



Liebert®

HPC

Data Center Freecooling Chiller  
with 100% Compressor Back Up



## 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, 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.eu**

## Liebert® HPC: Data Center Freecooling Chiller Range Granting 100% Compressor Back Up

**Liebert® HPC Freecooling Chiller** is the ultimate chilled water-based solution for delivering efficiency and reliability.

Its freecooling and compressor functioning options make it ideal for data center applications with cooling needs ranging from 350 kW to above 20 MW.

The efficiency of this system is maximized when the freecooling chiller operates at inlet water temperatures which are higher than standard levels. Having been designed to operate at high water temperatures of up to 32°C, Liebert HPC perfectly integrates with high efficiency floor mount units such as the Liebert PCW and with Vertiv™ SmartAisle™ cold aisle containment, guaranteeing outstanding energy savings and longer year-round freecooling.

Moreover, the compressor functioning mode is designed to operate as a back up when external temperatures exceed freecooling limits.

These features, together with advanced components and Vertiv ICOM™ control logic, provide a complete cooling system solution, ensuring unparalleled data center energy savings and reliability.



## KEY FEATURES AND PERFORMANCES

- Unique design features allow the Liebert HPC to efficiently leverage its freecooling capability when external air temperatures exceed 20°C, thus ensuring a significant reduction in annual energy consumption
- Fast Start Ramp ensures immediate restoration of chiller availability within 20 seconds after a power restart
- Year-long leveraging of freecooling is achieved also at partial load, with an overall system efficiency increase as a result of the embedded Supersaver function
- Silent solutions ideal for noise-sensitive environments.

## Enhanced Freecooling at all Latitudes with Vertiv™ SmartAisle™ Containment

The Liebert® HPC freecooling chiller reaches its peak performance when operated in conjunction with floor mount units such as Liebert PCW and with Vertiv™ SmartAisle™ containment.

The combination of these systems allow chilled water temperatures to reach up to 20-26°C Leaving Water Temperature (LWT) - Entering Water Temperature (EWT), further driving performance to its peak.

As shown in the following graphs, **a data center located in Oslo with a 1000 kW**

**cooling load is able to deliver energy savings worth more than 160,000 €/year through the use of a freecooling chiller.**

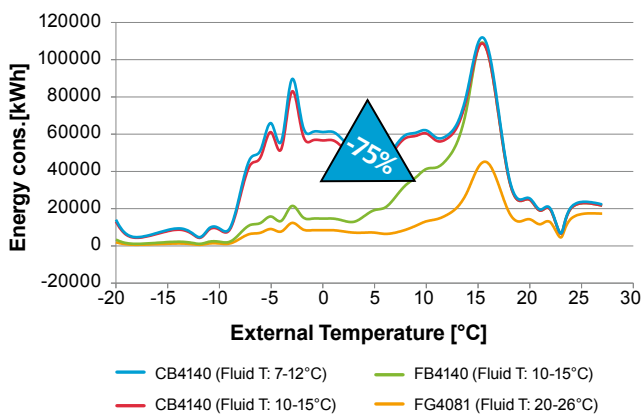
These savings have been proven comparing the operation of the Liebert HPC FG4-081 model freecooling chiller at 20-26°C (LWT-EWT), to a CB4-140

model chiller (60% larger) working at conventional temperatures from 7-12°C (LWT-EWT), with the same load.

Energy savings are substantial also in warmer climates, considering a 1000 kW Athens-based data center delivers savings of **130,000 €/year!**

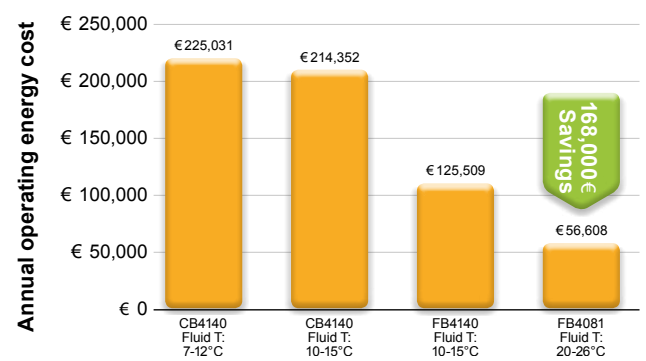
### Liebert HPC Freecooling Chiller with Vertiv SmartAisle Vs Standard Installation

1000 kW load - Oslo



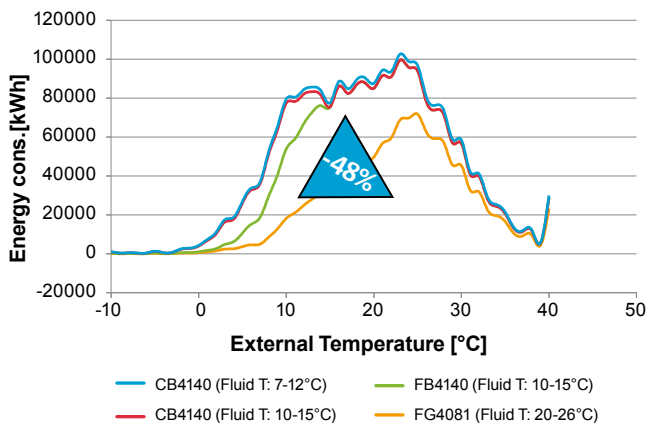
### Liebert HPC Freecooling Chiller with Vertiv SmartAisle Annual Operating Costs and Savings

