

CSK

Air to water chillers and heat pumps



The CSK water chillers range have been designed for small and medium residential and commercial applications. The CSK water chillers are suitable for water outlet temperatures at 7°C, commonly used in combinations with fan coils or/ and air handling units. The CSK water chillers provide high efficiencies and quiet operation and are suitable for indoor installations. The different versions allow the user to select the most suitable solution thanks to a wide range of accessories.

VERSIONS

- CSK, cooling only versions, available in 10 different sizes.
- CSK/HP, reversible heat pump versions, available in 10 different sizes.

ACCESSORIES

- LS low noise version.
- Partial heat recovery.
- Hydraulic kit A1ZZ with: pump, expansion valve, safety valve, flow switch, insulated tank.
- Fan speed control by means of a modulating damper.
- Spring or Rubber vibrations dampers.
- Evaporator antifreeze heater (basic version only).
- Antifreeze kit (only for A versions)
- Manometers.
- Coils protection mesh with metallic filter.
- Oversized condenser fan motors.
- Remote control panel.
- Serial interface card RS485.

Model CSK ÷ CSK/HP		05	07	09	13	15
Cooling capacity ⁽¹⁾	kW	5,2	7,3	8,6	12,9	15,1
Compressors input power ⁽¹⁾	kW	1,5	2,6	2,8	4,2	5,2
Water flow ⁽¹⁾	m³/h	0,9	1,3	1,5	2,2	2,6
Heating capacity ⁽²⁾	kW	4,7	7,2	8,4	12,6	15,0
Compressors input power ⁽²⁾	kW	1,7	2,5	3,0	4,2	4,9
Water flow ⁽²⁾	m³/h	0,8	1,3	1,5	2,2	2,7
Power supply	V/Ph/Hz	230/1/50			400/3+N/50	
Nominal input current	A	9,4	12,1	15,5	10,0	11,3
Peak current	A	42,0	68,0	75,0	75,0	83,0
Max input current	A	14,2	17,1	20,4	16,3	18,4
Compressors / Circuits	n°	Rotary 1/1		Scroll 1/1		
Fans	n°	1	1	1	1	1
Total airflow	m³/h	3000	3000	3000	5400	5400
Fans available static pressure	Pa	50	50	50	50	50
Sound power level ⁽³⁾	dB(A)	71	71	71	73	73
Sound pressure level ⁽⁴⁾	dB(A)	43	43	43	45	45
Water pump	kW	0,13	0,2	0,2	0,3	0,45
Pump available static pressure	kPa	53	47	39	80	66
Water tank	l	40	40	40	60	60

Modello CSK ÷ CSK/HP		20	25	30	35	40
Cooling capacity ⁽¹⁾	kW	18,3	23,3	26,7	30,5	40,2
Compressors input power ⁽¹⁾	kW	6,3	7,7	8,5	11,4	13,9
Water flow ⁽¹⁾	m³/h	3,1	4,0	4,5	5,2	7,0
Heating capacity ⁽²⁾	kW	19,1	23,7	27,4	33,5	41,3
Compressors input power ⁽²⁾	kW	6,4	7,6	8,7	10,9	13,2
Water flow ⁽²⁾	m³/h	3,4	4,2	4,8	6,0	7,2
Power supply	V/Ph/Hz	400/3+N/50				
Nominal input current	A	15,4	18,0	20,0	24,0	28,7
Peak current	A	116,0	140,0	161,0	201,0	232,0
Max input current	A	21,0	23,5	26,3	30,3	36,2
Compressors / Circuits	n°	Scroll 1/1				
Fans	n°	1	1	2	2	2
Total airflow	m³/h	8000	8000	10800	10800	10600
Fans available static pressure	Pa	50	50	50	50	50
Sound power level ⁽³⁾	dB(A)	77	77	82	82	82
Sound pressure level ⁽⁴⁾	dB(A)	49	49	54	54	54
Water pump	kW	0,45	0,45	0,55	0,55	0,9
Pump available static pressure	kPa	119	83	131	123	103
Water tank	l	60	60	180	180	180

⁽¹⁾ Cooling: ambient air temperature 35°C; evaporator water temperature in/out 12/7°C.

⁽²⁾ Heating: ambient air temperature 7°C DB, 6°C WB; condenser water temperature in/out 40/45°C.

⁽³⁾ Sound power level according to ISO 3746.

⁽⁴⁾ Sound pressure level at 10 mt. from the unit in free field conditions direction factor Q=2 according to ISO 3746.

CSK

FRAME

All CSK units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. All screws and rivets are in stainless steel. The colour of the units is RAL 9018.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, reverse cycle valve (for heat pump version only), one way valve (for heat pump version only), liquid receiver (for heat pump version only), Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSORS

The compressors are scroll type (rotative type for sizes 04,05,07 only), with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. They are mounted in a separate chamber in order to be separated from the air stream. The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit that allows the maintenance of the compressors even if the unit is working.

CONDENSERS

The condensers are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. The condensers can be protected by a metallic filter to be installed on request.

FANS

The fans are made of galvanized steel, centrifugal type, double inlet with forward curved blades. They are statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. They are mounted on the unit frame by interposition of rubber vibration dampers. The electric motors are 4 poles (about 1500 rpm), they are directly driven (05,07,09 sizes only) or connected to the fans by pulleys and belts (all other sizes). The protection class of the motors is IP 54.

