



Liebert® HPC-S

from 60 to 400 kW

Air-Cooled, Freecooling and
Adiabatic Freecooling Chillers
for Highly Efficient Data
Centers



Liebert HPC-S: From the Air-Cooled to the Adiabatic Freecooling Chiller

A Range of Solutions for Different Data Center Environments

Current market trends have seen an increase in operating temperatures under which new IT equipment operates. This has led to the progress in adiabatic solutions, extending freecooling availability to higher ambient temperatures. The newest data center designs, in accordance with ASHRAE (the American Society of Heating, Refrigerating and Air Conditioning Engineers) guidelines, have accepted to move out of the recommended envelope to the allowable ranges (A1-A4). The Liebert® HPC-S freecooling chiller solution embraces this trend by expanding its range to include the adiabatic freecooling models which incorporate newest developments in the management of adiabatic technology. When specifically applied to data centers with high chilled water temperatures, the adiabatic freecooling version of the Liebert HPC-S is capable of achieving an energy saving of 25% to 30% compared to a standard freecooling chiller solution.



Vertiv Liebert HPC-S Freecooling Chiller

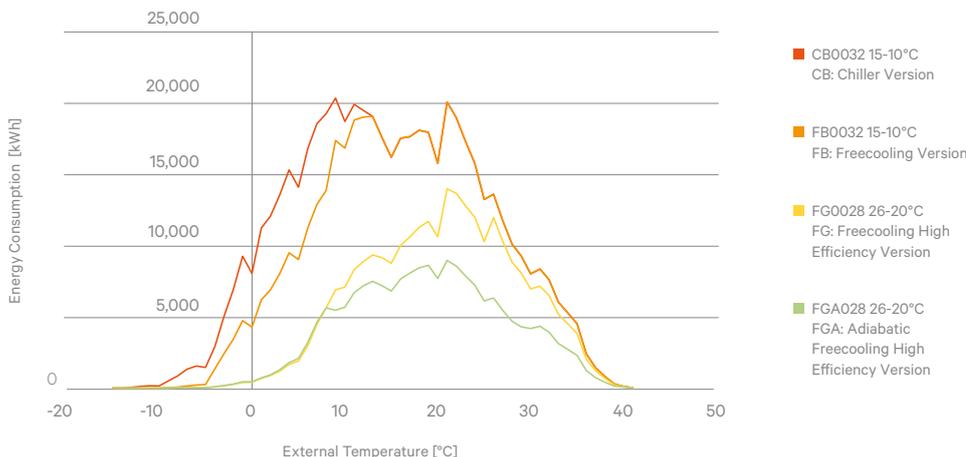
Liebert® HPC-S Helps Achieve Your Business Goals While Respecting the Environment

Today, environmental responsibility is becoming increasingly fundamental for many organizations. The Liebert® HPC-S guarantees increased efficiency for customers while reducing environmental impact through its ability to work in different operating modes: from sole direct expansion to freecooling and adiabatic freecooling modes. The freecooling operation takes advantage of the external environment conditions in order to cool water, thus requiring compressor operation only when the outside temperature exceeds freecooling limits. In the FGA models, the adiabatic wet pad system pre-cools the ambient air which enters the freecooling coil, thus increasing freecooling capacity and reducing the use of compressors throughout the year. Taking a data center with a 350 kW load in Madrid as an example, the annual energy saving of the Liebert HPC-S adiabatic freecooling version working at 26° to 20°C chilled water temperatures would be 30% higher compared to the freecooling unit operating at the same conditions. Energy savings would boost to 65% when compared to the air-cooled chiller version working with chilled water temperatures of 15° to 10°C.



Vertiv Liebert HPC-S Adiabatic Freecooling Chiller

Liebert HPC-S Annual Energy Consumption: A Wide Range of Energy Efficient Solutions



Madrid Climatic Profile with 350 kW Heat Load

Liebert® HPC - S

State-of-the-Art Technologies Maximizing the Benefits for Small Data Centers



Energy Efficiency

The freecooling and adiabatic freecooling operation allows to reduce the annual use of compressors, thus achieving top efficiency levels.



Freecooling

Integrated freecooling section, delivers additional energy savings and greater reliability.



Scroll Compressor

Liebert® HPC-S is equipped with scroll compressors to improve efficiency and performance reliability.



Supersaver

The Supersaver is the software logic embedded in the Liebert® iCOM™ control leveraging on the communication with floor mount units to maximize efficiency at system level.