1000 kW load - Oslo



### Liebert HPC Freecooling Chiller with Vertiv SmartAisle Vs Standard Installation

1000 kW load - Athens



### Liebert HPC Freecooling Chiller with Vertiv SmartAisle Annual Operating Costs and Savings

1000 kW load - Athens



## Liebert® HPC Freecooling Chiller Technology Maximizes Benefits for Data Centers



### Energy Efficiency

Maximized as a result of:

- Optimized freecooling system, achieved with integrated freecooling coils, hydraulic circuits and Vertiv™ ICOM™ control logic management
- New, advanced DX evaporator optimized for R134a, with counter flow configuration:
  - PHE (6-8 fan models)
  - Shell & Tube (10 - 20 fan models)
- Electronic Expansion Valve (EEV) guaranteeing stability and efficiency in all conditions
- Compressor design optimization guaranteeing high efficiency particularly at partial load.

Among the Liebert HPC range, the “G” version freecooling chiller delivers the highest efficiency at elevated inlet water temperatures, making it ideal for data centers and industrial applications in which water temperatures are higher than standard.

The Liebert HPC “G” version is also optimized for applications with extreme external environmental conditions, such as the tropical temperatures found in areas similar to the Middle East.



### EC Fans (Air cooled models)

High efficiency EC motors guarantee a 25% saving in energy consumption compared to traditional AC motors. EC fans are further optimized for operation, eliminating electromagnetic-related noise and minimizing overall sound emission.



### Screw Compressors

Each freecooling chiller features two semi-hermetic screw compressors, specifically designed and optimized for water chillers used in air conditioning applications. Excellent performance is ensured both at full and partial load as a result of the continuous capacity control system integrated within the Vertiv ICOM control logic. The screw compressors further ensure operation with minimized noise, making the unit ideal for noise-sensitive installations.



### Dynamic Demand Limit for Absorbed Power Control

With the optional energy meter, Liebert HPC is able to control the amount of power absorbed and avoid levels exceeding the user-defined power limits. This further allows for the optimization of electrical supply lines and the generator sizing.



### Electronic Expansion Valve

This valve is designed to constantly optimize the refrigeration circuit's performance in order to achieve the highest efficiency also at partial load. The Liebert HPC freecooling chiller range features the Electronic Expansion Valve as standard. The relevant valve management software is also embedded in the Vertiv ICOM control function.



### Increased Reliability with Double Electrical Panel

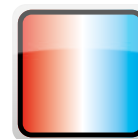
From 700 kW nominal capacity upwards, the Liebert HPC-L models are equipped with two electrically independent control panels, both of which are supplied with dedicated Vertiv ICOM electronic control boards.

This allows the optimization of electrical supply line sizing and further ensures intelligent management of maintenance operations. The dedicated electronic control boards guarantee one functioning chiller line continues to operate while the other is being serviced.



### Minimized Noise Levels

Audible noise is minimized for silent operation as a result of HyBlade EC Fans and customized acoustic insulation.



### Embedded Supersaver Function

This unique functioning mode can be set up in combination with the Liebert® PCW, floor-mount units, in order to additionally enhance energy savings, thus optimizing the Seasonal Energy Efficiency Ratio (SEER). This function allows the floor mount units to communicate via LAN with the freecooling chiller, automatically increasing water temperature when the thermal load decreases.

This in turn enhances the system's seasonal efficiency and freecooling operating time.



### Vertiv™ ICOM™ Control

Vertiv ICOM electronic control delivers extreme flexibility of both system and working conditions.

The Vertiv ICOM software has been developed by Vertiv to specifically ensure the intelligent control of units within dynamic data center environments via:

- Dedicated algorithm ensuring minimized fan speed for both low noise (L) and silent (Q) versions
- Networking of up to 16 freecooling chillers through teamwork mode, stand-by and cascade operation.



### Freecooling No Glycol Solution

For specific installations in which glycol is not permitted, Vertiv has developed a dedicated No Glycol Freecooling version which restricts the glycol fluid to the external unit only.

The entire system, from thermal insulation to the optimized sizing of pumps and heat exchangers, ensures the highest reliability and energy saving.



### Immediate Availability with Fast Start Ramp

Fast Start Ramp is the innovative technology which ensures immediate restoration of chiller operation following a power restart. This reliable technology allows the activation sequence to begin 20 seconds after power restoration, ensuring water temperatures remain stable.

