

ERAE MC HE Kc

AIR COOLED CHILLERS WITH SCROLL COMPRESSORS AXIAL FANS AND MICROCHANNEL CONDENSING COILS

COOLING CAPACITY FROM 134 to 664 kW



The images shown above are indicative and not binding.



AIR COOLED CHILLERS EQUIPPED WITH SCROLL COMPRESSORS, AXIAL FANS AND MICROCHANNEL CONDENSING COILS

Packaged air cooled chillers of ERAE... MC HE Kc series are suitable for outdoor installation and can be used to cool pure fluid solutions for air conditioning or in industrial applications.

The coupling of high-efficiency microchannel condensing coils and Stainless steel plate evaporator WITH increased exchange surface area and the thermo physical purity of R410A refrigerant, particularly glide-free at state exchanges, allows this range to attain EER nominal values in class A efficiency and to meet the requirements for seasonal efficiency foreseen by the (EU) Regulation 2016/2281.

Micro channel condensing coils are totally made up of mechanically expanded aluminum alloy. In comparison to the traditional Copper-Aluminum coils, the micro channel geometry provides less resistance to the air passing. This allows to optimize the performances of the fans section and consequently to reduce the absorbed power of the fans.

Moreover the micro channel technology permits to reduce the weight of the condensing section as well as the refrigerant charge.

The cross “V” arrangement of the condensing coils makes the units of this series perfectly each other modular, granting at the same time the easiest access to the technical room both for checking operations required during the normal unit functioning and for maintenance.

All the units are totally factory assembled and tested, following specific quality procedures. Besides they are totally hydraulic, cooling and electrical connected permitting a quick installation once on site. Before the test the cooling circuits of each unit are subjected to a pressure test and then charged with Refrigerant R410A and non-freezing oil. So, once on site, the units must be only positioned and electrically and hydraulically connected.

Operation limits:

Air: da +10 a +42°C ; **Water** (outlet from the evaporator): da 5 a 15°C.

Structure

Structure made of a base and a chassis manufactured in high-thickness galvanised steel, assembled with stainless steel rivets. All galvanised steel surfaces are powder-coated with colour RAL 7035.

Compressors

Scroll compressors with R410a refrigerant, operating on one or two independent circuits in single, tandem or trio version. The compressors are installed on rubber isolation dampers, provided with direct-start motors cooled by suction gas and fitted with both overload protection and crankcase heaters. They are charged with polyester oil and the terminal board is IP54. The on-board microprocessor automatically controls the individual compressors to regulate the cooling capacity.

Evaporator

Stainless steel plate evaporator of "single" or "dual" circuit type, with high thickness close cell insulation and UV ray-proof. The max operating pressure limits are 6 bar for water side and 45 bar for refrigerant side. The evaporator is also equipped with safety water flow switch switching off the unit in case of low water flow through the evaporator.

Coils

Microchannel condensing Coils totally made up of mechanically expanded aluminum alloy to grant a perfect and continuous contact among tubes and fins optimizing the thermal exchange and reducing dimensions.

The high passivation degree of the used alloy, besides the peculiar assembling way, avoids the possibility to have galvanic corrosion phenomena. On demand it is also possible to provide the units installed in particularly aggressive environments with surface treatments against exchangers environmental corrosion. (Option ACP and PCP).

Fans

Axial fans, 6 poles electrical motor with external rotor directly coupled to the wheel, designed to work with high external air temperatures and provided with in-built overload protection. Fan is statically and dynamically balanced in order to grant, together with the peculiar wing profile, a low sound level during operation. The fan is provided with safety protection grid. On demand, it is possible to supply a condensation pressure control for low external air temperatures operation thanks to the fans speed modulation through a phase cut (Standard for sizes from 5102 to 6602) or inverter driven electronic regulator. (Option BT and BF).

Refrigerant circuit

Independent cooling circuits, each provided with a shut-off valve for refrigerant charge, antifreeze sensor, shut-off valves on liquid lines, sight glass, dehydrating filter, high-pressure safety device on high pressure refrigerant side and electronic thermostatic expansion valve, as well as high and low pressure switches and gauges.