EVAPORATORS

The evaporators are made of AISI 316 stainless steel braze-welded plates type. The use of this kind of evaporators allows a massive reduction of the refrigerant charge of the unit compared to the traditional shell-in-tube evaporators and also a reduction of the overall dimensions of the unit. The evaporators are factory insulated with flexible close cell material and can be equipped with antifreeze heater (optional). Each evaporator is provided with a temperature sensor as antifreeze protection.

MICROPROCESSORS

All CSK units are supplied standard with microprocessor controls. The microprocessor controls the following functions: regulation of the water temperature, antifreeze protection, compressor timing, compressor automatic starting sequence, alarm reset, potential free contact for remote general alarm, alarms and operation leds. Upon request any microprocessor can be connected to a BMS system for the remote control and management. The technical department is available to study, together with the customer, different solutions using MODBUS; LONWORKS; BACNET or TREND protocols.

ELECTRIC BOX

The electric box is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit. In all CSK units are installed, standard, the compressors sequence relay which (only triphase versions) disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be

damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of pumps and fans), compressors fuses, control circuit automatic breakers, compressor contactors, fan contactors, pump contactors. The terminal board is supplied with voltage free contacts for remote ON-OFF, Summer / winter change over (heat pumps only) and general alarm.

CONTROL AND PROTECTION DEVICES

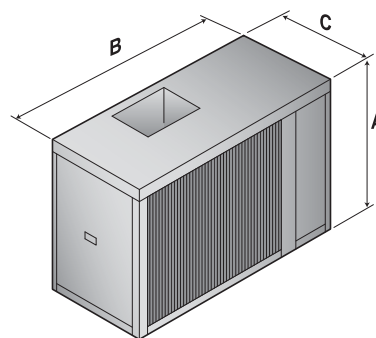
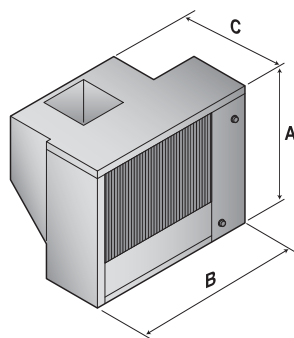
All units are supplied with the following control and protection devices: Return water temperature sensor, installed on the return water line from the plant (12°C), antifreeze protection sensor installed on the outlet water temperature (7°C), high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection, flow switch.

HEAT PUMP VERSION HP

The heat pump versions are provided with a 4 way reverse cycle valve and are suitable to produce hot water up to a temperature of 45-48°C. They are always supplied with liquid receiver and a second thermostatic valve to optimize the efficiency of the refrigerant cycle in heating and in cooling. The microprocessor is set for automatic defrost (in case of operation in severe ambient conditions) and for summer/winter change over.

Versions CSK ÷ CSK/HP	Code	05	07	09	13	15	20	25	30	35	40
Main switch	—	—	—	—	●	●	●	●	●	●	●
Flow switch	—	●	●	●	●	●	●	●	●	●	●
Microprocessor control	—	●	●	●	●	●	●	●	●	●	●
General alarm digital output	—	●	●	●	●	●	●	●	●	●	●
Remote on/off digital input	—	●	●	●	●	●	●	●	●	●	●
Electronic soft starter	DSSE	○	○	○	○	○	○	○	○	○	○
LS low noise version	LS00	○	○	○	○	○	○	○	○	○	○
Partial heat recovery	RP00	—	—	—	○	○	○	○	○	○	○
Low ambient condensing pressure control	DCCF	○	○	○	—	—	—	—	—	—	—
Low ambient condensing pressure cont by modulating	DCCS	—	—	—	○	○	○	○	○	○	○
Rubber vibration dampers	KAVG	○	○	○	○	○	○	○	○	○	○
Spring vibration dampers	KAVM	○	○	○	○	○	○	○	○	○	○
Evaporator antifreeze heater. (basic version only)	RAEV	○	○	○	○	○	○	○	○	○	○
Antifreeze kit (only for A versions)	RAES	○	○	○	○	○	○	○	○	○	○
Manometers	MAML	○	○	○	○	○	○	○	○	○	○
Condensate discharge drip tray with antifreeze heater	BRCA	○	○	○	○	○	○	○	○	○	○
Hydraulic kit pump + tank (A1ZZ)	A1ZZ	○	○	○	○	○	○	○	○	○	○
Hydraulic kit pump no tank (A1NT)	A1NT	○	○	○	○	○	○	○	○	○	○
Condensing coil protection mesh with metallic filter	FAMM	○	○	○	○	○	○	○	○	○	○
Oversized condenserfan motors Max 250 Pa	FOSP	○	○	○	○	○	○	○	○	○	○
Remote control panel	PCRL	○	○	○	○	○	○	○	○	○	○
Serial interface card RS485	INSE	○	○	○	○	○	○	○	○	○	○

● Standard, ○ Optional, — Not available.



Mod.	A (mm)	B (mm)	C (mm)	Kg
05/05A1	989	1103	625	102/155
07/07A1	989	1103	625	110/170
09/09A1	989	1103	625	128/187
13/13A1	1324	1203	694	135/217
15/15A1	1324	1203	694	142/222
20/20A1	1423	1453	780	188/267
25/25A1	1423	1453	780	209/286

Mod.	A (mm)	B (mm)	C (mm)	Kg
30/30A1	1270	1870	850	329/436
35/35A1	1270	1870	850	343/491
40/40A1	1270	1870	850	356/516