KELVIN
Air Conditioning System
2016

Qualified for **Energy Technology List**
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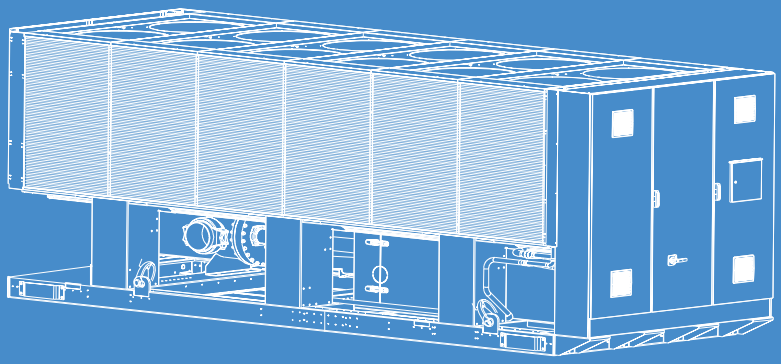
TM

bsi. ISO 9001 Quality Management | ISO 14001 Environmental Management

KELVIN Clim F323

Cooling Capacity: 319 ~ 1583 kW
Free-Cooling Capacity: 323 ~ 1370 kW



R134a | SHELL | A/C | FREE COOLING | EU

Packaged air cooled liquid chillers with free-cooling system in "A" class energy efficiency, for outdoor installation, equipped with screw compressors and axial fans

KELVIN AIR CONDITIONING

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EUROVENT CERTIFIED PERFORMANCE Pending... www.eurovent-certification.com

KELVIN AIRCONDITIONING

R134a · A CLASS · SHELL · A C · FREE COOLING · EU

MAIN FEATURES

- Air cooled liquid chiller with free-cooling system in A class energy efficiency.
- 24 models available, for a wide selection opportunity.
- Average step of 50kW.
- EER up to 3,34.
- ESEER up to 3,83.
- Twin-Screw compressors.
- R134a Refrigerant charge.
- Double refrigerant circuit.
- Shell and tube evaporator.
- AC Axial fans.
- Double air circuit.
- Electronic expansion valve.
- Suitable for outdoor installation.

MAIN BENEFITS

- Indirect free cooling system.
- Availability of Glycol Free system.
- High EER and ESEER, A class energy efficiency.
- Availability of kit for the reduction and the extreme reduction of the noise.
- Availability of pumping groups.
- Availability of partial heat recovery system.
- Availability of EC axial fans for a higher efficiency.
- Complete set of components dedicated to the safety of the unity.
- Eurovent Certification.(pending)

INDIRECT FREE COOLING SYSTEM

Complete cooling of the chilled water of the existing cooling system with the outside air. The energy saving will be higher the longer the outside temperature remains below the required temperature for cooling.

GLYCOL FREE

The accessory allows to use pure water instead of antifreeze solutions in the hydraulic circuit of the plant.

A CLASS ENERGY EFFICIENCY

The best and most accurate components applied to the chillers.

WORKING LIMITS IN COOLING MODE

Chilled water outlet temperature: -10~15°C
Ambient temperature: -20~45°C

WORKING LIMITS IN FREE-COOLING MODE

Minimum chilled water outlet temperature: -15°C
Minimum ambient temperature: -20°C

MAIN COMPONENTS

FRAMEWORK
- Base, self supporting frame and panelling in steel plate with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders.
- Colour: RAL 9002.

COMPRESSORS
- Twin screw semi-hermetic compressors with highly efficient screw profile and high peripheral speed, optimized for R134a refrigerant.
- Integrated discharge check valve.
- Flanged-on oil separator.
- Integrated safety relief valve (overpressure inner valve).
- Replaceable cartridge type oil filter.
- Valves for oil filling and discharge.
- Oil sight glass.
- Electronic protection device that includes:
  - Electric motor thermal protection via internal winding temperature sensors,
  - Phase sequence electronic relay,
  - Sensor on refrigerant discharge for temperature monitoring.
- 2-pole 3-phase electric motor with Part-Winding starting from model 290 V2 F06 to model 590 V2 F10 included.
- 2-pole 3-phase electric motor with Star / Delta starting from model 630 V2 F12 to model 1450 V2 F24 included.
- Capacity control, 50~100% for each compressor.
- Crankcase heater.
- Terminal box with IP54 enclosure class.
- Rubber supports.