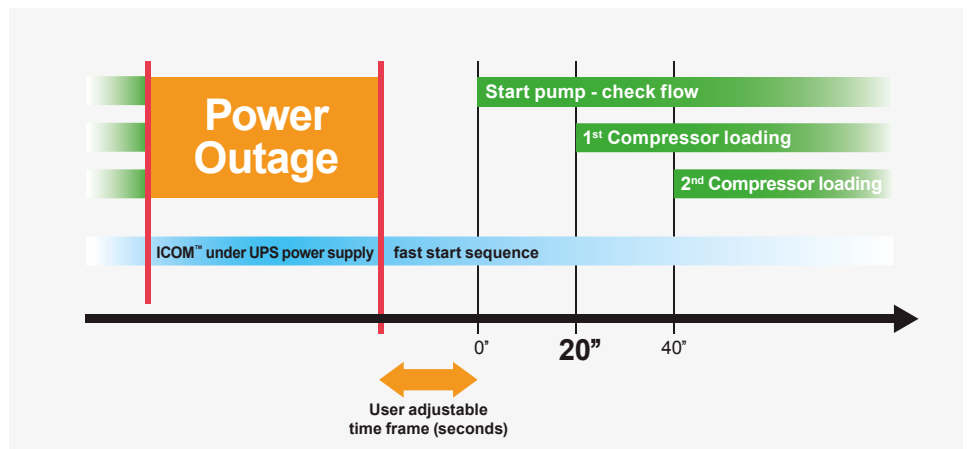


### Dual Power Supply

Units can be supplied with dual electrical power connections in which one is powered by the mains line or generator and the other by a UPS, both guaranteeing continuous supply to the electronic controller in all conditions.

This configuration allows the Fast Start Ramp to be initiated following a power restart.

The dual supply can further include the pumps and fans operating under the UPS line, enabling freecooling operation also when the UPS is the sole power source.



Liebert® HPC Fast Start Ramp sequence



Vertiv ICOM electronic control developed by Vertiv to address the specific needs of the data center.

## Liebert® HPC Freecooling and Aircooled Versions

The Liebert® HPC freecooling chiller achieves excellent energy savings for data centers as a result of its freecooling-oriented design. The main source of cooling is drawn from the outside air temperature, which is then transferred to the data center floor mount units by means of high efficiency fans and pumps.

Liebert HPC further utilizes in-built compressors for operation when outside air temperatures exceed freecooling limits.

The design, optimized for data center applications, allows operation with inlet water temperatures up to 32°C, thus increasing both freecooling and mechanical cooling efficiencies. These features ensure optimum operation in a vast range of environments, from the cool climate of Northern and Central Europe to warmer locations such as the Middle-East.

Furthermore, the high inlet water temperature capability of the Liebert HPC also leads to optimizations in chiller sizing. This is the result of the unit's ability to manage the requested cooling capacity efficiently within an optimized footprint, thus minimizing capital investment costs.

### STANDARD FEATURES

- Integrated freecooling system (Freecooling models)
- EC Fans (standard with “G” and “Q” versions)
- Intelligent fan control based on external temperature or time frame
- Electronic expansion valve
- Semi-hermetic screw compressors
- R134a refrigerant
- Evaporator water flow switch
- Part winding / Star delta (depending on compressor size)
- Double set point
- Shifting set point
- Auto unit Delta T setting
- Advanced low condensing pressure control
- Demand limit
- Intelligent inrush current control (air cooled)
- Remote on/off relay
- Voltage free contact:
  - chiller/pump operation
  - compressors operation
  - general alarm
  - general warning
  - freecooling status (configurable).

### Additional Options

- Star delta starting method
- Economizer
- On board pump group - inverter pumps
- Hydraulic kit
- Double power supply and Fast Start Ramp
- Compressor suction shut off valve
- Evaporator-pipes-pumps trace heating
- No-Glycol
- Heat Recovery
- Electrical panel heaters
- Energy meter
- Condensing coil filters
- Protection grid
- Compressors power factor correction
- Anti vibration mount kit, rubber or spring type
- Full range monitoring possibilities: Modbus and Bacnet (485 and IP), SNMP, HTTP/Web.





## Liebert® HPC Water Cooled Version

Liebert® HPC-W is the product line of water cooled chillers, from 600 to 2100 kW, designed to combine the best performance in terms of efficiency and reliability, while granting minimum environmental impact. The use of shell & tube heat exchangers and semi-hermetic screw compressors specifically designed for applications with R134a enable these models to feature high energy efficiency. The Seasonal Energy Performance Ratio (SEPR) is aligned with the European Minimum Energy Performance Standards in place from 2018.

### Benefits for Data Center Electrical Infrastructure

Manifold features are available to adapt the chiller to the typical data center environment: fast restart after power failure (both compressors are back on within one minute after a power failure), energy meter and possibility to limit the current consumption, intelligent software management of the inrush peak current, and the embedded possibility to monitor the power consumption and the cooling capacity provided. The high water temperature (WHT) version, moreover, is optimized for 26-20°C chiller water temperatures and up to 32°C chilled water inlet. All versions are available with compressors insulation compartment for low noise applications.

### STANDARD FEATURES

- 2 Semi-hermetic screw compressors
- Electronic expansion valve
- Shell & tube heat exchangers
- R134a refrigerant
- Part winding / Star delta (depending on compressor size)
- Double set point
- Shifting set point
- Auto unit Delta T setting
- Advanced low condensing pressure control
- Demand limit
- Remote on/off relay
- Voltage free contact:
  - chiller/pump operation
  - compressors operation
  - general alarm
  - general warning
  - configurable

### Additional Options

- Evaporator water flow switch
- Double power supply and Fast Start Ramp
- Energy meter
- 7" large touch screen display
- Compressor suction shut off valve
- Compressors insulation compartment
- Compressors power factor correction
- Anti-vibration mount kit, rubber type
- Full range monitoring possibilities: Modbus and Bacnet (485 and IP), SNMP, HTTP/Web.



