Vertiv™ Liebert® AFC

The Inverter Screw Chiller Range with Eco-Friendly Refrigerant

from 650 to 2000 kW

Liebert® AFC: The Coolest Solution for a Sustainable Data Center

Today, the new challenges that critical infrastructures must face are increasing, in addition to reliability, service continuity and cost reduction, there is also environmental compatibility. Problems related to pollution, the greenhouse effect and global warming are the main challenges that modern industries face.

Liebert® AFC, as a result of its new low global warming potential (GWP) HFO refrigerant and inverter technology, offers an eco-friendly solution, aiming at drastically reducing direct and indirect CO_2 emissions into the atmosphere, and limiting the carbon footprint of the data center.

Liebert® AFC has been optimized to have very high levels of efficiency and at the same time ensuring the highest levels of reliability required by modern IT applications. The inverter technology widely used for compressors, pumps and fans allows to reduce energy consumption and in particular the electrical power required during peaks, allowing to increase the power available for IT equipment.

The inverter driven compressor and the innovative Liebert® AFC regulation algorithms ensure accurate control of the fluid delivery temperature to the indoor units under any working condition.

Cooling continuity and reliability are key factors for Liebert® AFC and are granted by the Fast Restart functionality which allows for a quick and safe restart after a power failure.

Liebert® AFC is a solution that is well suited to the different needs of critical infrastructures as it is an extremely versatile and highly configurable solution. The different options available allow for tailor-made solutions independently of the data center requirements.

Value of Liebert® AFC Range

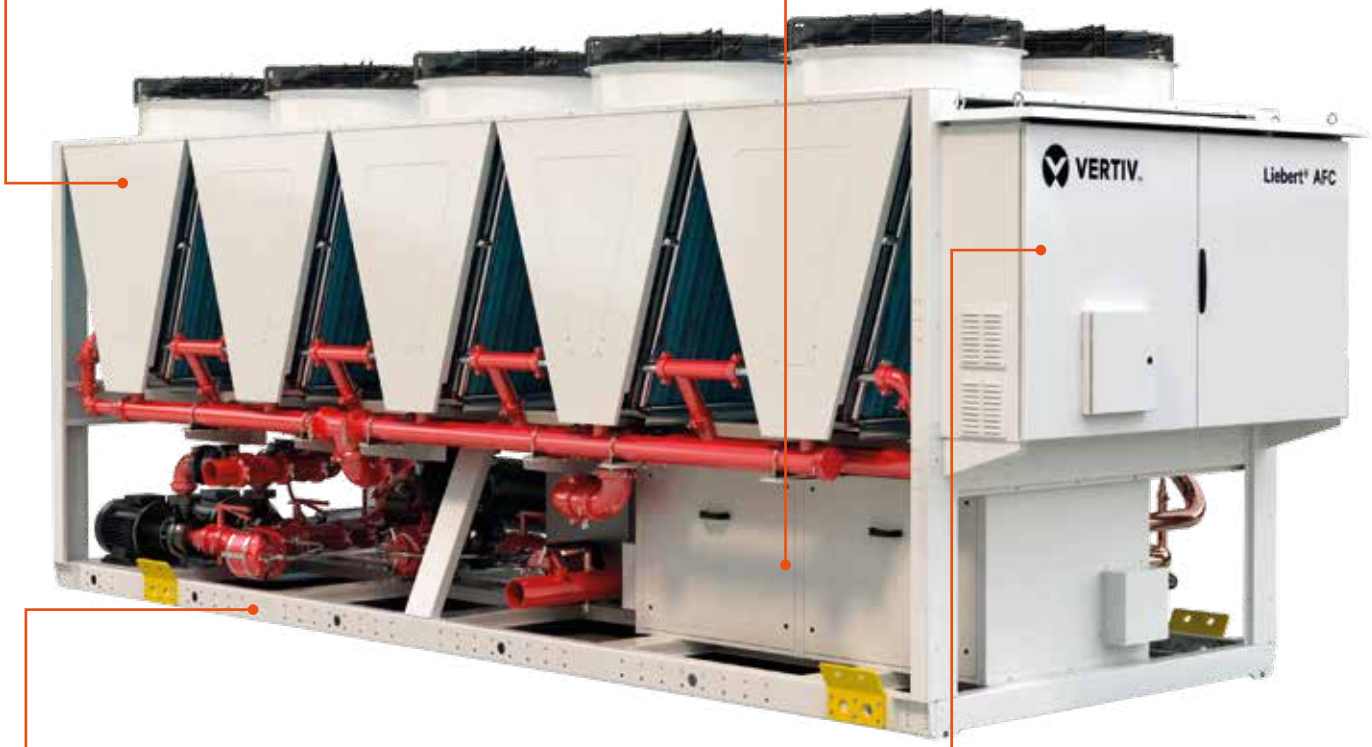
Features	How You Benefit
• Low GWP HFO Refrigerant (R1234ze)	• An environmentally friendly refrigerant with a low impact on the environment
• Inverter driven compressor	• Low in-rush current and higher part load efficiency, allowing for savings in the electrical infrastructure design and lower running costs
• Glycol-Free version	• The possibility of using pure water inside the data center lowers the risk of environmental pollution and grants lower installation costs
• Optimized freecooling coils	• Increased freecooling capacity and more freecooling hours lead to a better seasonal efficiency and lower operating costs
• Fast restart option	• Guaranteeing cooling continuity
• Compact Frame	• Possibility to increase the cooling density
• Wide operative range from -25°C to +56°C external ambient temperature	• Global solution suitable for any climatic condition