EVAPORATOR
- Single pass type shell and tube evaporator optimized for R134a refrigerant.
- Tubes with a helical rifled internal surface.
- Intermediate baffles positioned to ensure optimum speed of the fluid and low pressure drops.
- Single circuit on water side and independent circuits, one for each compressor, on refrigerant side.
- Shell, header, tube sheets, made of carbon steel, tubes in Cu.
- Anticondensate insulation made of polyurethane.
- Temperature sensors on water inlet and outlet.
- Hydraulic connections with grooved end supplied as standard with flexible joint and adapter pipe to be welded.

CONDENSING AND FREE-COOLING COIL
- Heat exchangers contained in single coil with high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops. The combination of two factors, special tubes and fins, allow to optimally combine the following aspects:
  - Maximum capacity relative to the size of the exchanger,
  - Minimum charge of refrigerant,
  - Reduction of the air flow required for the heat exchange,
- Frame in galvanized steel.
- Motorized valves for free-cooling water circuit control.
- Temperature sensor on ambient air.

FANS SECTION
- Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels.
- External rotor AC type electric motor.
- Stepless variable speed with phase-cut electronic controller for condensing pressure control.
- Stepless variable speed with phase-cut electronic controller for free-cooling control.
- IP54 enclosure class.

Component for each refrigerant circuit:
- Electronic expansion valve that allows high performance and system efficiency thanks to a timely and accurate response to changes in temperature and pressure.
- Energy reserve module for the electronic expansion valve to allow the closure of the valve in the event of lack of power supply.
- Sight glass.
- Filter dryer on liquid line.
- Service valves on liquid line.
- Service valves on compressor gas discharge.
- Double safety valve (only one in function) on high and low pressure side. The system include two safety valves with manual changeover system.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure and oil pressure.
- High pressure safety switch with manual reset.
- Pressure gauge on high and low pressure.
- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- Plastic capillary hoses for pressure sensors connection.
- R134a refrigerant charge.

ELECTRICAL PANEL
In accordance with EN60204-1 norms, suitable for outdoor installation, complete with:
- Main switch with door lock safety.
- Fuses for each compressor.
- Magnetothermic switches for fans.
- Fuses for water pumps (if scheduled).
- Contactors for each load.
- Compressor Part-Winding starting system from model 290 V2 F06 to model 590 V2 F10 included.
- Compressor Star / Delta starting system from model 630 V2 F12 to model 1450 V2 F24 included.
- Transformer for auxiliary circuit and microprocessor supply.
- Panel with machine controls.
- Power supply 400/3/50.

CONTROL SYSTEM
- MP.COM microprocessor system with graphic display for control and monitor of operating and alarms status. The system includes:
  - Voltage free contact for remote general alarm.
  - Main components hour-meter.
  - Nonvolatile "Flash" memory for data storage.
  - Menu with protection password.
  - LAN connection.
- Additional module "1" for ambient air temperature inlet.
- Driver for the additional module "1".