Electrical board

Electrical board in compliance with CE Norms, contained in a suitable section protected by internal safety panel, provided with a lock-door main switch. Inside all the control and protection components are suitably placed, together with terminal board and auxiliaries. Microprocessor and relevant display are also placed inside the electrical cabinet.

Microprocessor

Electronic Microprocessor for unit management installed inside the electrical cabinet, with double evaporator in/out control of the chilled water temperature, as well as control of working parameters and equalization of compressors working hours, failures auto-detection system, alarm log, start and set point timeslot programming, possibility of remote management and supervision by enabling standard communication protocols management.

Versions

High efficiency version (HE)

Units with full load efficiency Eurovent class A EER ≥ 3.1 .

Technical data - ERAE MC HE Kc serie

ERAE MC HE Kc		1301	1701	2102	2402	2702	3102	3502
Performance data								
Cooling capacity (EN14511)	kW	134,1	179,2	214,0	243,0	268,6	311,0	343,3
Total input power (EN14511)	kW	43,3	54,2	67,5	76,9	86,4	96,9	110,4
EER	W/W	3,10	3,31	3,17	3,16	3,11	3,21	3,11
SEER ⁽¹⁾		3,82	4,11	3,89	3,84	3,84	4,03	4,00
η _{s,c} ⁽¹⁾		149,8	161,6	152,7	150,7	150,6	158,1	157,0
Refrigerant data R410A								
Global warming potential	GWP	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	39,7	54,3	64,7	73,1	79,3	91,9	102,3
Refrigerant charge	Kg	19	26	31	35	38	44	49
Scroll Compressors								
Quantity/Circuits	n°/n°	2 / 1	2 / 1	4 / 2	4 / 2	4 / 2	4 / 2	4 / 2
Nominal consumption of the unit	A	67,5	81,8	107,3	119,6	134,8	150,6	171,6
Max. current consumption of the unit	A	97	130	160	177	194	228	262
Max. starting current of the unit	A	306	351	305	358	373	419	440
Axial fans								
Quantity	n°	2	4	4	4	4	6	6
Motors power input	kW	5,0	7,8	7,8	9,9	9,9	11,6	11,6
Total condensing air flow	m ³ /h	54900	86000	86000	109800	109800	129000	129000
Electrical current consumption	A	10,3	15,6	15,6	20,6	20,6	23,4	23,4
Evaporator plate heat exchanger								
Quantity	n°	1	1	1	1	1	1	1
Water flow	m ³ /h	23,1	30,9	36,9	41,9	46,3	53,6	59,2
Pressure drop	kPa	31,7	36,8	49,6	50,7	48,5	62,1	57,0
Sound power level ⁽²⁾	dB(A)	91,0	91,0	91,0	93,0	94,0	94,0	94,0
Power supply	V/Hz/Ph	400/50/3	400/50/3	400/50/3	400/50/3	400/50/3	400/50/3	400/50/3

Performances are referred to the following conditions: ambient air temperature 35°C - water 12/7°C

(1) In accordance with (EU) 2016/2281 and relative norms part of this.

(2) Sound power level in accordance with ISO 3744.