Eco-friendly

The Liebert® AFC is environmentally friendly by using new refrigerants with almost zero impact in the atmosphere. At the same time the improved efficiency leads to a reduction in the electricity consumption and in the CO_2 emission related to it.

Energy Efficiency

The Liebert® AFC sets new efficiency standards on the chilled-water cooling systems for data centers. The chiller design combines market leading technologies such as inverter driven components and optimized control algorithm to leverage on efficiency whilst cutting the running costs.



Flexibility

Liebert® AFC is designed to perfectly match the configuration and requirements of any data center. This unit is extremely configurable, and the vast number of versions and options combined with the wide operating range makes it an extremely versatile unit that can be used all over the world.

Smart Liebert® iCOM™ Control

The Liebert® iCOM control manages and optimizes the overall system. It is fully-programmable via an advanced and user-friendly touch display and can be linked with common BMS protocols, allowing remote supervision.

A Sustainable Solution for Low-carbon Data Centers

- Liebert AFC offers a wide choice of refrigerants, from the traditional R134a to the more eco-compatible solutions. In fact, R513A allows to have performances similar to traditional refrigerants, but with a more than halved environmental impact. The R1234ze HFO offers an extremely “Green” solution as the GWP level is close to zero.
- Glycol is very important in freecooling units to avoid problems related to freezing, but at the same time it is a pollutant. The Glycol-free versions allow glycol to be contained inside the unit, preventing it from circulating inside the data center. This allows to greatly reduce the risk of environmental pollution and at the same time to reduce installation costs.
- To further reduce the environmental impact, the unit has been designed to have a lower use of electricity, leading to a reduction in CO_2 emissions that are connected to it.

Improved Efficiency, Increased Savings

- The unit has been designed to ensure utmost efficiency in the peak conditions, that together with low in-rush current of the inverter compressor allows to reduce the electrical infrastructure. The reduced peak power increases the availability of the electrical power for IT load.
- The inverter driven technology widely used for the compressor, EC fans and pumps allows to maximize energy efficiency whilst minimizing energy consumption. The inverter screw compressor improves efficiency especially at part loads and in mixed mode, with a significant saving in annual energy up to 20% more compared to a fixed screw solution.
- The freecooling coils have been optimized to use the external ambient air as the primary source of cooling. The full freecooling temperature (or Zero Energy Temperature – ZET) in some models can be higher than 10 ° C, hence below this temperature the compressors can be switched off. The impact on efficiency is thus significant, as the use of the compressors can be limited only to cover the cooling peak. A redundant sensor can be installed and activated only if the first one breaks or is missing.