Adiabatic Cooling

In the adiabatic models, the highly efficient adiabatic wet pads humidify air entering the freecooling and condensing coils, increase freecooling operation and mechanical efficiency.



Electronic Expansion Valve

Stability and efficiency guaranteed in all conditions.



Extremely Low Noise

Audible noise is reduced to a minimum as a result of EC Fans and special acoustic insulation.



Fast Re-start

Ensures full restoration of chiller capacity within 100 seconds from a power re-start.



EC Fans

High efficiency motors guarantee a 25% reduction in energy consumption compared to traditional AC motors.



Smart Liebert® iCOM™ Control

Advanced unit and teamwork control to maximize energy efficiency.

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 our 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 Adiabatic Freecooling Chiller Innovation Lab

Vertiv's Thermal Management Customer Experience Center features a dedicated area to test our highly efficient freecooling and adiabatic freecooling chillers. The Adiabatic Freecooling Chiller Innovation Lab provides customers, consultants and data center specialists with the most complete testing area to experience the

capabilities of our technology at peak also conditions. Each Liebert® HPC-S unit undergoes stringent end-of-line testing in our two multi-purpose specialized testing cabins prior to its 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 m³ and is designed to perform high precision tests with

simulated ambient temperatures of up to 55°C. Every customer visit is accompanied by a final report including each and every tested parameter as well as the relevant outputs for the specific unit validated. With our constant focus on our customers' needs, we guide them through a first-hand experience with full transparency and flexibility, enabling them to achieve the highest standards of technical excellence.



Chiller unit undergoing an end-of-line test

Liebert® HPC-S Freecooling Chiller from 60 - 220 kW

G Model			FG0006	FG0007	FG0009	FG0011	FG0014	FG0015	FG0018		
High Efficiency Configuration	Cooling Capacity ¹	kW	63.0	82.6	93.5	118.8	149.3	165.4	187.2		
	Freecooling Capacity ²	kW	45.7	70.7	84.2	88.6	130.2	136.5	135.1		
	Total Power Input ¹	kW	18.8	24.3	28.1	36.7	45.3	51.7	58.2		
	Unit EER ¹	---	3.35	3.40	3.33	3.24	3.30	3.20	3.22		
	SPL (Sound Pressure Level) ³	dB(A)	78.5	79.5	79.5	79.5	80	80	80		
	PWL (Sound Power Level) ⁴	dB(A)	95.5	97.5	97.5	97.5	99	99	99		
	Dimensions	mm	2043 x 1201 x 1931		3043 x 1201 x 1931		4043 x 1201 x 1931				
Quiet Configuration	Cooling Capacity ¹	kW	57.4	78.2	88.3	109.9	140.3	154.0	172.1		
	Freecooling Capacity ²	kW	33.9	55.3	65.0	66.5	99.7	103.1	100.9		
	Total Power Input ¹	kW	19.3	22.0	26.4	36.7	43.3	51.0	59.1		
	Unit EER ¹	---	2.97	3.55	3.34	3.00	3.24	3.02	2.91		
	SPL (Sound Pressure Level) ³	dB(A)	58	59	59	61	62	62	62		
	PWL (Sound Power Level) ⁴	dB(A)	75	77	77	79	81	81	81		
	Dimensions	mm	2043 x 1201 x 1874		3043 x 1201 x 1874		4043 x 1201 x 1874				
B Model			FB0006	FB0007	FB0009	FB0011	FB0014	FB0015	FB0018	FB0019	FB0022
Base Configuration	Cooling Capacity ¹	kW	61.4	73.7	91.1	116.3	138.5	151.6	182.8	199.7	223.7
	Freecooling Capacity ²	kW	45.1	44.9	70.2	87.8	87.6	89.7	133.8	137.8	133.9
	Total Power Input ¹	kW	19.2	24.9	28.6	37.2	46.9	54.8	59.3	68.2	77.3
	Unit EER ¹	---	3.20	2.96	3.19	3.13	2.95	2.77	3.08	2.93	2.89
	SPL (Sound Pressure Level) ³	dB(A)	75	75	76	76	76.5	76.5	77	77.5	78
	PWL (Sound Power Level) ⁴	dB(A)	92	92	94	94	94.5	94.5	96	96.5	97
Low Noise Configuration	Cooling Capacity ¹	kW	59.9	71.3	89.7	114.0	134.9	147.2	178.9	194.8	217.4
	Freecooling Capacity ²	kW	41.6	41.0	65.2	81.1	80.5	82.2	123.3	126.7	122.9
	Total Power Input ¹	kW	19.3	25.3	28.0	37.1	47.3	55.8	59.3	68.7	78.3
	Unit EER ¹	---	3.10	2.82	3.20	3.07	2.85	2.64	3.02	2.84	2.78
	SPL (Sound Pressure Level) ³	dB(A)	63	63	64	66	66.5	66.5	67	67.5	68
	PWL (Sound Power Level) ⁴	dB(A)	80	80	82	84	84.5	84.5	86	86.5	87
Dimensions	mm	2043 x 1201 x 1902			3043 x 1201 x 1902			4043 x 1201 x 1902			