Technical data - ERAE MC HE Kc serie

ERAE MC HE Kc		4002	4402	5102	5602	6302	6602
Performance data							
Cooling capacity (EN14511)	kW	396,7	442,7	522,8	565,3	624,7	664,0
Total input power (EN14511)	kW	124,7	139,7	164,9	181,2	194,0	210,8
EER	W/W	3,18	3,17	3,17	3,12	3,22	3,15
SEER ⁽¹⁾		3,96	4,11	4,22	4,19	4,21	4,17
$\eta_{s,c}$ ⁽¹⁾		155,3	161,3	165,7	164,6	165,4	163,7
Refrigerant data R410A							
Global warming potential	GWP	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	116,9	131,5	154,5	167,0	185,8	196,3
Refrigerant charge	Kg	56	63	74	80	89	94
Scroll Compressors							
Quantity/Circuits	n°/n°	4 / 2	4 / 2	6 / 2	6 / 2	6 / 2	6 / 2
Nominal consumption of the unit	A	191,5	213,6	254,1	280,5	295,2	320,8
Max. current consumption of the unit	A	296	331	393	427	462	496
Max. starting current of the unit	A	546	569	522	635	651	677
Axial fans							
Quantity	n°	6	8	8	8	10	10
Motors power input	kW	14,9	15,5	19,8	19,8	24,8	24,8
Total condensing air flow	m ³ /h	164700	172000	219600	219600	274500	274500
Electrical current consumption	A	30,9	31,2	41,2	41,2	51,5	51,5
Evaporator plate heat exchanger							
Quantity	n°	1	1	1	1	1	1
Water flow	m ³ /h	68,4	76,3	90,1	97,5	107,7	114,5
Pressure drop	kPa	49,8	53,5	55,8	54,5	59,7	64,5
Sound power level ⁽²⁾	dB(A)	96,0	98,0	96,0	98,0	98,0	100,0
Power supply	V/Hz/Ph	400/50/3	400/50/3	400/50/3	400/50/3	400/50/3	400/50/3

Performances are referred to the following conditions: ambient air temperature 35°C - water 12/7°C

(1) In accordance with (EU) 2016/2281 and relative norms part of this.

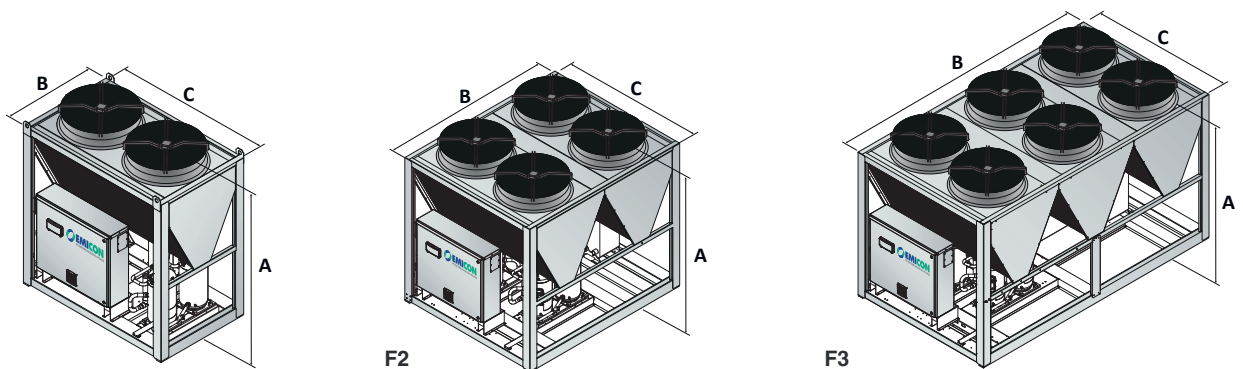
(2) Sound power level in accordance with ISO 3744.

Accessories - ERAE MC HE Kc serie

ERAE MC HE KC		1301	1701	2102	2402	2702	3102	3502
Amperometer	A	o	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils (AIAX coating)	ACP	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	o	o	o	o	o	o	o
Low ambient temperature operation (down to 20°C)	BT	o	o	o	o	o	o	o
Low ambient temperature operation (down to -20°C)	BF	o	o	o	o	o	o	o
Soundproofed compressors cabinet with standard material	CF	o	o	o	o	o	o	o
Overall compressor and technical compartment cabinet	CFT	o	o	o	o	o	o	o
Soundproofed compressors cabinet with polyester material	CFU	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o
Anti-intrusion grid	GP1	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o
LON Protocol serial interface	IH (LON)	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o
SNMP or TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o	o
Buffer tank module	MV	-	o	o	o	o	o	o
Pump group	P1	-	o	o	o	o	o	o
Higher available pressure pump group	P1H	-	o	o	o	o	o	o
Double pump group (only one working)	P2	-	o	o	o	o	o	o
Higher available pressure double pump group (only one working)	P2H	-	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils (Powder coating)	PCP	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o
In-line twin pump group (only one working)	PT	-	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o
Power factor correction system cosfi ≥0,9	RF	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o
Voltmeter	V	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•	•