Liebert® HPC-W - Low Noise Version



Liebert® HPC-W

## Liebert® HPC: Remote Monitoring Service and Connectivity

### 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.



### Basic Web Access

Basic operational information can be made available through the monitoring feature offered by the Vertiv ICOM™ Control over Ethernet. A web browser is the only requirement needed for the unit to communicate directly with the local or remote web interface.

### Monitoring and Control Through Existing Network Via your Web Browser

The Liebert HPC system can be fitted with a Vertiv IntelliSlot® Unity Card allowing full advantage to be taken of the Ethernet network and remote monitoring from your computer desktop, network operations center or any network access simply utilizing a standard web browser. A standard web browser, via HTTP protocol or Network Management System software via SNMP protocol, can be used to access the unit information.

### Monitoring Integration with Existing Building Management System

If required, Liebert® HPC can be monitored through an existing Building Management System using one of the many open protocols supported: Modbus, Bacnet, SNMP, HTTP, LonWorks. Depending on the protocol adopted, the communication hardware can be either an internal card (Vertiv™ Intellislot®) or an external adapter.

### Vertiv™ Nform™ Software Centralized Management

Utilizing the SNMP and Web technologies integrated in each Vertiv IntelliSlot Unity Card, Vertiv Nform centrally manages alarm notifications and provides an intuitive interface to access critical status information. Vertiv Nform allows critical system information to be readily available to support personnel wherever they are, increasing responsiveness to alarm-event conditions, thus allowing IT organizations to maximize their system availability.

### Vertiv™ SiteScan® Web Control, Data Capture, Energy Management and Planning

For customers who require extensive management of critical system equipment spanning multiple locations in an ever-moving global enterprise, Vertiv SiteScan Web will centrally manage critical equipment and give the power to move beyond the event responsive service paradigm.

### Vertiv SiteScan Web does it all

- Real-Time Monitoring and Control
- Event Management and Reporting
- Data Analysis and Trending
- Building Management Integration .

Vertiv SiteScan Web is a comprehensive critical system management solution dedicated to ensuring reliability through graphics, event management and data export. The standard web interface allows users easy access from anywhere, anytime.



## Customer Experience Center

### Thermal Management

Vertiv's Customer Experience Center located in Tognana (Padova - Italy), is specifically designed for customers to interact with Thermal Management 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.

### The Freecooling Chiller Validation Area

Vertiv Thermal Management Customer Experience Center not only hosts our chiller production plant, but also features a dedicated area to test the state-of-the-art Liebert® HPC chiller range. Each Liebert HPC unit undergoes stringent end of line testing in our Freecooling Chiller Validation Area prior to shipment.

The state-of-the-art equipment and features of the cabins ensure high precision measurement of a wide range of testing conditions. The main testing cabin has an internal volume of 650 m<sup>3</sup> and is designed to perform high precision tests with simulated ambient temperatures of up to 55°C.

### Customer Witness Tests

Vertiv customers are given the possibility of witnessing unit testing first-hand in our dedicated Customer Experience Center. The range of witness tests offered include:

- **Performance Test:** cooling capacity, power absorption and efficiency are measured at requested working conditions. These tests adhere to the procedures outlined in the EN 14511 standard
- **Dry Run Test:** all end of line functional testing is repeated with the customer
- **Sound Test:** the acoustic emissions of the unit are measured following the ISO 3744 standard procedure.



*Witness test cabins have been designed to optimize the reliability of unit testing, ensuring that real installation conditions are simulated in order to confirm the unit's guaranteed performance.*



## Liebert® HPC-M: Freecooling Chiller Range

G MODELS		FG4036	FG4039	FG4046	FG4052	FG4058	FG4066
<b>R134a Refrigerant</b>							
Cooling Capacity <sup>1</sup>	kW	507	575	667	751	835	945
Freecooling Capacity <sup>1</sup>	kW	471	483	587	601	719	743
Total Power Input <sup>1</sup>	kW	134	155	165	191	210	245
Unit EER <sup>1</sup>		3.78	3.72	4.05	3.92	3.97	3.86
Cooling Capacity <sup>2</sup>	kW	371	424	479	543	595	679
Freecooling Capacity <sup>2</sup>	kW	277	287	344	354	422	440
Total Power Input <sup>2</sup>	kW	119	136	145	167	184	213
Unit EER <sup>2</sup>		3.12	3.12	3.3	3.25	3.23	3.19
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	79.5	79.5	80	80	81	81
PWL (Sound Power Level) <sup>4</sup>	dB(A)	100	100	101	101	102	102
Evaporator Type		Plate Heat Exchanger		Shell & Tube			
Dimensions - L x D x H	mm	5017x2260x2570		6013x2260x2570	7009x2260x2570		
Operating Weight	kg	5236	5282	7278	7301	8008	8089

Q MODELS		FQ4031	FQ4036	FQ4039	FQ4046	FQ4052	FQ4058	FQ4066
<b>R134a Refrigerant</b>								
Cooling Capacity <sup>2</sup>	kW	298	349	396	449	506	567	628
Freecooling Capacity <sup>2</sup>	kW	165	216	223	268	275	329	335
Total Power Input <sup>2</sup>	kW	104	112	134	139	164	180	213
Unit EER <sup>2</sup>		2.88	3.12	2.97	3.22	3.08	3.15	2.95
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	65	65.5	65.5	66	66	67	67
PWL (Sound Power Level) <sup>4</sup>	dB(A)	85	86	86	87	87	88	88
Evaporator Type		Plate Heat Exchanger			Shell & Tube			
Dimensions - L x D x H	mm	4021x2260x2570	5017x2260x2570		6013x2260x2570	7009x2260x2570		
Operating Weight	kg	4371	5046	5092	7012	7032	7728	7807