OPTIONAL ACCESSORIES

KELVIN Clim F323 SIZE	F06	F08	F10	F12	F14	F16	F18	F20	F22	F24
739 - Pumping group (1 pump)	●	●	●	●	●	-	-	-	-	-
769 - Pumping group (1+1stby)	●	●	●	●	●	-	-	-	-	-
740 - Pumping group (2 pumps)	-	-	-	-	-	●	●	●	●	●
770 - Pumping group (1+2stby)	-	-	-	-	-	●	●	●	●	●
1004 - Antifreeazing heater for pumping group	●	●	●	●	●	●	●	●	●	●
118 - Kit brine A (for glycol solution production up to °6-C)	●	●	●	●	●	●	●	●	●	●
119 - Kit brine B (for glycol solution production up to °12-C)	●	●	●	●	●	●	●	●	●	●
786 - Pipes antifreezing kit	●	●	●	●	●	●	●	●	●	●
79 - Electrical panel heating system	●	●	●	●	●	●	●	●	●	●
150 - LNO kit (noise reduction)	●	●	●	●	●	●	●	●	●	●
151 - ELN kit (extremely noise reduction)	●	●	●	●	●	●	●	●	●	●
170 - Spring antivibration holders (kit)	●	●	●	●	●	●	●	●	●	●
171 - Rubber antivibration holders (kit)	●	●	●	●	●	●	●	●	●	●
101 - EC fan	●	●	●	●	●	●	●	●	●	●
Condensing pressure / Free cooling control system	●	●	●	●	●	●	●	●	●	●
450 - Partial heat recovery	●	●	●	●	●	●	●	●	●	●
449 - Voltage free contact for partial heat recovery water pump activation	●	●	●	●	●	●	●	●	●	●
Condensing coil in special execution	●	●	●	●	●	●	●	●	●	●
250 - Coils protection nets (kit)	●	●	●	●	●	●	●	●	●	●
731 - Safety water flow switch	●	●	●	●	●	●	●	●	●	●
-1005 Safety oil flow switch	●	●	●	●	●	●	●	●	●	●
143 - Glycol free	●	●	●	●	●	●	●	●	●	●
650 - Compressor thermal relay	●	●	●	●	●	●	●	●	●	●
605 - Compr. power factor capacitor - 0,9	●	●	●	●	●	●	●	●	●	●
Supply network control relay	●	●	●	●	●	●	●	●	●	●
83 - Compressor operation indicator	●	●	●	●	●	●	●	●	●	●
550 - Stop valve on compressor suction line	●	●	●	●	●	●	●	●	●	●
85 - Demand limit	●	●	●	●	●	●	●	●	●	●
88 - Analog set point compensation	●	●	●	●	●	●	●	●	●	●
1003 - Analogic flowmeter	●	●	●	●	●	●	●	●	●	●
1005 - Power supply analyzer	●	●	●	●	●	●	●	●	●	●
1009 - Multimeter kit	●	●	●	●	●	●	●	●	●	●
919 - Clock card	●	●	●	●	●	●	●	●	●	●
923 - KELVIN-Com MBUS/JBUS Serial board	●	●	●	●	●	●	●	●	●	●
926 - LON Serial board	●	●	●	●	●	●	●	●	●	●
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	●	●	●	●	●	●	●	●	●	●
932 - BACnet MS/TP Serial board	●	●	●	●	●	●	●	●	●	●
934 - MP.COM expansion card	●	●	●	●	●	●	●	●	●	●
942 - Serial card for GSM Modem	●	●	●	●	●	●	●	●	●	●
943 - Data Logger	●	●	●	●	●	●	●	●	●	●
962 - Kit modem GSM	●	●	●	●	●	●	●	●	●	●
957 - Plantwatch without modem	●	●	●	●	●	●	●	●	●	●
930 - Remote graphic terminal kit	●	●	●	●	●	●	●	●	●	●
889 - Master plant SEQUENCER	●	●	●	●	●	●	●	●	●	●
KELVIN CLOUD PLATFORM	●	●	●	●	●	●	●	●	●	●