• Standard o Optional - Not available

Dimensions - ERAE MC HE Kc serie



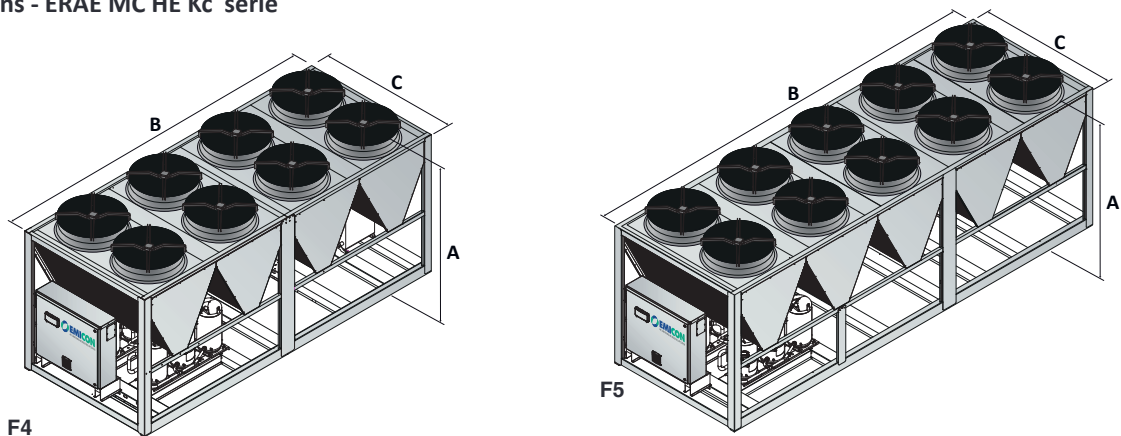
Mod.		A (mm)	B (mm)	C (mm)	Kg
1301	F1	2470	1340	2260	1174
1701	F2	2470	2680	2260	1598
2102	F2	2470	2680	2260	1871
2402	F2	2470	2680	2260	1977
2702	F2	2470	2680	2260	1988
3102	F3	2470	4020	2260	2473
3502	F3	2470	4020	2260	2478

Accessories - ERAE MC HE Kc serie

ERAE MC HE KC		4002	4402	5102	5602	6302	6602
Amperometer	A	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils (AIAX coating)	ACP	o	o	o	o	o	o
Electrical power supply different than standard	AE	o	o	o	o	o	o
Low ambient temperature operation (down to 20°C)	BT	o	o	●	●	●	●
Low ambient temperature operation (down to -20°C)	BF	o	o	o	o	o	o
Soundproofed compressors cabinet with standard material	CF	o	o	o	o	o	o
Overall compressor and technical compartment cabinet	CFT	o	o	o	o	o	o
Soundproofed compressors cabinet with polyester material	CFU	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o
Anti-intrusion grid	GP1	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o
LON Protocol serial interface	IH (LON)	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o
SNMP or TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o
Buffer tank module	MV	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o
Double pump group (only one working)	P2	o	o	o	o	o	o
Higher available pressure double pump group (only one working)	P2H	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils (Powder coating)	PCP	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o
In-line twin pump group (only one working)	PT	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o
Power factor correction system cosφi ≥0,9	RF	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o
Voltmeter	V	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o
Electronic thermostatic valve	TE	●	●	●	●	●	●

● Standard o Optional - Not available

Dimensions - ERAE MC HE Kc serie



Mod.		A (mm)	B (mm)	C (mm)	Kg
4002	F3	2470	4020	2260	2579
4402	F4	2470	5360	2260	2988
5102	F4	2470	5360	2260	3422
5602	F4	2470	5360	2260	3488
6302	F5	2470	6700	2260	3941
6602	F5	2470	6700	2260	3952