Adaptable to Any Critical Infrastructure Design

- Multiple available versions (Chiller - Freecooling - Freecooling Glycol-free) allow to easily adapt to different site conditions, having always the possibility to choose the best combination between efficiency and initial cost.
- In order to offer a solution that can be exploited globally, and therefore both in very cold climates and in warmer ones, Liebert AFC has been designed to have a wide operating range. Up to +56°C and down to - 25°C external ambient temperature (-20°C for R1234ze).
- The reduced footprint is ensured by the new compact design, 15% more compact than the industry standard.
- Highly configurable is a fundamental requirement for modern critical infrastructures and in this context the wide choice of Liebert AFC options allows to build a tailor-made solution. Fast restart function for a quick and safe restart after power outage, automatic transfer switch (ATS) on board, several pump configurations compatible with constant and variable flow, coil coating for harsh environments are just some examples.
- The acoustic pollution of the cooling units is a typical problem for critical infrastructures located in city centers or near residential areas, but Liebert AFC low noise and quite versions guarantee a noise level from 5 to 10 dB lower than the standard models.

Smart Liebert® iCOM™ Control

- Ready for Teamwork of up to 16 units with optimization based on working conditions, furthermore it allows for advanced control functionalities (sharing sensor’s data, standby rotation, cascade operation and rotating master function).
- A virtual display can replicate, through a web browser, all the functionalities of the standard display, either remotely or connecting a laptop on the ethernet port directly to the frontal door.
- Unit power consumptions and cooling gross capacity can be calculated thanks to specific algorithms and the direct communication between the control, sensors and the different devices. This allows the monitoring of the unit energy efficiency through the BMS system.

Vertiv's Customer Experience Center located in Tognana (Padova - Italy)

The site includes 6 different laboratories and is specifically designed for customers to interact with Thermal Management data center technologies. Labs n.5 and n. 6 are dedicated to test and validate Vertiv's chiller range including our latest Liebert AFC units.

1 R&D Validation Lab 1

The Research & Development Validation Lab 1 is specifically designed to test floor-mount units and can balance a thermal load of up to 150 kW with a chamber air temperature between 0°C and 60°C.

2 R&D Validation Lab 2

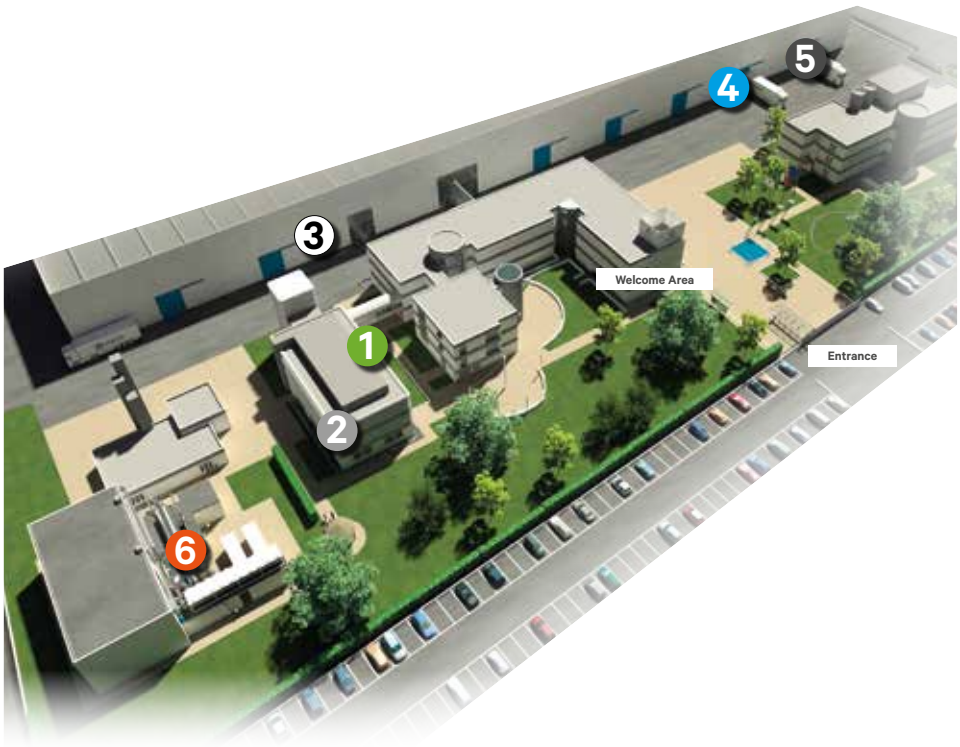
Designed for conditioners belonging to the Telecom sector, the Research & Development Validation Lab 2 includes two different testing chambers: one simulating internal ambient conditions from 0°C to 60°C and the other simulating external ambient conditions from -32°C to 60°C. This validation area can balance a thermal load of up to 100 kW (50 kW in each room).