● available accessory; - not available accessory

TECHNICAL DATA KELVIN Clim F323

	KELVIN Clim F323 SIZE		290 V2 F06	310 V2 F06	330 V2 F08	360 V2 F08	380 V2 F08	420 V2 F08	460 V2 F10	490 V2 F10
STANDARD	**Cooling capacity (1)**	**kW**	**319**	**335**	**361**	**386**	**409**	**451**	**501**	**532**
	Unit power input	kW	95,5	100,9	109,1	117,7	124,7	138,3	151,4	162,2
	Free-Cooling capacity (2)	**kW**	**323**	**325**	**397**	**435**	**438**	**452**	**520**	**533**
	Evaporator water flow rate	m³/h	57,2	60,0	64,6	69,2	73,2	80,8	89,8	95,2
	Evaporator pressure drop	kPa	54	53	69	74	76	89	54	68
	Compressors		twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw
	Quantity	n.	2	2	2	2	2	2	2	2
	Capacity control	%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%
	Axial fans	n.	6	6	7	8	8	8	10	10
	Total air flow	m³/h	122336	119280	142772	163168	159040	159040	198800	198800
	Air circuits	n.	2	2	2	2	2	2	2	2
	Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	110	146	145	145	194	194	241	241
	Gas circuits	n.	2	2	2	2	2	2	2	2
	Power supply	V/Ph/Hz	50/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/400
	Max unit operating current (FLA)	A	251,4	230,4	261,8	293,2	293,2	335,2	381,2	366,5
	Unit starting current (LRA)	A	400,4	388,4	418,3	445,2	445,2	525,2	624,0	633,0
	EER (1)	kW/kW	3,34	3,32	3,31	3,28	3,28	3,26	3,31	3,28
	ESEER		3,78	3,77	3,78	3,74	3,76	3,77	3,74	3,75
	Sound power level [Lw] (3)	dB(A)	92,1	92,5	92,7	92,9	91,5	91,9	92,1	96,2
	Average sound pressure level [Lpm] (4)	dB(A)	72,4	72,8	72,5	72,7	71,3	71,7	71,4	75,6
	Net weight	kg	5330	5923	6633	6638	6857	6895	8018	8030
	Hydraulic connections									
	Evaporator IN/OUT - OD (5)	Ø mm	139,7	139,7	139,7	139,7	139,7	139,7	139,7	139,7
OPTIONAL	Glycol free system (2)									
	Free-Cooling capacity	**kW**	**241**	**243**	**297**	**325**	**327**	**338**	**387**	**397**
	Glycol free water pump power input	kW	5,5	5,5	5,5	5,5	5,5	5,5	5,5	5,5
	Partial heat recovery (6)									
	Heating capacity	**kW**	**62,9**	**66,0**	**71,1**	**76,1**	**80,6**	**88,9**	**98,8**	**105,0**
	Pumping group									
	Power input	kW	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5
LNO KIT %100	**Cooling capacity (1)**	**kW**	**319**	**335**	**361**	**386**	**409**	**451**	**501**	**532**
	Unit power input	kW	95,5	100,9	109,1	117,7	124,7	138,3	151,4	162,2
	Free-Cooling capacity (2)	**kW**	**323**	**325**	**397**	**435**	**438**	**452**	**520**	**533**
	Total air flow	m³/h	122376	119280	142772	163168	159040	159040	198800	198800
	EER (1)	kW/kW	3,34	3,32	3,31	3,28	3,28	3,26	3,31	3,28
	Sound power level [Lw] (3)	dB(A)	90,1	90,5	90,7	90,9	89,5	89,9	90,1	94,2
	Average sound pressure level [Lpm] (4)	dB(A)	70,4	70,8	70,5	70,7	69,3	69,7	69,4	73,6
LNO KIT %85	**Cooling capacity (1)**	**kW**	**313**	**330**	**356**	**382**	**404**	**445**	**496**	**522**
	Unit power input	kW	95,4	102,5	110,2	117,9	125,1	140,8	152,1	164,2
	Free-Cooling capacity (2)	**kW**	**321**	**323**	**395**	**433**	**436**	**451**	**518**	**529**
	Total air flow	m³/h	104019	101388	121356	138692	135184	135184	168980	168980
	EER (1)	kW/kW	3,28	3,22	3,23	3,24	3,23	3,16	3,26	3,18
	Sound power level [Lw] (3)	dB(A)	89,1	89,5	89,7	89,9	88,5	88,9	89,1	93,2
	Average sound pressure level [Lpm] (4)	dB(A)	69,4	69,8	69,5	69,7	68,3	68,7	68,4	72,6
LNO KIT %70	**Cooling capacity (1)**	**kW**	**305**	**322**	**349**	**375**	**397**	**436**	**487**	**509**
	Unit power input	kW	96,5	106,3	112,6	120,2	128,5	144,4	156,1	168,5
	Free-Cooling capacity (2)	**kW**	**318**	**321**	**393**	**431**	**434**	**448**	**514**	**524**
	Total air flow	m³/h	85663	83496	99940	114218	111328	111328	139160	139160
	EER (1)	kW/kW	3,16	3,03	3,10	3,12	3,09	3,02	3,12	3,02
	Sound power level [Lw] (3)	dB(A)	86,1	86,5	86,7	86,9	85,5	85,9	86,1	90,2
	Average sound pressure level [Lpm] (4)	dB(A)	66,4	66,8	66,5	66,7	65,3	65,7	65,4	69,6
ELN KIT	**Cooling capacity (1)**	**kW**	**305**	**322**	**349**	**375**	**397**	**436**	**487**	**509**
	Unit power input	kW	96,5	106,3	112,6	120,2	128,5	144,4	156,1	168,5
	Free-Cooling capacity (2)	**kW**	**318**	**321**	**393**	**431**	**434**	**448**	**514**	**524**
	Total air flow	m³/h	85663	83496	99940	114218	111328	111328	139160	139160
	EER (1)	kW/kW	3,16	3,03	3,10	3,12	3,09	3,02	3,12	3,02
	Sound power level [Lw] (3)	dB(A)	83,1	83,5	83,7	83,9	82,5	82,9	83,1	87,2
	Average sound pressure level [Lpm] (4)	dB(A)	63,4	63,8	63,5	63,7	62,3	62,7	62,4	66,6