1 At the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; water inlet/outlet temperature 15/10°C; ethylene glycol 30%

2 At the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 5°C; coolant inlet temperature 15°C; ethylene glycol 30%

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

4 At outdoor temperature of 35°C; calculated according to ISO 3744

Liebert® HPC-S Air-Cooled Chiller from 60 - 220 kW

G Model			CG0006	CG0007	CG0009	CG0011	CG0014	CG0015	CG0018		
High Efficiency Configuration	Cooling Capacity ¹	kW	59.6	77.8	89.1	113.3	142.2	158.3	178.6		
	Total Power Input ¹	kW	18.2	23.6	27.3	35.6	44.0	50.1	56.4		
	Unit EER ¹	---	3.27	3.30	3.27	3.18	3.23	3.16	3.17		
	SPL (Sound Pressure Level) ²	dB(A)	78.5	79.5	79.5	79.5	80	80	80		
	PWL (Sound Power Level) ³	dB(A)	95.5	97.5	97.5	97.5	99	99	99		
	Dimensions	mm	2043 x 1201 x 1931		3043 x 1201 x 1931		4043 x 1201 x 1931				
Quiet Configuration	Cooling Capacity ¹	kW	54.3	73.9	84.2	104.7	133.8	147.4	164.3		
	Total Power Input ¹	kW	18.7	21.5	25.7	35.7	42.2	49.5	57.4		
	Unit EER ¹	---	2.91	3.44	3.28	2.93	3.17	2.98	2.86		
	SPL (Sound Pressure Level) ²	dB(A)	58	59	59	61	62	62	62		
	PWL (Sound Power Level) ³	dB(A)	75	77	77	79	81	81	81		
	Dimensions	mm	2043 x 1201 x 1874		3043 x 1201 x 1874		4043 x 1201 x 1874				
B Model			CB0006	CB0007	CB0009	CB0011	CB0014	CB0015	CB0018	CB0019	CB0022
Base Configuration	Cooling Capacity ¹	kW	58.5	70.6	86.8	111.6	132.9	146.5	175.8	193.1	215.9
	Total Power Input ¹	kW	18.5	23.9	28.0	35.9	45.2	52.7	57.1	65.5	74.3
	Unit EER ¹	---	3.16	2.95	3.10	3.11	2.94	2.78	3.08	2.95	2.91
	SPL (Sound Pressure Level) ²	dB(A)	75	75	76	76	76.5	76.5	77	77.5	78
	PWL (Sound Power Level) ³	dB(A)	92	92	94	94	94.5	94.5	96	96.5	97
Low Noise Configuration	Cooling Capacity ¹	kW	56.8	68.0	85.2	108.8	128.8	141.3	171.1	187.3	208.7
	Total Power Input ¹	kW	18.6	24.4	27.3	35.8	45.8	53.8	57.2	66.2	75.4
	Unit EER ¹	---	3.05	2.79	3.12	3.04	2.81	2.63	2.99	2.83	2.77
	SPL (Sound Pressure Level) ²	dB(A)	63	63	64	66	66.5	66.5	67	67.5	68
	PWL (Sound Power Level) ³	dB(A)	80	80	82	84	84.5	84.5	86	86.5	87
Dimensions	mm	2043 x 1201 x 1902			3043 x 1201 x 1902			4043 x 1201 x 1902			

1 At the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; water inlet/outlet temperature 12/7 °C; ethylene glycol 0%

