CW versions

- Full airflow and cooling capacity modulation to match server load and to save energy
- Best footprint capacity with the highest efficiency
- Six different control modes to ensure greater flexibility.



Liebert DCL

Closed loop rack cooling

- Two different architectures: Closed Loop Hybrid Loop
- Multiple combinations for up to 4 server racks
- Dual CW coil version for redundancy.

SERVICES

Vertiv supports entire critical infrastructures with the largest global service organization and an extensive service offering, enhancing network availability and ensuring total peace of mind 24/7.

Our approach to servicing critical infrastructure covers all aspects of availability and performance: from single power and thermal management equipment to entire mission-critical systems.

The most comprehensive insurance for business protection can be obtained with a service program from Vertiv which includes access to Vertiv LIFE™ Services.

VERTIV™ LIFE™ SERVICES

Vertiv LIFE Services provides Remote Diagnostics and Preventive Monitoring for UPS and thermal management equipment.

Vertiv LIFE Services delivers increased uptime and operational efficiency by enabling continuous monitoring of your equipment, expert data analysis and field engineering expertise.

Through the data transferred from your equipment via Vertiv LIFE Services, our Remote experts gain the real-time insight and information needed to quickly identify, diagnose, and resolve any irregularities that may arise in operation, ultimately taking responsibility for your critical assets 24/7.



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