L MODELS		FL4031	FL4036	FL4039	FL4046	FL4052	FL4058	FL4066	FL4078
<b>R134a Refrigerant</b>									
Cooling Capacity <sup>2</sup>	kW	312	342	413	439	528	569	658	746
Freecooling Capacity <sup>2</sup>	kW	191	194	256	257	316	320	387	394
Total Power Input <sup>2</sup>	kW	103	120	133	146	165	188	213	270
Unit EER <sup>2</sup>		3.02	2.86	3.1	3	3.2	3.02	3.09	2.76
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	70	70	70.5	70.5	71	71	72	72
PWL (Sound Power Level) <sup>4</sup>	dB(A)	90	90	91	91	92	92	93	93
Evaporator Type		Plate Heat Exchanger				Shell & Tube			
Dimensions - L x D x H	mm	4021x2260x2570		5017x2260x2570		6013x2260x2570		7009x2260x2570	
Operating Weight	kg	4262	4310	4982	5742	6920	6941	7697	7892

B MODELS		FB4031	FB4036	FB4039	FB4046	FB4052	FB4058	FB4066	FB4078	
<b>R134a Refrigerant</b>										
Cooling Capacity <sup>2</sup>	kW	318	348	396	447	506	578	644	762	
Freecooling Capacity <sup>2</sup>	kW	202	206	212	273	280	341	348	421	
Total Power Input <sup>2</sup>	kW	105	121	143	148	171	191	221	271	
Unit EER <sup>2</sup>		3.02	2.89	2.78	3.03	2.85	3.03	2.91	2.81	
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	78	78	78	78.5	78.5	79	79	80	
PWL (Sound Power Level) <sup>4</sup>	dB(A)	98	98	98	99	99	100	100	101	
Evaporator Type		Plate Heat Exchanger					Shell & Tube			
Dimensions - L x D x H	mm	4021x2260x2570			5017x2260x2570		6013x2260x2570		7009x2260x2570	
Operating Weight	kg	4322	4371	4416	5852	5946	7100	7154	8104	

<sup>1</sup> Cooling capacity at the following conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; coolant inlet/outlet temperature 26/20 °C; ethylene glycol 30% Freecooling capacity at the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 10°C; coolant inlet temperature 26°C; ethylene glycol 30%;

<sup>2</sup> Cooling capacity at the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; coolant inlet/outlet temperature 15/10 °C; ethylene glycol 30%

<sup>3</sup> Measured at outdoor temperature of 35°C; 1m from the unit; free field conditions; according to ISO 3744

<sup>4</sup> At outdoor temperature of 35°C; calculated according to ISO 3744

## Liebert® HPC-M: Air-cooled Chiller Range

G MODELS		CG4036	CG4039	CG4046	CG4052	CG4058	CG4066
<b>R134a Refrigerant</b>							
Cooling Capacity <sup>1</sup>	kW	528	614	679	780	866	982
Total Power Input <sup>1</sup>	kW	132	150	161	184	202	234
Unit EER <sup>1</sup>		3.99	4.1	4.21	4.24	4.28	4.21
Cooling Capacity <sup>2</sup>	kW	353	412	447	516	563	644
Total Power Input <sup>2</sup>	kW	115	129	140	157	173	197
Unit EER <sup>2</sup>		3.08	3.2	3.2	3.3	3.25	3.26
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	79.5	79.5	80	80	81	81
PWL (Sound Power Level) <sup>4</sup>	dB(A)	100	100	101	101	102	102
Evaporator Type		Plate Heat Exchanger		Shell & Tube			
Dimensions - L x D x H	mm	5017x2260x2570		6013x2260x2570	7009x2260x2570		
Operating Weight	kg	4476	4522	6268	6288	6837	6854

Q MODELS		CQ4031	CQ4036	CQ4039	CQ4046	CQ4052	CQ4058	CQ4066
<b>R134a Refrigerant</b>								
Cooling Capacity <sup>2</sup>	kW	292	334	387	421	483	542	603
Total Power Input <sup>2</sup>	kW	97	107	124	131	152	166	196
Unit EER <sup>2</sup>		3.03	3.13	3.13	3.21	3.18	3.26	3.07
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	65	65.6	65.6	66	66	67	67
PWL (Sound Power Level) <sup>4</sup>	dB(A)	85	86	86	87	87	88	88
Evaporator Type		Plate Heat Exchanger			Shell & Tube			
Dimensions - L x D x H	mm	4021x2260x2570	5017x2260x2570		6013x2260x2570	7009x2260x2570		
Operating Weight	kg	3742	4286	4332	5996	6020	6557	6579