3 Floor-Mount Validation Lab

The lab is equipped with a highly automated testing chamber, this validation area can balance a thermal load of up to 200 kW and can simulate a test environment within a temperature range of 0°C to 60°C.

4 Evaporative Cooling Innovation Lab

Dedicated area to test the state-of-the-art Liebert EFC - Vertiv's highly efficient indirect evaporative freecooling unit. Testing parameters include IT loads of up to 450 kW and an airflow of up to 120,000 m^3 per hour at any external ambient temperature required to simulate typical peak conditions across the EMEA region.



5 Freecooling Chiller Validation Area

The Freecooling Chiller Validation Area is able to balance a thermal load of up to 1600 kW with a chamber air temperature between 20°C and 50°C and chiller water set point between 5°C and 20°C.

6 Adiabatic Freecooling Chiller Innovation Lab

This latest designed lab can test units with cooling capacities up to 1.5 MW with state-of-the-art accuracy in a broad range of working conditions, from -10°C to +55°C, also for adiabatic units.

Rely on a Higher Level of Service Expertise for Thermal Management in Your Data Center

Who is better prepared to meet the service needs for your thermal management system than the company that pioneered the precision air conditioning market? We're a world leader in research and development of innovative products that protect mission-critical thermal applications and have supported data centers around the world for decades.

After all, there's a vast difference in the expertise necessary to address the comfort cooling needs of a normal building and the thermal management needs of your sensitive and sophisticated data center. An incorrect repair procedure by improperly trained technicians, or the use of non-genuine parts, can have a profound effect on your equipment performance, your data center availability, and your energy costs.

The factory trained and certified technicians of Vertiv know the difference. We are equipped to maximize the performance and efficiency of your thermal management system as no one else can.

Supporting Your Business Around the Globe

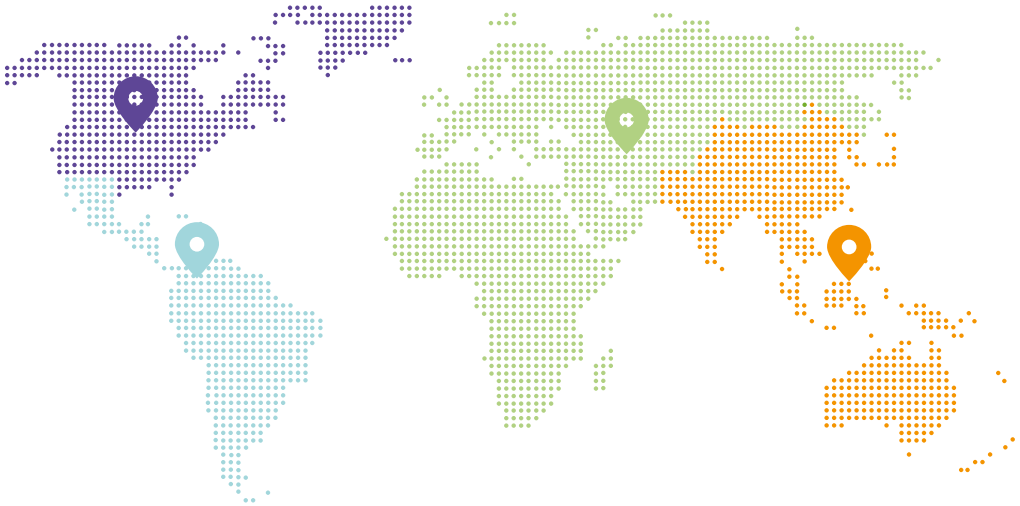
We bring our combination of strengths to life on a global scale, ensuring that we're able to serve you wherever you do business. Vertiv has the largest factory-trained service force with more than 2,700 field engineers together with the capability to support you remotely with a comprehensive range of remote Services and Software Solutions. Our service team members are located in virtually every major country across the globe and are backed by more than 330 technical support/response personnel. This means that no matter where you operate, you are covered by the most knowledgeable engineers and technicians available, giving you relief from any concern.

