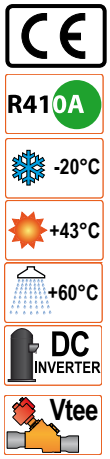
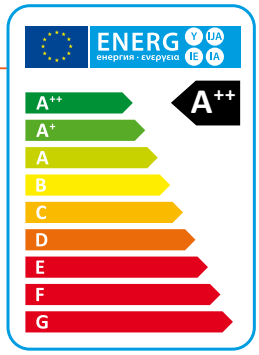
LRi

High efficiency air to water heat pumps with INVERTER compressor





The LRi series of high efficiency heat pumps has been specifically designed for use with radiant floor heating systems or those applications where it is necessary to have maximum efficiency when heating.
They have been optimized on heating mode, are able to produce water up to 60°C and can operate down to -20°C ambient temperature.
LZi units can produce domestic hot water through the activation of an external 3-way-valve.
All models are supplied as standard with a reversing valve for defrost and cold water production in summer.

VERSIONS

HH	Heating only.
RV	Reversible heating/cooling.
LS	Low noise.
P2U	2 pipe systems without domestic hot water production.
P2S	2 pipe systems with domestic hot water production by external 3 way valve.

ACCESSORIES

E1NT	Hydraulic kit with inverter pump.
KAVG	Rubber anti-vibration mountings.
PCRL	Remote control panel.
RAES	User and recovery heat exchanger antifreeze kit.
VECE	E.C. fans.

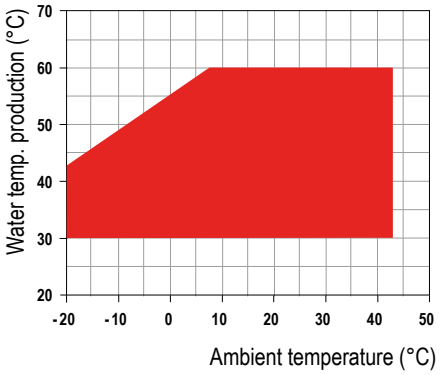
LRi/HH - Only Heating Version		10	15
Energy Class in low temperature - According to EU reg. 811/2013		A++	A++
Heating capacity (EN14511) (1)	kW	10,0	15,1
Total input power (EN14511) (1)	kW	2,3	3,6
COP (EN14511) (1)	W/W	4,35	4,23
Power supply	V/Ph/Hz	230/1/50	230/1/50
Max input current standard unit	A	17,5	25,3
Peak current standard unit	A	17,1	24,8
Max air flow in heating mode	m^3/h	5500	9000
Fans	n°	1	2
Compressors/Circuits	n°/n°	1/1	1/1
Max sound power level in heating mode (3)	dB (A)	66	68
Max sound pressure level in heating mode (4)	dB (A)	38	40
Nominal waterflow	l/h	1720	2600
Available static pressure circulating pump	kPa	40	75

LRi/RV - Reversible Version		10	15
Energy Class in low temperature - According to EU reg. 811/2013		A++	A++
Heating capacity (EN14511) (1)	kW	10,0	15,1
Total input power (EN14511) (1)	kW	2,3	3,6
COP (EN14511) (1)	W/W	4,35	4,23
Cooling capacity (EN14511) (2)	kW	7,8	13,0
Total input power (EN14511)(2)	kW	3,10	4,19
EER (EN14511) (2)	W/W	2,52	3,1
Power supply	V/Ph/Hz	230/1/50	230/1/50
Max input current standard unit	A	17,5	25,3
Peak current standard unit	A	17,1	24,8
Max air flow in heating mode	m^3/h	5500	9000
Max air flow in cooling mode	m^3/h	5500	9000
Fans	n°	1	2
Compressors/Circuits	n°/n°	1/1	1/1
Max sound power level in heating mode (3)	dB (A)	66	68
Max sound pressure level in heating mode (4)	dB (A)	38	40
Max sound power level in cooling mode (3)	dB (A)	66	68
Max sound pressure level in cooling mode (4)	dB (A)	38	40
Nominal waterflow	l/h	1720	2600
Available static pressure circulating pump	kPa	40	75