1. Referred to glycol solution temperature 15/10°C; 20% Ethylene glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 $m^2°K/kW$.
2. Referred to glycol solution inlet temperature 15°C; 20% Ethylene glycol solution; ambient temperature 3°C. Fouling factor of the exchangers 0,043 $m^2°K/kW$.
3. Sound power level [Lw] according to ISO EN 9614 – 2.
4. Average sound pressure level [LPm] 1m far according to ISO EN 3744.
5. Hydronic connection with grooved end complete with flexible joint and adapter pipe for solder connection.
6. Referred to glycol solution temperature 15/10°C; 20% Ethylene glycol solution; air temperature to the condenser 35°C. Water temperature heat recovery 40/45°C – 0% glycol solution; Fouling factor of the exchangers 0,043 $m^2°K/kW$.

TECHNICAL DATA KELVIN Clim F323

	KELVIN Clim F323		540 V2	590 V2	630 V2	680 V2	720 V2	790 V2	860 V2	910 V2
	SIZE		F10	F10	F12	F14	F14	F16	F16	F16
STANDARD	**Cooling capacity (1)**	**kW**	**584**	**638**	**691**	**735**	**781**	**863**	**943**	**993**
	Unit power input	kW	178,6	195,1	210,7	228,3	244,1	266,4	291,0	308,4
	Free-Cooling capacity (2)	**kW**	**553**	**570**	**655**	**735**	**773**	**868**	**917**	**930**
	Evaporator water flow rate	m³/h	105,0	114,0	124,0	132,0	140,0	155,0	169,0	178,0
	Evaporator pressure drop	kPa	71	73	92	110	113	118	125	141
	Compressors		twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw
	Quantity	n.	2	2	2	2	2	2	2	2
	Capacity control	%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%
	Axial fans	n.	10	10	12	13	14	15	16	16
	Total air flow	m³/h	198800	198800	238560	261794	278320	302070	318080	318080
	Air circuits	n.	2	2	2	2	2	2	2	2
	Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	241	241	289	294,5	337	339,5	389	389
	Gas circuits	n.	2	2	2	2	2	2	2	2
	Power supply	V/Ph/Hz	50/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/400
	Max unit operating current (FLA)	A	394,8	423,2	460,7	483,7	506,7	580,1	653,5	685,0
	Unit starting current (LRA)	A	714,0	741,0	556,8	587,7	609,6	708,5	778,4	808,4
	EER (1)	kW/kW	3,27	3,27	3,28	3,22	3,20	3,24	3,24	3,22
	ESEER		3,75	3,75	3,71	3,72	3,77	3,74	3,72	3,71
	Sound power level [Lw] (3)	dB(A)	96,5	96,7	97,7	99,3	100,4	101,1	101,7	101,6
	Average sound pressure level [Lpm] (4)	dB(A)	75,8	76,0	76,7	77,9	79,0	79,3	79,9	79,8
	Net weight	kg	8182	8304	9086	9669	9872	11754	12233	12267
	Hydraulic connections									
	Evaporator IN/OUT - OD (5)	Ø mm	139,7	139,7	139,7	139,7	139,7	168,3	168,3	168,3
OPTIONAL	Glycol free system (2)									
	Free-Cooling capacity	**kW**	**412**	**425**	**490**	**549**	**578**	**649**	**686**	**696**
	Glycol free water pump power input	kW	5,5	7,5	7,5	7,5	7,5	15,0	15,0	15,0
	Partial heat recovery (6)									
	Heating capacity	**kW**	**115,0**	**126,0**	**136,0**	**145,0**	**154,0**	**170,0**	**186,0**	**196,0**
	Pumping group									
	Power input	kW	7,5	7,5	7,5	7,5	7,5	15,0	15,0	15,0
LNO KIT %100	**Cooling capacity (1)**	**kW**	**584**	**638**	**691**	**735**	**781**	**863**	**943**	**993**