Vertiv™ Environet™ Alert

provides an easy-to-use monitoring software solution that helps ensure the continuous cooling and power of your critical infrastructure. Get monitoring, alerting and trending at a price that's right for your business. Vertiv Environet Alert is designed to achieve SMB and enterprise goals.

Vertiv™ Critical Insight

is a real-time software platform designed to ensure continuous performance improvement and efficiency for any critical infrastructure. It is a comprehensive web-based critical infrastructure monitoring tool designed to identify and manage key operational behaviours, analyse trending, and manage energy usage. Vertiv Critical Insight is designed to achieve medium and large enterprise goals.



Our Presence

Global Presence

Manuf. and Assembly Locations **28**

Service Centers **250+**

Service Field Engineers **2,650+**

Technical Support/Response **300+**

Customer Experience Centers/Labs **16**

US and Canada
Manuf. and Assembly Locations **13**
Service Centers **100+**
Service Field Engineers **850+**
Technical Support/Response **120+**
Customer Experience Centers/Labs **4**

Latin America
Manuf. and Assembly Locations **1**
Service Centers **20+**
Service Field Engineers **240+**
Technical Support/Response **20+**
Customer Experience Centers/Labs **2**

Europe, Middle East And Africa
Manuf. and Assembly Locations **9**
Service Centers **70+**
Service Field Engineers **590+**
Technical Support/Response **90+**
Customer Experience Centers/Labs **5**

Asia Pacific
Manuf. and Assembly Locations **5**
Service Centers **60+**
Service Field Engineers **970+**
Technical Support/Response **80+**
Customer Experience Centers/Labs **5**

Technical Features

R134a Screw Freecooling Version FH4 Models			065	075	080	090	100*	110*	125*	140*	165*	180*	195*
Mechanical cooling performance: [1]	Cooling capacity	kW	669	754	836	947	1035	1104	1277	1425	1688	1838	1986
	Total power input (Premium fans)	kW	156	179	200	229	243	261	302	342	393	467	504
	Unit EER (Premium fans)	-	4.29	4.20	4.18	4.14	4.26	4.24	4.23	4.17	4.29	3.94	3.94
	Fluid flow	m3/h	107	121	134	152	166	177	205	228	180	196	212
Total freecooling [100% load]: [2]	ZET temperature	°C	9.6	8.2	9.2	7.5	8.4	7.6	7.4	5.3	6.3	6.6	5.3
Sound levels	N. of fans		10	10	12	12	14	14	16	16	18	20	20
	Sound Pressure Level - SPL (Premium fans) [4]	dB(A)	78.4	78.6	78.8	79.0	79.2	79.3	79.7	79.9	80.2	80.6	80.8
	Sound Power Level - PWL (Premium fans) [5]	dB(A)	99.9	100.1	100.8	101.0	101.6	101.7	102.4	102.6	103.3	104.0	104.2
	Sound Pressure Level - SPL (Low noise version) [6]	dB(A)	72.3	73.0	73.2	73.9	74.1	74.4	75.0	75.8	76.4	77.1	77.7
	Sound Power Level - PWL (Low noise version) [6]	dB(A)	93.8	94.5	95.2	95.9	96.4	96.8	97.7	98.5	99.5	100.5	101.1
Dimensions	Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
	Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
	Unit height (Premium fans)	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865