L MODELS		CL4031	CL4036	CL4039	CL4046	CL4052	CL4058	CL4066	CL4078
<b>R134a Refrigerant</b>									
Cooling Capacity <sup>2</sup>	kW	299	334	396	426	494	544	631	721
Total Power Input <sup>2</sup>	kW	99	112	129	136	156	174	196	249
Unit EER <sup>2</sup>		3.02	2.98	3.08	3.13	3.16	3.12	3.22	2.9
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	70	70	70.5	70.5	71	71	72	72
PWL (Sound Power Level) <sup>4</sup>	dB(A)	90	90	91	91	92	92	93	93
Evaporator Type		Plate Heat Exchanger				Shell & Tube			
Dimensions - L x D x H	mm	4021x2260x2570	5017x2260x2570		6013x2260x2570	7009x2260x2570			
Operating Weight	kg	3633	3679	4222	4930	5910	5928	6469	6674

B MODELS		CB4031	CB4036	CB4039	CB4046	CB4052	CB4058	CB4066	CB4078
<b>R134a Refrigerant</b>									
Cooling Capacity <sup>2</sup>	kW	303	334	388	426	494	544	618	736
Total Power Input <sup>2</sup>	kW	101	115	131	141	159	180	205	251
Unit EER <sup>2</sup>		3	2.89	2.96	3.02	3.1	3.03	3.02	2.93
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	78	78	78	78.5	78.5	79	79	80
PWL (Sound Power Level) <sup>4</sup>	dB(A)	98	98	98	99	99	100	100	101
Evaporator Type		Plate Heat Exchanger				Shell & Tube			
Dimensions - L x D x H	mm	4021x2260x2570			5017x2260x2570	6013x2260x2570		7009x2260x2570	
Operating Weight	kg	3691	3740	3785	5040	5132	6089	6112	6884

<sup>1</sup> Cooling capacity at the following conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; water inlet/outlet temperature 26/20 °C; ethylene glycol 0%

<sup>2</sup> Cooling capacity at the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; water inlet/outlet temperature 12/7 °C; ethylene glycol 0%

<sup>3</sup> Measured at outdoor temperature of 35 °C; 1m from the unit; free field conditions; according to ISO 3744

<sup>4</sup> At outdoor temperature of 35°C; calculated according to ISO 3744



Liebert® HPC-L: Freecooling Chiller Range

G MODELS		FG4069	FG4075	FG4081	FG4087	FG4093	FG4100	FG4107	FG4122	
<b>R134a Refrigerant</b>										
Cooling Capacity <sup>1</sup>	kW	1044	1098	1166	1207	1247	1424	1502	1555	
Freecooling Capacity <sup>1</sup>	kW	849	857	876	870	872	1154	1161	1170	
Total Power Input <sup>1</sup>	kW	272	1044	335	362	388	381	408	525	
Unit EER <sup>1</sup>		3.84	3.65	3.48	3.33	3.21	3.73	3.68	2.96	
Cooling Capacity <sup>2</sup>	kW	766	810	867	899	929	1046	1107	1165	
Freecooling Capacity <sup>2</sup>	kW	506	511	515	519	521	689	696	705	
Total Power Input <sup>2</sup>	kW	237	260	286	306	326	327	349	437	
Unit EER <sup>2</sup>		3.23	3.12	3.03	2.93	2.85	3.2	3.17	2.66	
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	84	84	84	84	84	85	85	85	
PWL (Sound Power Level) <sup>4</sup>	dB(A)	106	106	106	106	106	107.5	107.5	107.5	
Evaporator Type		Shell & Tube								
Dimensions - L x D x H	mm	9586x2308x2581					11578x2308x2581			
Operating Weight	kg	11627	11639	11718	11790	11991	13544	13808	14591	

Q MODELS		FQ4068	FQ4074	FQ4080	FQ4086	FQ4092	FQ4099	FQ4106	FQ4121	FQ4139	
<b>R134a Refrigerant</b>											
Cooling Capacity <sup>2</sup>	kW	695	731	776	882	910	951	1003	1115	1211	
Freecooling Capacity <sup>2</sup>	kW	389	391	394	518	519	522	525	629	644	
Total Power Input <sup>2</sup>	kW	246	277	312	299	319	345	377	435	472	
Unit EER <sup>2</sup>		2.82	2.64	2.49	2.95	2.85	2.76	2.66	2.56	2.56	
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	65.5	65.5	65.5	66	66	66	66	67	67	
PWL (Sound Power Level) <sup>4</sup>	dB(A)	87.5	87.5	87.5	88.5	88.5	88.5	88.5	90	90	
Evaporator Type		Shell & Tube									
Dimensions - L x D x H	mm	9586x2308x2543			11578x2308x2543				13570x2308x2543		
Operating Weight	kg	11508	11517	11595	13104	13300	13328	13588	15671	15773	

L MODELS		FL4068	FL4074	FL4080	FL4086	FL4092	FL4099	FL4106	FL4121	FL4139	
<b>R134a Refrigerant</b>											
Cooling Capacity <sup>2</sup>	kW	737	778	830	929	963	1008	1067	1205	1287	
Freecooling Capacity <sup>2</sup>	kW	460	464	469	611	614	619	624	474	762	
Total Power Input <sup>2</sup>	kW	243	269	298	296	315	336	362	417	459	
Unit EER <sup>2</sup>		3.04	2.9	2.79	3.14	3.06	3	2.95	2.89	2.80	
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	73	73	73	74	74	74	74	75	75	
PWL (Sound Power Level) <sup>4</sup>	dB(A)	95	95	95	96.5	96.5	96.5	96.5	98	98	
Evaporator Type		Shell & Tube									
Dimensions - L x D x H	mm	9586x2308x2571			11578x2308x2571				13570x2308x2571		
Operating Weight	kg	11508	11517	11595	13104	13300	13328	13588	15671	15773	