2 Measured at outdoor temperature of 35 °C; 1m from the unit; free field conditions; according to ISO 3744

3 At outdoor temperature of 35°C; calculated according to ISO 3744

Liebert® HPC-S Freecooling Chiller from 170 - 400 kW

G Model			FG0017	FG0020	FG0023	FG0025	FG0028	FG0030	
High Efficiency Configuration	Cooling Capacity ¹	kW	171.8	189.4	224.4	242.7	281.5	312.9	
	Freecooling Capacity ²	kW	105.5	102.1	139.6	134.6	179.5	173.5	
	Total Power Input ¹	kW	59.1	67.3	76.8	84.8	95.2	108.4	
	Unit EER ¹	---	2.91	2.81	2.92	2.86	2.96	2.89	
	SPL (Sound Pressure Level) ³	dB(A)	78.5	78.5	79	79	79.5	79.5	
	PWL (Sound Power Level) ⁴	dB(A)	97.5	97.5	98.5	98.5	99.5	99.5	
	Dimensions	mm	3750 x 1300 x 2529		4750 x 1300 x 2529		5750 x 1300 x 2529		
Quiet Configuration	Cooling Capacity ¹	kW	157.7	174.4	206.8	224.7	259.5	288.5	
	Freecooling Capacity ²	kW	81.2	81.4	107.6	107.6	137.7	137.9	
	Total Power Input ¹	kW	59.5	69.2	77.1	86.1	95.6	110.5	
	Unit EER ¹	---	2.65	2.52	2.68	2.61	2.71	2.61	
	SPL (Sound Pressure Level) ³	dB(A)	65	65	65.5	65.5	66	66	
	PWL (Sound Power Level) ⁴	dB(A)	84	84	85	85	86	86	
	Dimensions	mm	3750 x 1300 x 2472		4750 x 1300 x 2472		5750 x 1300 x 2472		
B Model					FB0023	FB0025	FB0028	FB0030	FB0032
Base Configuration	Cooling Capacity ¹	kW	168.5	183.6	209.8	235.8	268.0	303.6	341.1
	Freecooling Capacity ²	kW	98.8	101.0	100.0	133.1	132.1	171.6	169.3
	Total Power Input ¹	kW	59.5	69.3	80.0	86.9	97.4	111.3	125.6
	Unit EER ¹	---	2.83	2.65	2.62	2.71	2.75	2.73	2.72
	SPL (Sound Pressure Level) ³	dB(A)	76	76	76	76.5	76.5	77	77
	PWL (Sound Power Level) ⁴	dB(A)	95	95	95	96	96	97	97
Low Noise Configuration	Cooling Capacity ¹	kW	165.5	179.9	205.5	231.1	262.7	297.4	334.5
	Freecooling Capacity ²	kW	93.0	94.7	94.9	125.1	125.4	160.8	160.4
	Total Power Input ¹	kW	59.0	69.3	80.1	86.7	97.3	111.2	125.8
	Unit EER ¹	---	2.80	2.59	2.56	2.66	2.70	2.67	2.66
	SPL (Sound Pressure Level) ³	dB(A)	70.5	70.5	70.5	71	71	71.5	71.5
	PWL (Sound Power Level) ⁴	dB(A)	89.5	89.5	89.5	90.5	90.5	91.5	91.5
Dimensions	mm	3750x1300x2500			4750x1300x2500			5750x1300x2500	

1 At the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; water inlet/outlet temperature 15/10°C; ethylene glycol 30%