R134a Screw Chiller Version CH4 Models			065	075	080	090	100*	110*	125*	140*	165*	180*	195*
Mechanical cooling performance: [3]	Cooling capacity	kW	689	776	861	977	1067	1138	1315	1470	1740	1894	2046
	Total power input (Premium fans)	kW	152	175	195	223	237	254	294	332	382	455	490
	Unit EER (Premium fans)	-	4.52	4.43	4.41	4.38	4.49	4.48	4.47	4.43	4.56	4.16	4.18
	Fluid flow	m3/h	99	112	124	141	153	164	189	212	167	182	196
Sound levels	N. of fans		10	10	12	12	14	14	16	16	18	20	20
	Sound Pressure Level - SPL (Premium fans) [4]	dB(A)	77.2	77.4	77.6	77.9	78.1	78.2	78.6	78.9	79.2	79.6	79.9
	Sound Power Level - PWL (Premium fans) [5]	dB(A)	98.7	98.9	99.6	99.9	100.5	100.6	101.3	101.6	102.3	103.0	103.3
	Sound Pressure Level - SPL (Low noise version) [6]	dB(A)	71.9	72.6	72.8	73.6	73.7	74.0	74.7	75.5	76	76.9	77.4
	Sound Power Level - PWL (Low noise version) [6]	dB(A)	93.4	94.1	94.8	95.6	96.0	96.4	97.4	98.2	99.1	100.3	100.8
Dimensions	Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
	Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
	Unit height (Premium fans)	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865

R134a Screw Glycol-Free Version NH4 Models			065	075	080	090	100*	110*	125*	140*	165*	180*	195*
Mechanical cooling performance: [3]	Cooling capacity	kW	678	763	848	960	1049	1117	1290	1441	1703	1855	2003
	Total power input (Premium fans)	kW	157	181	202	231	245	262	304	344	396	470	508
	Unit EER (Premium fans)	-	4.31	4.22	4.21	4.16	4.28	4.25	4.25	4.18	4.3	3.94	3.95
	Fluid flow	m3/h	97	110	122	138	151	161	186	207	163	178	192
Total freecooling [100% load]: [2]	ZET temperature	°C	6.9	5.0	6.6	4.7	5.8	4.8	4.7	2.6	2.9	3.4	1.7
Sound levels	N. of fans		10	10	12	12	14	14	16	16	18	20	20
	Sound Pressure Level - SPL (Premium fans) [4]	dB(A)	78.7	78.8	79.1	79.3	79.5	79.6	80.0	80.2	80.4	80.8	81.0
	Sound Power Level - PWL (Premium fans) [5]	dB(A)	100.2	100.3	101.1	101.3	101.9	102.0	102.7	102.9	103.5	104.2	104.4
	Sound Pressure Level - SPL (Low noise version) [6]	dB(A)	72.4	73.1	73.3	74.1	74.2	74.5	75.1	75.9	76.5	77.2	77.8
	Sound Power Level - PWL (Low noise version) [6]	dB(A)	93.9	94.6	95.3	96.1	96.5	96.9	97.8	98.6	99.6	100.6	101.2
Dimensions	Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
	Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
	Unit height (Premium fans)	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865

R513A Screw Freecooling Version FH3 Models			065	075	080	090	100*	110*	125*	140*	165*	180*	195*
Mechanical cooling performance: [1]	Cooling capacity	kW	664	746	830	939	1027	1093	1266	1424	1670	1817	1969
	Total power input (Premium fans)	kW	160	185	206	236	250	268	311	354	407	464	512
	Unit EER (Premium fans)	-	4.15	4.04	4.03	3.98	4.10	4.07	4.07	4.02	4.11	3.91	3.84
	Fluid flow	m3/h	106	120	133	150	165	175	203	228	178	194	210
Total freecooling [100% load]: [2]	ZET temperature	°C	9.7	8.3	9.2	7.7	8.5	7.7	7.5	5.3	6.4	6.8	5.4
Sound levels	N. of fans		10	10	12	12	14	14	16	16	18	20	20
	Sound Pressure Level - SPL (Premium fans) [4]	dB(A)	78.4	78.6	78.9	79.1	79.3	79.4	79.8	80.0	80.3	80.6	80.9
	Sound Power Level - PWL (Premium fans) [5]	dB(A)	99.9	100.1	100.9	101.1	101.7	101.8	102.5	102.7	103.4	104.0	104.3
	Sound Pressure Level - SPL (Low noise version) [6]	dB(A)	72.4	73.1	73.4	74.1	74.2	74.5	75.2	76.0	76.6	77.1	77.7
	Sound Power Level - PWL (Low noise version) [6]	dB(A)	93.9	94.6	95.4	96.1	96.6	96.9	97.9	98.7	99.7	100.5	101.1
Dimensions	Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
	Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
	Unit height (Premium fans)	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865

