LRK

Air to water chillers and heat pumps for underfloor cooling/heating systems

CE

R407C

The LRK water chillers range have been expressly designed to be combined with underfloor cooling/heating systems. These units can produce outlet cold water temperatures up to 18°C, with energy efficiencies higher than 30÷35% with respect to the traditional water chillers having water outlet temperatures at 7°C.
The compact dimensions, the versatility and the wide range of accessories make the LRK series ideal for any application.

VERSIONS

- LRK, cooling only version, available in 11 different sizes.
- LRK/HP reversible heat pump version, available in 11 different sizes

ACCESSORIES

- LS low noise version.
- Hydraulic kit A1ZZ with: pump, expansion valve, safety valve, flow switch, insulated tank.
- Partial heat recovery.
- Low ambient condensing pressure control.
- Spring or Rubber vibrations dampers.
- Evaporator antifreeze heater (Basic version only).
- Manometers.
- Coil protection mesh with metallic filter.
- Remote control panel.
- Condensate discharge drip tray with antifreeze heater (HP version only).
- Hydraulic kit A1NT with: pump, expansion valve, safety valve, flow switch.

LRK

Model LRK ÷ LRK/HP		04	05	07	09	13
Cooling capacity [1]	kW	5,8	7,2	8,3	11,4	18,9
Compressor input power [1]	kW	1,4	1,7	2,7	3,0	4,8
Water flow [1]	m³/h	1,0	1,2	1,5	2,0	3,3
Heating capacity [2]	kW	3,9	4,8	7,2	8,4	12,6
Compressor input power [2]	kW	1,4	1,7	2,5	3,0	4,2
Water flow [2]	m³/h	0,7	0,8	1,3	1,5	2,2
Power supply	V/Ph/Hz	230/1/50				400/3+N/50
Nominal input current	A	11,0	14,8	19,9	23,0	13,7
Peak current	A	39,3	51,3	80,3	104,3	70,7
Max input current	A	14,3	15,7	21,6	27,4	16,7
Airflow	m³/h	3000	3000	3000	3000	5400
Fans	n°	1	1	1	1	2
Compressors	n°/tipo	1/Rotary				1/Scroll
Sound power level [3]	dB (A)	68	68	68	68	69
Sound pressure level [4]	dB (A)	40	40	40	40	41
Water pump (A version)	kW	0,13	0,13	0,2	0,2	0,3
Pump available static pressure (A vers.)	kPa	46	42	28	26	60
Water tank (A version)	l	40	40	40	40	60

Model LRK ÷ LRK/HP		15	20	25	30	35	40
Cooling capacity [1]	kW	20,9	25,2	33,5	39,5	44,3	53,9
Compressor input power [1]	kW	6,0	7,5	8,9	9,7	13,4	15,9
Water flow [1]	m³/h	3,7	4,4	5,9	6,9	7,8	9,4
Heating capacity [2]	kW	15,0	19,1	23,7	27,4	33,5	41,3
Compressor input power [2]	kW	4,9	6,4	7,6	8,7	10,9	13,2
Water flow [2]	m³/h	2,7	3,4	4,2	4,8	6,0	7,2
Power supply	V/Ph/Hz	400/3+N/50					
Nominal input current	A	14,7	19,5	21,6	25,9	28,8	33,8
Peak current	A	78,7	105,0	129,0	134,9	174,9	205,9
Max input current	A	16,7	21,1	24,0	28,9	33,5	35,7
Airflow	m³/h	5400	8000	8000	10800	10800	10600
Fans	n°	2	2	2	2	2	2
Compressors	n°/tipo	1/Scroll					
Sound power level [3]	dB (A)	69	74	74	79	79	79
Sound pressure level [4]	dB (A)	41	46	46	51	51	51
Water pump (A version)	kW	0,45	0,45	0,45	0,55	0,55	0,9
Pump available static pressure (A vers.)	kPa	50	47	20	85	80	55
Water tank (A version)	l	60	60	60	180	180	180

[1] Cooling: ambient temperature 35°C; water temperature 23/18°C.
[2] Heating: ambient temperature 7°C DB, 6°C WB; water temperature 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.