2 At the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 5°C; coolant inlet temperature 15°C; ethylene glycol 30%

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

4 At outdoor temperature of 35°C; calculated according to ISO 3744

Liebert® HPC-S Air-Cooled Chiller from 170 - 400 kW

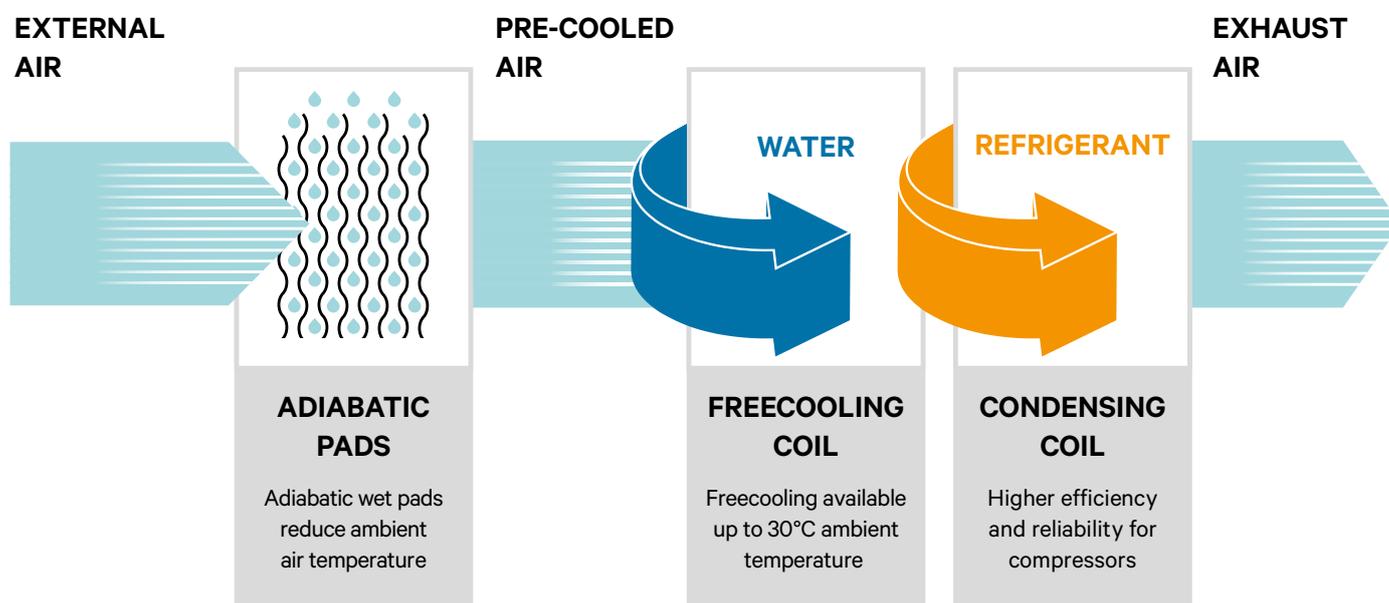
G Model			CG0017	CG0020	CG0023	CG0025	CG0028	CG0030	
High Efficiency Configuration	Cooling Capacity ¹	kW	165.7	185.5	216.4	237.2	270.8	305.9	
	Total Power Input ¹	kW	56.9	63.7	74.1	80.5	91.8	102.8	
	Unit EER ¹	---	2.91	2.91	2.92	2.95	2.95	2.98	
	SPL (Sound Pressure Level) ²	dB(A)	78.5	78.5	79	79	79.5	79.5	
	PWL (Sound Power Level) ³	dB(A)	97.5	97.5	98.5	98.5	99.5	99.5	
	Dimensions	mm	3750 x 1300 x 2529		4750 x 1300 x 2529		5750 x 1300 x 2529		
Quiet Configuration	Cooling Capacity ¹	kW	153.2	170.1	200.8	218.8	251.3	281.1	
	Total Power Input ¹	kW	56.8	65.6	73.7	81.8	91.3	105.0	
	Unit EER ¹	---	2.70	2.59	2.72	2.67	2.75	2.68	
	SPL (Sound Pressure Level) ²	dB(A)	65	65	65.5	65.5	66	66	
	PWL (Sound Power Level) ³	dB(A)	84	84	85	85	86	86	
	Dimensions	mm	3750 x 1300 x 2472		4750 x 1300 x 2472		5750 x 1300 x 2472		
B Model			CB0017	CB0020	CB0023	CB0025	CB0028	CB0030	CB0032
Base Configuration	Cooling Capacity ¹	kW	163.3	178.5	205.8	228.9	261.4	294.6	333.6
	Total Power Input ¹	kW	57.0	66.1	75.5	83.2	92.2	106.5	118.6
	Unit EER ¹	---	2.86	2.70	2.72	2.75	2.83	2.77	2.81
	SPL (Sound Pressure Level) ²	dB(A)	76	76	76	76.5	76.5	77	77
	PWL (Sound Power Level) ³	dB(A)	95	95	95	96	96	97	97
Low Noise Configuration	Cooling Capacity ¹	kW	159.9	174.4	200.5	224.0	255.4	287.9	325.4
	Total Power Input ¹	kW	56.7	66.3	76.1	83.2	92.6	106.5	119.3
	Unit EER ¹	---	2.82	2.63	2.63	2.69	2.76	2.70	2.73
	SPL (Sound Pressure Level) ²	dB(A)	70.5	70.5	70.5	71	71	71.5	71.5
	PWL (Sound Power Level) ³	dB(A)	89.5	89.5	89.5	90.5	90.5	91.5	91.5
Dimensions	mm	3750x1300x2500			4750x1300x2500			5750x1300x2500	

1 At the following standard conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; water inlet/outlet temperature 12/7 °C; ethylene glycol 0%