B MODELS		FB4069	FB4075	FB4081	FB4087	FB4093	FB4100	FB4107	FB4122	FB4140	
<b>R134a Refrigerant</b>											
Cooling Capacity <sup>2</sup>	kW	752	795	849	880	908	1028	1089	1148	1308	
Freecooling Capacity <sup>2</sup>	kW	485	490	494	497	499	661	668	676	818	
Total Power Input <sup>2</sup>	kW	243	267	295	316	336	337	360	443	461	
Unit EER <sup>2</sup>		3.09	2.98	2.88	2.78	2.7	3.05	3.03	2.59	2.84	
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	80	80	80	80	80	81	81	81	82	
PWL (Sound Power Level) <sup>4</sup>	dB(A)	102	102	102	102	102	103,5	103,5	103,5	105	
Evaporator Type		Shell & Tube									
Dimensions - L x D x H	mm	9586x2308x2571				11578x2308x2571			13570x2308x2571		
Operating Weight	kg	11627	11639	11718	11790	11991	13544	13808	14551	15773	

<sup>1</sup> Cooling capacity at the following conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; coolant inlet/outlet temperature 26/20 °C; ethylene glycol 30% Freecooling capacity at the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 10°C; coolant inlet temperature 26°C; ethylene glycol 30%;

<sup>2</sup> Cooling capacity at the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; coolant inlet/outlet temperature 15/10 °C; ethylene glycol 30%

<sup>3</sup> Measured at outdoor temperature of 35°C; 1m from the unit; free field conditions; according to ISO 3744

<sup>4</sup> At outdoor temperature of 35°C; calculated according to ISO 3744

## Liebert® HPC-L: Air-cooled Chiller Range

G MODELS		CG4069	CG4075	CG4081	CG4087	CG4093	CG4100	CG4107	CG4122	
<b>R134a Refrigerant</b>										
Cooling Capacity <sup>1</sup>	kW	1107	1167	1242	1289	1355	1419	1557	1699	
Total Power Input <sup>1</sup>	kW	258	285	316	341	362	386	395	486	
Unit EER <sup>1</sup>		4.29	4.1	3.93	3.78	3.75	3.68	3.94	3.49	
Cooling Capacity <sup>2</sup>	kW	745	790	846	881	926	972	1063	1159	
Total Power Input <sup>2</sup>	kW	219	239	262	280	297	324	327	396	
Unit EER <sup>2</sup>		3.40	3.31	3.23	3.15	3.12	3.08	3.25	2.93	
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	83.5	83.5	83.5	83.5	84	84	84.5	85	
PWL (Sound Power Level) <sup>4</sup>	dB(A)	105.5	105.5	105.5	105.5	106	106	106.5	107.5	
Evaporator Type		Shell & Tube								
Dimensions - L x D x H	mm	8590x2308x2581					9586x2308x2581		11578x2308x2581	
Operating Weight	kg	9100	9108	9187	9264	9446	9477	10282	11911	

Q MODELS		CQ4068	CQ4074	CQ4080	CQ4086	CQ4092	CQ4099	CQ4106	CQ4121	CQ4139
<b>R134a Refrigerant</b>										
Cooling Capacity <sup>2</sup>	kW	693	732	812	842	903	948	1001	1124	1201
Total Power Input <sup>2</sup>	kW	223	249	264	282	289	310	334	386	426
Unit EER <sup>2</sup>		3.12	2.9	3.08	2.98	3.13	3.06	3.00	2.91	2.82
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	65	65	65.5	65.5	66	66	66	67	67
PWL (Sound Power Level) <sup>4</sup>	dB(A)	87	87	87.5	87.5	88.5	88.5	88.5	90	90
Evaporator Type		Shell & Tube								
Dimensions - L x D x H	mm	8590x2308x2571			9586x2308x2571		11578x2308x2571		13570x2308x2543	
Operating Weight	kg	9086	9098	9674	9746	10632	10660	10920	12604	12706

L Models		CL4068	CL4074	CL4080	CL4086	CL4092	CL4099	CL4106	CL4121	CL4139
<b>R134a Refrigerant</b>										
Cooling Capacity <sup>2</sup>	kW	728	772	851	886	947	995	1054	1178	1262
Total Power Input <sup>2</sup>	kW	221	243	260	278	288	305	325	382	418
Unit EER <sup>2</sup>		3.29	3.17	3.28	3.19	3.29	3.26	3.24	3.08	3.02
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	73	73	73.5	73.5	74	74	74	75	75
PWL (Sound Power Level) <sup>4</sup>	dB(A)	95	95	95.5	95.5	96.5	96.5	96.5	98	98
Evaporator Type		Shell & Tube								
Dimensions - L x D x H	mm	8590x2308x2571			9586x2308x2571		11578x2308x2571		13570x2308x2571	
Operating Weight	kg	9086	9098	9674	9746	10632	10660	10920	12604	12706