	Unit power input	kW	178,6	195,1	210,7	228,3	244,1	266,4	291,0	308,4
	Free-Cooling capacity (2)	**kW**	**553**	**570**	**655**	**735**	**773**	**868**	**917**	**930**
	Total air flow	m³/h	198800	198800	238560	261794	278320	302070	318080	318080
	EER (1)	kW/kW	3,27	3,27	3,28	3,22	3,20	3,24	3,24	3,22
	Sound power level [Lw] (3)	dB(A)	94,5	94,7	95,7	97,3	98,4	99,1	99,7	99,6
	Average sound pressure level [Lpm] (4)	dB(A)	73,8	74,0	74,7	75,9	77,0	77,3	77,9	77,8
LNO KIT %85	**Cooling capacity (1)**	**kW**	**574**	**627**	**681**	**723**	**768**	**850**	**929**	**976**
	Unit power input	kW	181,6	197,8	213,5	231,0	246,2	269,8	294,9	312,8
	Free-Cooling capacity (2)	**kW**	**550**	**567**	**653**	**732**	**770**	**864**	**913**	**926**
	Total air flow	m³/h	168980	168980	202776	222524	236572	256759	270368	270368
	EER (1)	kW/kW	3,16	3,17	3,19	3,13	3,12	3,15	3,15	3,12
	Sound power level [Lw] (3)	dB(A)	93,5	93,7	94,7	96,3	97,4	98,1	98,7	98,6
	Average sound pressure level [Lpm] (4)	dB(A)	72,8	73,0	73,7	74,9	76,0	76,3	76,9	76,8
LNO KIT %70	**Cooling capacity (1)**	**kW**	**559**	**611**	**665**	**705**	**748**	**830**	**907**	**952**
	Unit power input	kW	187,0	204,3	218,8	236,6	252,7	275,7	302,3	321,6
	Free-Cooling capacity (2)	**kW**	**545**	**562**	**648**	**727**	**764**	**859**	**908**	**921**
	Total air flow	m³/h	139160	139160	166992	183256	194824	211449	222656	222656
	EER (1)	kW/kW	2,99	2,99	3,04	2,98	2,96	3,01	3,00	2,96
	Sound power level [Lw] (3)	dB(A)	90,5	90,7	91,7	93,3	94,4	95,1	95,7	95,6
	Average sound pressure level [Lpm] (4)	dB(A)	69,8	70,0	70,7	71,9	73,0	73,3	73,9	73,8
ELN KIT	**Cooling capacity (1)**	**kW**	**559**	**611**	**665**	**705**	**748**	**830**	**907**	**952**
	Unit power input	kW	187,0	204,3	218,8	236,6	252,7	275,7	302,3	321,6
	Free-Cooling capacity (2)	**kW**	**545**	**562**	**648**	**727**	**764**	**859**	**908**	**921**
	Total air flow	m³/h	139160	139160	166992	183256	194824	211449	222656	222656
	EER (1)	kW/kW	2,99	2,99	3,04	2,98	2,96	3,01	3,00	2,96
	Sound power level [Lw] (3)	dB(A)	87,5	87,7	88,7	90,3	91,4	92,1	92,7	92,6
	Average sound pressure level [Lpm] (4)	dB(A)	66,8	67,0	67,7	68,9	70,0	70,3	70,9	70,8

1. Referred to glycol solution temperature 15/10°C; 20% Ethylene glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 $m^2°K/kW$.
2. Referred to glycol solution inlet temperature 15°C; 20% Ethylene glycol solution; ambient temperature 3°C. Fouling factor of the exchangers 0,043 $m^2°K/kW$.
3. Sound power level [Lw] according to ISO EN 9614 – 2.
4. Average sound pressure level [LPm] 1m far according to ISO EN 3744.
5. Hydronic connection with grooved end complete with flexible joint and adapter pipe for solder connection.
6. Referred to glycol solution temperature 15/10°C; 20% Ethylene glycol solution; air temperature to the condenser 35°C. Water temperature heat recovery 40/45°C – 0% glycol solution; Fouling factor of the exchangers 0,043 $m^2°K/kW$.