R513A Screw Chiller Version
CH3 Models

			065	075	080	090	100*	110*	125*	140*	165*	180*	195*
Mechanical cooling performance: [3]	Cooling capacity	kW	684	770	856	969	1059	1127	1305	1471	1723	1874	2036
	Total power input (Premium fans)	kW	156	180	201	230	244	262	303	344	395	452	500
	Unit EER (Premium fans)	-	4.38	4.27	4.26	4.21	4.33	4.31	4.3	4.27	4.36	4.15	4.07
	Fluid flow	m3/h	98	111	123	139	152	162	188	212	165	180	195
Sound levels	N. of fans		10	10	12	12	14	14	16	16	18	20	20
	Sound Pressure Level - SPL (Premium fans) [4]	dB(A)	77.2	77.4	77.7	77.9	78.2	78.3	78.7	79.0	79.3	79.6	79.9
	Sound Power Level - PWL (Premium fans) [5]	dB(A)	98.7	98.9	99.7	99.9	100.6	100.7	101.4	101.7	102.4	103.0	103.3
	Sound Pressure Level - SPL (Low noise version) [6]	dB(A)	72.1	72.8	73.0	73.8	73.9	74.2	74.8	75.7	76.3	76.8	77.5
	Sound Power Level - PWL (Low noise version) [6]	dB(A)	93.6	94.3	95.0	95.8	96.2	96.6	97.5	98.4	99.4	100.2	100.9
Dimensions	Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
	Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
	Unit height (Premium fans)	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865

R513A Screw Glycol-Free Version
NH3 Models

			065	075	080	090	100*	110*	125*	140*	165*	180*	195*
Mechanical cooling performance: [3]	Cooling capacity	kW	673	755	841	951	1040	1105	1279	1439	1684	1833	1984
	Total power input (Premium fans)	kW	161	186	208	238	252	270	313	357	410	468	516
	Unit EER (Premium fans)	-	4.17	4.05	4.05	4.00	4.12	4.09	4.09	4.03	4.11	3.92	3.84
	Fluid flow	m3/h	96	109	121	137	150	159	184	207	162	176	190
Total freecooling [100% load]: [2]	ZET temperature	°C	7.0	5.2	6.7	4.8	5.7	4.8	4.7	2.5	3.0	3.8	2.1
Sound levels	N. of fans		10	10	12	12	14	14	16	16	18	20	20
	Sound Pressure Level - SPL (Premium fans) [4]	dB(A)	78.7	78.9	79.1	79.3	79.5	79.6	80.0	80.3	80.5	80.8	81.1
	Sound Power Level - PWL (Premium fans) [5]	dB(A)	100.2	100.4	101.1	101.3	101.9	102.0	102.7	103.0	103.6	104.2	104.5
	Sound Pressure Level - SPL (Low noise version) [6]	dB(A)	72.6	73.3	73.5	74.3	74.3	74.6	75.3	76.1	76.7	77.2	77.8
	Sound Power Level - PWL (Low noise version) [6]	dB(A)	94.1	94.8	95.5	96.3	96.7	97.0	98.0	98.8	99.8	100.6	101.2
Dimensions	Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
	Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
	Unit height (Premium fans)	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865