B MODELS		CB4069	CB4075	CB4081	CB4087	CB4093	CB4100	CB4107	CB4122	CB4140
<b>R134a Refrigerant</b>										
Cooling Capacity <sup>2</sup>	kW	732	776	829	862	905	950	1041	1143	1287
Total Power Input <sup>2</sup>	kW	223	244	268	287	305	325	336	400	420
Unit EER <sup>2</sup>		3.28	3.18	3.09	3	2.97	2.93	3.1	2.86	3.07
SPL (Sound Pressure Level) <sup>3</sup>	dB(A)	79.5	79.5	79.5	79.5	80	80	80.5	81	82
PWL (Sound Power Level) <sup>4</sup>	dB(A)	101.5	101.5	101.5	101.5	102	102	102.5	103.5	105
Evaporator Type		Shell & Tube								
Dimensions - L x D x H	mm	8590x2308x2571					9586x2308x2571		11578x2308x2571	
Operating Weight	kg	9100	9108	9187	9264	9446	9477	10282	11911	11871

<sup>1</sup> Cooling capacity at the following conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; water inlet/outlet temperature 26/20 °C; ethylene glycol 0%

<sup>2</sup> Cooling capacity at the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; water inlet/outlet temperature 12/7 °C; ethylene glycol 0%

<sup>3</sup> Measured at outdoor temperature of 35 °C; 1m from the unit; free field conditions; according to ISO 3744

<sup>4</sup> At outdoor temperature of 35°C; calculated according to ISO 3744





## Liebert® HPC-W: Watercooled Chiller Range

WH Models		WH2063	WH2072	WH2088	WH2100	WH2115	WH2131	WH2142
<b>R134a Refrigerant</b>								
Cooling Capacity <sup>1</sup>	kW	641	738	899	1029	1182	1343	1453
Unit Power Input <sup>1</sup>	kW	113	128	157	178	200	226	255
Unit EER <sup>1</sup>		5,69	5,75	5,73	5,79	5,92	5,95	5,69
Number of Refrigeration Circuits	#	2	2	2	2	2	2	2
Base Version SPL <sup>3</sup>	dB(A)	76,5	77,4	76,7	76,9	79,3	78,7	81,0
Base Version PWL <sup>4</sup>	dB(A)	96,0	96,9	96,2	96,4	98,8	98,2	100,5
Low-Noise Version SPL <sup>3</sup>	dB(A)	68,5	69,4	68,7	68,9	71,3	70,7	73,0
Low-Noise Version PWL <sup>4</sup>	dB(A)	88,0	88,9	88,2	88,4	90,8	90,2	92,5
Lenght	mm	4241	4588	4588	4588	4976	4976	4976
Depth	mm	1555	1555	1555	1555	1791	1791	1791
Height	mm	2154	2265	2265	2265	2578	2578	2578
Operating Weight	kg	4456	5435	6532	6642	8424	8573	8781

WHT Models - for high water temperature		WHT2043	WHT2053	WHT2063	WHT2072	WHT2088	WHT2100	WHT2115	WHT2131	WHT2142
<b>R134a Refrigerant</b>										
Cooling Capacity <sup>2</sup>	kW	743	851	937	1102	1293	1486	1719	1960	2125
Unit Power Input <sup>2</sup>	kW	118	136	152	173	196	226	248	280	344
EER <sup>2</sup>		6,27	6,27	6,15	6,37	6,59	6,57	6,93	6,99	6,19
Number of Refrigeration Circuits	#	2	2	2	2	2	2	2	2	2
Base Version SPL <sup>3</sup>	dB(A)	77,9	78,4	79,7	80,6	79,9	80,1	82,5	81,9	84,2
Base Version PWL <sup>4</sup>	dB(A)	97,4	97,9	99,2	100,1	99,4	99,6	102,0	101,4	103,7
Low-Noise Version SPL <sup>3</sup>	dB(A)	69,9	70,4	71,7	72,6	71,9	72,1	74,5	73,9	76,2
Low-Noise Version PWL <sup>4</sup>	dB(A)	89,4	89,9	91,2	92,1	91,4	91,6	94,0	93,4	95,7
Lenght	mm	4241	4241	4241	4588	4588	4588	4976	4976	4976
Depth	mm	1555	1555	1555	1555	1555	1555	1791	1791	1791
Height	mm	2154	2154	2154	2265	2265	2265	2578	2578	2578
Operating Weight	kG	4413	4456	4477	5477	6595	6705	8487	8636	8928

<sup>1</sup> At the following standard conditions: power supply 400V/3ph/50Hz; evaporator water inlet/outlet 12/7°C; condenser water inlet/outlet 30/35°C

<sup>2</sup> At the following standard conditions: power supply 400V/3ph/50Hz; evaporator water inlet/outlet 26/20°C; condenser water inlet/outlet 35/40°C

<sup>3</sup> Measured at 1 m from the unit; free field conditions; according to ISO 3744; nominal working conditions

<sup>4</sup> Calculated according to ISO 3744; nominal working conditions

## 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 AFC

The Adiabatic Freecooling Chiller available from 500-1450 kW

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

### 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.



### 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.

### 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.

## 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™ TRELLIS™ PLATFORM

Vertiv's Trellis™ platform is a realtime 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 as well as enable for virtualization.

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.



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MKA4L0UKHPC Rev. 3-07/2017