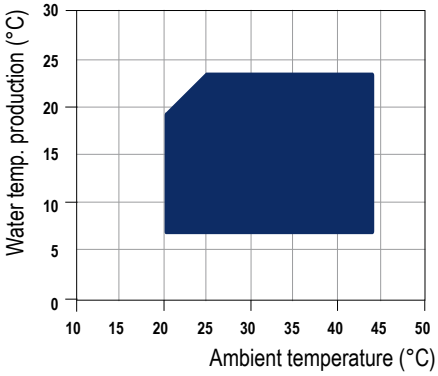
Performances refer to the following conditions:
(1)Heating: Ambient temperature 7°C DB, 6°C WB, water temperature 30/35°C.
(2)Cooling: ambient temperature 35°C, water temperature 23/18°C.
(3)Sound power level in accordance with ISO 9614.
(4)Sound pressure level at 10 mt from the unit in free field conditions direction factor Q=2, calculated in accordance with ISO 9614.

OPERATION LIMITS

(All versions)



(RV versions Only)



FRAME
All units are made from hot-galvanised sheet steel, painted with polyurethane powder enamel and stoved at 180°C to provide maximum protection against corrosion. The frame is self-supporting with removable panels.

REFRIGERANT CIRCUIT
The refrigerant circuit is made by using components from leading international companies in accordance with ISO 97/23 for the of braze welding processes.
The refrigerant used is R410A.
The refrigerant circuit includes: sight glass, filter drier, electronic expansion valve, 4-way valve, check valves, liquid receiver, Schrader valves for maintenance and control, a safety device (according to PED regulation).

COMPRESSORS
The compressors are high-efficiency scroll type, variable-speed modulation capability through DC inverter, supplied with a special design that increases the efficiency of the refrigeration cycle under conditions of very low ambient temperature. The compressors are equipped with an innovative electric motor permanent magnet brushless DC inverter-driven, high-efficiency, are all equipped with electrical resistance and thermal overload protection.

SOURCE HEAT EXCHANGER
The source heat exchanger is made from 3/8" copper pipes and 0,1mm thick aluminium fins with the tubes being mechanically expanded into the aluminium fins in order to maximise heat transfer. Furthermore, the design guarantees a low air side pressure drop thus enabling the use of low rotation speed (and hence low noise) fans.

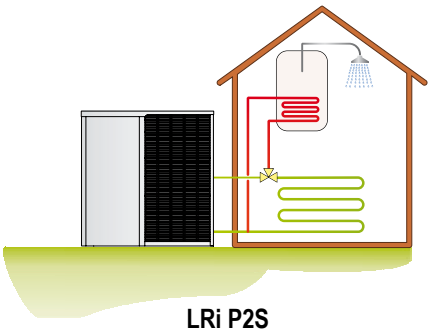
USER HEAT EXCHANGERS
The user heat exchanger is a braze welded, plate type heat exchanger, manufactured from AISI 316 stainless steel. Utilisation of this type of exchanger results in a massive reduction of the refrigerant charge of the unit compared to a traditional shell-in-tube type. A further advantage is a reduction in the overall dimensions of the unit.
The exchangers are factory insulated with flexible close cell material and can be fitted with an antifreeze heater (accessory). Each exchanger is fitted with a temperature sensor on the discharge water side for antifreeze protection.

E.C. FANS
The fans are axial type with high performance aerofoil blades, the impeller is made of galvanized sheet galvanized, painted with polyurethane powder, to ensure a high protection in aggressive and severe environments. The impeller mounted directly on DC-brushless motor with external rotor, to ensure ideal cooling of the engine and a total absence of losses of the transmission. Impeller dynamically balanced in class 6.3 according to ISO 1940. Engine brushlesss-DC permanent magnet high efficiency electronic switching unit (driver) separate. Continuous speed variation with voltage signal 0-10 V, PFC integrated protection "burn out" (excessive drop in voltage), fully IP54 driver, serial interface with Modbus RTU communication protocol. The maximum rotation speed of the motor is 600 rpm to guarantee an extremely low noise level.