R1234ze - Inverter - Freecooling Version FIZ Models			065	075	080	085	095*	110*	125*	140*	150*
Mechanical cooling performance: [1]	Cooling capacity	kW	671	735	782	853	960	1106	1258	1432	1586
	Total power input (Premium fans)	kW	152	178	182	204	226	267	301	334	374
	Unit EER (Premium fans)	-	4.40	4.14	4.29	4.17	4.25	4.14	4.18	4.29	4.24
	Fluid flow	m3/h	107	118	125	137	154	177	202	153	169
Total freecooling [100% load]: [2]	ZET temperature	°C	9.6	8.5	9.9	8.9	9.3	7.5	7.6	9.1	9.2
Sound levels	N. of fans		10	10	12	12	14	14	16	18	20
	Sound Pressure Level - SPL (Premium fans) [4]	dB(A)	78.6	78.9	79.0	79.3	79.5	79.3	79.7	79.8	80.1
	Sound Power Level - PWL (Premium fans) [5]	dB(A)	100.1	100.4	101.0	101.3	101.9	101.7	102.4	102.9	103.5
	Sound Pressure Level - SPL (Low noise version) [6]	dB(A)	73.2	74.5	74.1	75.1	75.2	74.5	75.0	75.4	76.0
	Sound Power Level - PWL (Low noise version) [6]	dB(A)	94.7	96.0	96.1	97.0	97.5	96.9	97.8	98.5	99.4
Dimensions	Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
	Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
	Unit height (Premium fans)	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865

R1234ze - Inverter - Chiller Version CIZ Models			065	075	080	085	095*	110*	125*	140*	150*
Mechanical cooling performance: [3]	Cooling capacity	kW	686	757	804	878	986	1139	1294	1468	1625
	Total power input (Premium fans)	kW	147	172	177	198	220	259	296	323	362
	Unit EER (Premium fans)	-	4.68	4.40	4.54	4.44	4.49	4.40	4.44	4.54	4.49
	Fluid flow	m3/h	99	109	116	126	142	164	186	141	156
Sound levels	N. of fans		10	10	12	12	14	14	16	18	20
	Sound Pressure Level - SPL (Premium fans) [4]	dB(A)	77.3	77.7	77.8	78.2	78.4	78.2	78.5	78.7	79.0
	Sound Power Level - PWL (Premium fans) [5]	dB(A)	98.8	99.2	99.8	100.1	100.8	100.6	101.2	101.8	102.4
	Sound Pressure Level - SPL (Low noise version) [6]	dB(A)	72.8	74.1	73.7	74.7	74.8	74.1	74.6	75.0	75.6
	Sound Power Level - PWL (Low noise version) [6]	dB(A)	94.3	95.6	95.7	96.6	97.2	96.5	97.4	98.1	99.0
Dimensions	Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
	Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
	Unit height (Premium fans)	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865

R1234ze - Inverter - Glycol-Free Version NIZ Models			065	075	080	085	095*	110*	125*	140*	150*
Mechanical cooling performance: [3]	Cooling capacity	kW	679	745	792	864	971	1118	1271	1443	1597
	Total power input (Premium fans)	kW	153	179	184	206	228	269	303	336	376
	Unit EER (Premium fans)	-	4.43	4.16	4.31	4.20	4.27	4.15	4.19	4.29	4.25
	Fluid flow	m3/h	97	107	114	124	140	161	183	138	153
Total freecooling [100% load]: [2]	ZET temperature	°C	6.9	5.5	7.6	6.3	6.9	4.5	4.9	5.9	5.8
Sound levels	N. of fans		10	10	12	12	14	14	16	18	20
	Sound Pressure Level - SPL (Premium fans) [4]	dB(A)	78.8	79.1	79.3	79.5	79.8	79.6	79.9	80.1	80.4
	Sound Power Level - PWL (Premium fans) [5]	dB(A)	100.3	100.6	101.3	101.5	102.2	102.0	102.6	103.2	103.8
	Sound Pressure Level - SPL (Low noise version) [6]	dB(A)	73.4	74.6	74.2	75.2	75.4	74.6	75.2	75.5	76.0
	Sound Power Level - PWL (Low noise version) [6]	dB(A)	94.9	96.1	96.2	97.2	97.7	97.0	97.9	98.6	99.5
Dimensions	Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
	Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
	Unit height (Premium fans)	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865

Notes:

[1] 35°C ambient temperature; 20°C fluid outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;

[2] 20°C fluid outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;

[3] 35°C ambient temperature; 20°C fluid outlet temperature; water; power supply 400V/3ph/50Hz;

[4] The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method. At nominal working conditions; [1]

[5] The value of PWL is calculated in according to ISO 3744 procedure method. At nominal working conditions. [1]

[6] Cooling capacity and efficiency for low noise version are indicated in the product document

* Preliminary values

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MKA4L0UKAFCze - Rev. 0-06/2021