2 Measured at outdoor temperature of 35 °C; 1m from the unit; free field conditions; according to ISO 3744

3 At outdoor temperature of 35°C; calculated according to ISO 3744

Adiabatic Freecooling Models: Boosting Data Center Efficiency and Resilience



Liebert® HPC-S Adiabatic Freecooling Chiller from 170 - 400 KW

Standard noise models			FGA017	FGA020	FGA023	FGA025	FGA028	FGA030
Smart aisle application (fluid in/out 26°/20°C)	Cooling Capacity ¹	kW	221	246	290	317	365	408
	Freecooling Capacity at 20°C ambient ²	kW	106	105	140	139	179	179
	Total Power Input ¹	kW	63.9	72.6	82.7	90.9	102.5	116.5
	Unit EER ¹	---	3.46	3.39	3.51	3.49	3.56	3.50
	SPL (Sound Pressure Level) ³	dB(A)	73.5	74.0	74.5	75.0	75.5	75.5
	PWL (Sound Power Level) ⁴	dB(A)	93.2	93.7	94.7	95.2	96.1	96.1
	Dimensions	mm	3750 x 1900 x 2625		4750 x 1900 x 2625		5750 x 1900 x 2625	
Legacy application (fluid in/out 15°/10°C)	Cooling Capacity ⁵	kW	171	191	224	244	281	315
	Freecooling Capacity at 5°C ambient ⁶	kW	105	104	138	137	178	177
	Total Power Input ⁵	kW	59.1	66.5	66.0	73.1	95.2	107.1
	Unit EER ¹	---	2.90	2.87	2.92	2.92	2.95	2.94
	SPL (Sound Pressure Level) ³	dB(A)	73.5	74.0	74.5	75.0	75.5	75.5
	PWL (Sound Power Level) ⁴	dB(A)	93.2	93.7	94.7	95.2	96.1	96.1
	Dimensions	mm	3750 x 1900 x 2625		4750 x 1900 x 2625		5750 x 1900 x 2625	
Low noise models			FGA017-LN	FGA020-LN	FGA023-LN	FGA025-LN	FGA028-LN	FGA030-LN
Smart aisle application (fluid in/out 26°/20°C)	Cooling Capacity ¹	kW	211	233	277	301	348	386
	Freecooling Capacity at 20°C ambient ²	kW	93	93	124	123	158	156
	Total Power Input ¹	kW	63.8	74.0	82.3	92.0	101.9	118.3
	Unit EER ¹	---	3.30	3.15	3.36	3.27	3.42	3.26
	SPL (Sound Pressure Level) ³	dB(A)	67.5	68.0	68.5	69.0	69.5	69.5
	PWL (Sound Power Level) ⁴	dB(A)	87.2	87.7	88.7	89.2	90.1	90.1
	Dimensions	mm	3750 x 1900 x 2625		4750 x 1900 x 2625		5750 x 1900 x 2625	
Legacy application (fluid in/out 15°/10°C)	Cooling Capacity ⁵	kW	165	182	215	234	270	302
	Freecooling Capacity at 5°C ambient ⁶	kW	91	91	121	120	155	154
	Total Power Input ⁵	kW	58.1	66.7	75.3	83.3	93.2	106.8
	Unit EER ¹	---	2.84	2.73	2.86	2.81	2.90	2.82
	SPL (Sound Pressure Level) ³	dB(A)	67.5	68.0	68.5	69.0	69.5	69.5
	PWL (Sound Power Level) ⁴	dB(A)	87.2	87.7	88.7	89.2	90.1	90.1
	Dimensions	mm	3750 x 1900 x 2625		4750 x 1900 x 2625		5750 x 1900 x 2625	

1 At the following conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; water inlet/outlet temperature 26°/20°C; ethylene glycol 30%
2 At the following conditions: power supply 400V/3ph/50Hz; outdoor temp. 20°C, relative humidity 55%; coolant inlet temp. 26°C; eth. gl. 30%; adiabatic ON
3 Measured at outdoor temperature of 35 °C; 1m from the unit; free field conditions; according to ISO 3744
4 At outdoor temperature of 35°C; calculated according to ISO 3744
5 At the following conditions: power supply 400V/3ph/50Hz; outdoor temperature 35°C; water inlet/outlet temperature 15°/10°C; ethylene glycol 30%
6 At the following conditions: power supply 400V/3ph/50Hz; outdoor temperature 5°C; coolant inlet temperature 15°C; ethylene glycol 30%; adiabatic OFF