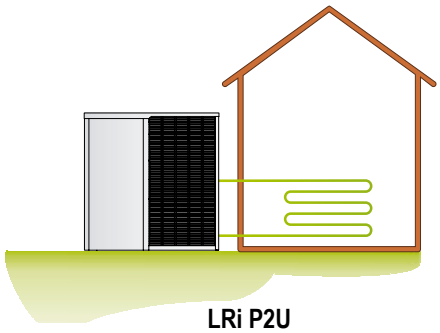
MICROPROCESSORS
All units are supplied as standard with microprocessor controls. The microprocessor controls the following functions: control of the water temperature, antifreeze protection, compressor timing, compressor automatic starting sequence (For multiple compressors), alarm reset. The control panel is supplied with display showing all operational icons. The microprocessor is set for automatic defrost (when operating in severe ambient conditions) and for summer/ winter change over.
The control also manages the anti-legionella program, the integration with other heating sources (electric heaters, boilers, solar panels etc), the operation of a three port modulating valve (for diverting to DHW or heating) and both the heating circuit pump and the domestic hot water circuit pump.

ELECTRIC ENCLOSURE
The enclosure is manufactured in order to comply with the requirements of the electromagnetic compatibility standards CEE 73/23 and 89/336. Access to the enclosure is achieved by removing the front panel of the unit. The following components are supplied as standard on all units: main switch, a sequence relay that disables the power supply in the event that the phase sequence is incorrect (scroll compressors can be damaged if they rotate in the wrong direction), thermal overloads (protection of pumps and fans), compressor fuses, control circuit automatic breakers, compressor contactors, fan contactors and pump contactors. The terminal board has volt 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 controls and protections: user water return temperature sensor, antifreeze protection temperature sensor installed on users water output, high pressure manual reset, low pressure automatic reset, compressor thermal protection, air fan, thermal protection, pressure transducer (used to optimize the defrost cycle and to adjust the fan speed depending on ambient conditions), flow switch. All units are also fitted with a temperature probe sensor with "Energy Saving" function, supplied in a separate plastic box, which can be used to stop the pump use during periods of stand-by, when the water temperature reaches the set point. Doing this the power consumption of the unit is strongly reduced.



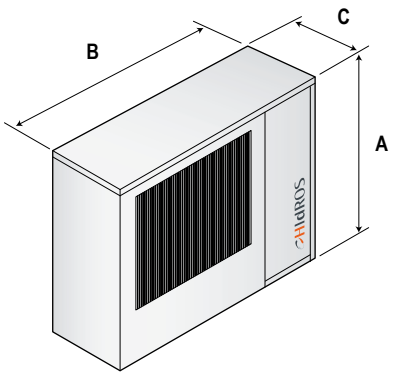
LRi P2S



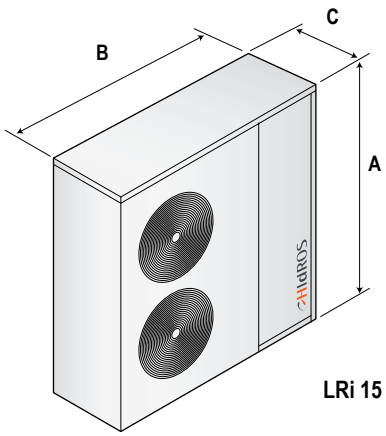
LRi P2U

LRi Options	Code	10	15
Compressor automatic switch		●	●
Flow switch		●	●
User water strainer		●	●
Evap/condens pressure control by transducer and fan speed control	DCCF	●	●
Fresh air temperature probe for set-point compensation	SOND	○	○
DHW Probe		●	●
Specific software for operation priorities		●	●
Remote ON/OFF digital input		●	●
Summer/Winter digital input		●	●
Floating frame technology		●	●
Condensate discharge drip tray with antifreeze heater	BRCA	●	●
Electronic Expansion Valve	VTEE	●	●
Electronic Soft starter	DSSE	●	●
Remote control panel	PCRL	○	○
Water strainer		○	○
E1NT Hydraulic kit (pump only)	E1NT	●	●
Rubber anti-vibration mountings.	KAVG	○	○
Antifreeze kit	RAES	●	●
E.C. fans	VECE	●	●

● Standard, ○ Optional, – Not available.



LRi 10



LRi 15

Mod.	A (mm)	B (mm)	C (mm)	Kg
10	890	875	360	75
15	1420	1025	360	120