TECHNICAL DATA KELVIN Clim F323

	KELVIN Clim F323 SIZE		960 V2 F16	1050 V2 F16	1110 V2 F18	1170 V2 F20	1240 V2 F20	1310 V2 F20	1380 V2 F22	1450 V2 F24
STANDARD	**Cooling capacity (1)**	**kW**	**1043**	**1146**	**1215**	**1285**	**1361**	**1438**	**1508**	**1583**
	Unit power input	kW	324,9	358,1	379,7	394,2	418,8	442,5	465,4	488,6
	Free-Cooling capacity (2)	**kW**	**943**	**965**	**1056**	**1144**	**1165**	**1185**	**1273**	**1370**
	Evaporator water flow rate	m³/h	187,0	205,0	218,0	230,0	244,0	258,0	270,0	284,0
	Evaporator pressure drop	kPa	147	133	153	80	89	71	88	91
	Compressors		twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw
	Quantity	n.	2	2	2	2	2	2	2	2
	Capacity control	%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%	25... 100%
	Axial fans	n.	16	16	18	20	20	20	22	24
	Total air flow	m³/h	318080	318080	357840	397600	397600	397600	437360	477120
	Air circuits	n.	2	2	2	2	2	2	2	2
	Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	389	389	436	482	482	482	530	578
	Gas circuits	n.	2	2	2	2	2	2	2	2
	Power supply	V/Ph/Hz	50/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/400
	Max unit operating current (FLA)	A	716,5	737,5	787,7	837,9	893,6	949,2	993,1	1037,0
	Unit starting current (LRA)	A	837,4	968,4	1040,2	1088,0	1243,0	1296,0	1415,8	1457,6
	EER (1)	kW/kW	3,21	3,20	3,20	3,26	3,25	3,25	3,24	3,24
	ESEER		3,72	3,83	3,79	3,77	3,78	3,83	3,81	3,79
	Sound power level [Lw] (3)	dB(A)	101,4	99,9	101,7	103,9	103,9	103,9	104,1	104,2
	Average sound pressure level [Lpm] (4)	dB(A)	79,6	78,1	79,5	81,5	81,5	81,5	81,4	81,3
	Net weight	kg	12277	12376	13934	15142	15402	15422	16101	16780
	Hydraulic connections									
	Evaporator IN/OUT - OD (5)	Ø mm	168,3	168,3	168,3	168,3	168,3	168,3	168,3	168,3
OPTIONAL	Glycol free system (2)									
	Free-Cooling capacity	**kW**	**705**	**722**	**790**	**854**	**870**	**885**	**951**	**1024**
	Glycol free water pump power input	kW	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0
	Partial heat recovery (6)									
	Heating capacity	**kW**	**206,0**	**226,0**	**239,0**	**253,0**	**268,0**	**283,0**	**297,0**	**312,0**
	Pumping group									
	Power input	kW	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0
LNO KIT %100	**Cooling capacity (1)**	**kW**	**1.043**	**1.146**	**1.215**	**1.285**	**1.361**	**1.438**	**1.508**	**1.583**
	Unit power input	kW	324,9	358,1	379,7	394,2	418,8	442,5	465,4	488,6
	Free-Cooling capacity (2)	**kW**	**943**	**965**	**1056**	**1144**	**1165**	**1185**	**1273**	**1370**
	Total air flow	m³/h	318080	318080	357840	397600	397600	397600	437360	477120
	EER (1)	kW/kW	3,21	3,20	3,20	3,26	3,25	3,25	3,24	3,24
	Sound power level [Lw] (3)	dB(A)	99,4	97,9	99,7	101,9	101,9	101,9	102,1	102,2
	Average sound pressure level [Lpm] (4)	dB(A)	77,6	76,1	77,5	79,5	79,5	79,5	79,4	79,3
LNO KIT %85	**Cooling capacity (1)**	**kW**	**1.025**	**1.124**	**1.193**	**1.262**	**1.334**	**1.407**	**1.477**	**1.553**
	Unit power input	kW	330,6	367,3	387,3	400,6	426,2	452,4	474,9	497,8
	Free-Cooling capacity (2)	**kW**	**939**	**961**	**1052**	**1138**	**1159**	**1178**	**1267**	**1364**
	Total air flow	m³/h	270368	270368	304164	337960	337960	337960	371756	405552
	EER (1)	kW/kW	3,10	3,06	3,08	3,15	3,13	3,11	3,11	3,12
	Sound power level [Lw] (3)	dB(A)	98,4	96,9	98,7	100,9	100,9	100,9	101,1	101,2
	Average sound pressure level [Lpm] (4)	dB(A)	76,6	75,1	76,5	78,5	78,5	78,5	78,4	78,3
LNO KIT %70	**Cooling capacity (1)**	**kW**	**997**	**1091**	**1159**	**1227**	**1294**	**1362**	**1432**	**1509**
	Unit power input	kW	340,3	382,8	401,0	413,1	441,6	471,3	492,1	515,0
	Free-Cooling capacity (2)	**kW**	**934**	**956**	**1046**	**1129**	**1149**	**1168**	**1257**	**1354**
	Total air flow	m³/h	222656	222656	250488	278320	278320	278320	306152	333984
	EER (1)	kW/kW	2,93	2,85	2,89	2,97	2,93	2,89	2,91	2,93
	Sound power level [Lw] (3)	dB(A)	95,4	93,9	95,7	97,9	97,9	97,9	98,1	98,2
	Average sound pressure level [Lpm] (4)	dB(A)	73,6	72,1	73,5	75,5	75,5	75,5	75,4	75,3
ELN KIT	**Cooling capacity (1)**	**kW**	**997**	**1091**	**1159**	**1227**	**1294**	**1362**	**1432**	**1509**
	Unit power input	kW	340,3	382,8	401,0	413,1	441,6	471,3	492,1	515,0
	Free-Cooling capacity (2)	**kW**	**934**	**956**	**1046**	**1129**	**1149**	**1168**	**1257**	**1354**
	Total air flow	m³/h	222656	222656	250488	278320	278320	278320	306152	333984
	EER (1)	kW/kW	2,93	2,85	2,89	2,97	2,93	2,89	2,91	2,93
	Sound power level [Lw] (3)	dB(A)	92,4	90,9	92,7	94,9	94,9	94,9	95,1	95,2
	Average sound pressure level [Lpm] (4)	dB(A)	70,6	69,1	70,5	72,5	72,5	72,5	72,4	72,3