LRK

FRAME

All LRK 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 for outdoor installations 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, 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 form maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

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.

CONDENSER

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 axial type with aluminium aerofoil blades. They are statically and dynamically balanced and supplied complete of the safety fan guard according to EN 60335. They are mounted on the unit frame by interposition of rubber vibration dampers. The electric motors are all at 6 poles (about 900 rpm). The motors are directly driven with an integrated thermal overload protection. 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.

MICROPROCESSOR

All LRK 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 LRK units are installed, standard, the compressors sequence relay (only triphase units) which 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 (23°C), antifreeze protection sensor installed on the outlet water temperature (18°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.

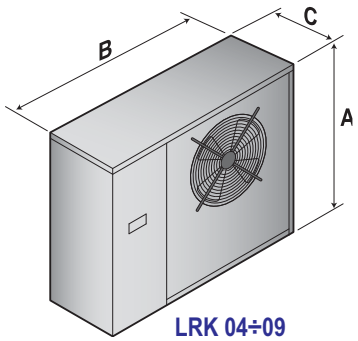
HEAT PUMP VERSION (HP)

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.

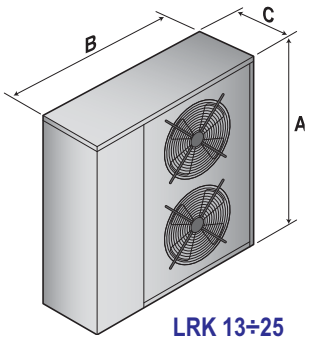
LRK

Versions LRK ÷ LRK/HP	Code	04	05	07	09	13	15	20	25	30	35
Main switch	–	–	–	–	●	●	●	●	●	●	●
Flow switch	–	●	●	●	●	●	●	●	●	●	●
Microprocessor control	–	●	●	●	●	●	●	●	●	●	●
General alarm digital output	–	●	●	●	●	●	●	●	●	●	●
Remote on/off digital input	–	●	●	●	●	●	●	●	●	●	●
LS low noise version	LS00	○	○	○	○	○	○	○	○	○	○
Partial heat recovery	RP00	–	–	–	–	○	○	○	○	○	○
Low ambient condensing pressure control	DCCF	○	○	○	○	○	○	○	○	○	○
Rubber vibration dampers	KAVG	○	○	○	○	○	○	○	○	○	○
Spring vibration dampers	KAVM	○	○	○	○	○	○	○	○	○	○
Electronic soft starter	DSSE	○	○	○	○	○	○	○	○	○	○
Evaporator antifreeze heater (basic versions 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	○	○	○	○	○	○	○	○	○	○
Cond. coil protection mesh with metallic filter	FAMM	○	○	○	○	○	○	○	○	○	○
Remote control panel	PCRL	○	○	○	○	○	○	○	○	○	○
Serial interface card RS485	INSE	○	○	○	○	○	○	○	○	○	○

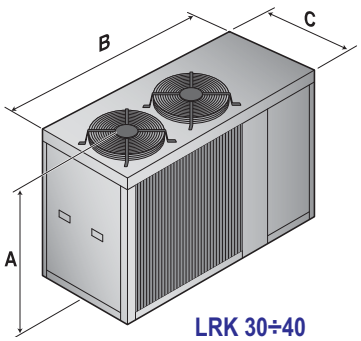
● Standard, ○ Optional, – Not available.



LRK 04÷09



LRK 13÷25



LRK 30÷40

Mod.	A (mm)	B (mm)	C (mm)	Kg
04/04A1	889	920	380	88/142
05/05A1	889	920	380	95/148
07/07A1	989	1103	380	104/163
09/09A1	989	1103	380	118/179
13/13A1	1324	1203	423	127/207
15/15A1	1324	1203	423	133/212

Mod.	A (mm)	B (mm)	C (mm)	Kg
20/20A1	1423	1453	473	188/267
25/25A1	1423	1453	473	209/286
30/30A1	1406	1870	850	330/440
35/35A1	1406	1870	850	345/495
40/40A1	1406	1870	850	360/520