1. Referred to glycol solution temperature 15/10°C; 20% Ethylene glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 m²°K/kW.
2. Referred to glycol solution inlet temperature 15°C; 20% Ethylene glycol solution; ambient temperature 3°C. Fouling factor of the exchangers 0,043 m²°K/kW.
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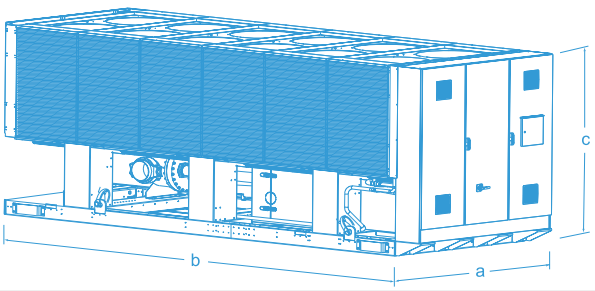
DIMENSIONS (mm)
KELVIN Clim F323
SIZE F

	a	b	c
F06	3520	2260	2550
F08	4490	2260	2550
F10	5460	2260	2550
F12	6430	2260	2550
F14	7400	2260	2550
F16	8720	2260	2550
F18	9690	2260	2550
F20	10660	2260	2550
F22	11630	2260	2550
F24	12600	2260	2550




KELVIN
Air Conditioning System