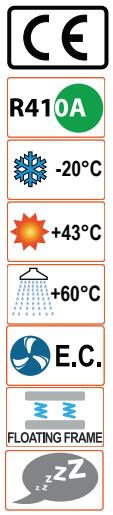
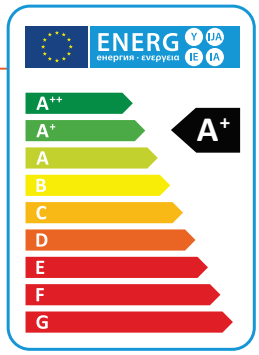
LHA

High efficiency air to water heat pumps





The LHA 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.
LHA units are available in 2 pipe, 2+2 pipe and 4 pipe versions.
Some versions can produce domestic hot water, in the P2S version through the activation of an external 3-way-valve and in the P4S version by means of a separate heat exchanger and hydraulic circuit for the domestic hot water.
All versions are supplied with reverse cycle valve used for winter defrost; the HH version is suitable for use in those countries that have support schemes for use of heat pump technology for heating. The RV versions are also able to produce cold water. The HH heating only versions is factory set and locked to operate only in heating mode whilst.
The noise is extremely low thanks to the use of a special floating vibration damping system which allows a noise reduction of about 10-12 dB(A) (Optional).

VERSIONS

HH	Heating only.
RV	Reversible heating/cooling.
LS	Low noise.
XL	Super 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.
P4U	4 pipe systems heating/cooling.
P4S	2+2 pipe systems with domestic hot water production.

ACCESSORIES

A1NT	Hydraulic kit with one pump without tank.
A1ZZ	Hydraulic kit with tank and one pump.
A2NT	Hydraulic kit with two pump without tank.
A2ZZ	Hydraulic kit with tank and two pump.
DSSE	Electronic soft starter.
INSE	Serial interface card RS 485.
KAVG	Rubber anti-vibration mountings.
KP	Hydraulic circuit antifreeze kit.
PCRL	Remote control panel.
RAEV	User and recovery heat exchanger antifreeze kit.
SGRS	Cascade control system via RS485.
SODP	Unit performance optimizer.
VECC	High static pressure E.C. fans.
VECE	E.C. fans.
VTEE	Electronic thermostatic valve.

(LS/HH) Low noise - Heating only version		252	302	402	452	502	602	702	802	902	1002	1202
Energy Class in low temperature - According to EU reg. 811/2013		A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+
Heating capacity (EN14511) (1)	kW	25,4	34,2	40,2	48,1	56,6	65,1	74,7	82	99,5	112,1	123,7
Total input power (EN14511)(1)	kW	5,8	7,8	8,9	11,5	12,9	14,5	17,4	19,1	22,6	25,5	28,1
COP (EN14511) (1)	W/W	4,40	4,40	4,50	4,20	4,40	4,50	4,30	4,30	4,40	4,40	4,40
Power supply	V/Ph/Hz	400/3+N/50			400/3/50							
Max input current standard unit	A	18,5	24,8	33,4	35,8	45,8	47,8	57,6	69,6	75,6	81,6	87,6
Peak current standard unit	A	53,2	77,5	93,4	114,8	135,8	143,8	150,6	178,6	215,6	266,6	272,6
Peak current standard unit with soft starter (optional)	A	31,9	46,5	56,0	68,9	81,5	86,3	90,4	107,2	129,4	160,0	163,6
Max air flow in heating mode	m^3/h	9600	9600	12200	21000	21000	21000	42000	42000	42000	42000	42000
Fans	n°	2	2	2	1	1	1	2	2	2	2	2
Compressors / Circuits	n°/n°	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1
Max sound power level in heating mode (2)	dB (A)	75	75	75	78	78	78	80	80	81	81	81
Max sound pressure level in heating mode (3)	dB (A)	47	47	47	50	50	50	52	52	53	53	53

(LS/HH) Low noise - Heating only version		1402	1602	1802	2002	2504	3004	3204	3504	4004	4504	5004
Energy Class in low temperature - According to EU reg. 811/2013		A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+
Heating capacity (EN14511) (1)	kW	143,9	158,3	177,1	192,1	246	279,4	306,8	338,2	394,1	448,3	483,2
Total input power (EN14511)(1)	kW	33,5	36,8	41,2	45,7	57,2	68,1	74,8	84,6	93,8	109,3	117,9
COP (EN14511) (1)	W/W	4,30	4,30	4,30	4,20	4,30	4,10	4,10	4,00	4,20	4,10	4,10
Power supply	V/Ph/Hz	400/3/50										
Max input current standard unit	A	99,9	108,4	125,3	142,2	175,2	196,0	216,8	254,4	292,0	326,4	360,8
Peak current standard unit	A	323,4	331,9	359,3	386,8	360,2	400,2	440,3	488,4	536,6	611,4	686,2
Peak current standard unit with soft starter (optional)	A	194,0	199,1	215,6	232,1	216,1	240,1	264,2	293,0	322,0	366,8	411,7
Max air flow in heating mode	m^3/h	62000	62000	62000	62000	81500	110000	110000	110000	112000	135000	135000
Fans	n°	3	3	3	3	4	6	6	6	6	8	8
Compressors / Circuits	n°/n°	2/1	2/1	2/1	2/1	4/2	4/2	4/2	4/2	4/2	4/2	4/2
Max sound power level in heating mode (2)	dB (A)	84	84	84	84	85	86	86	86	86	88	88
Max sound pressure level in heating mode (3)	dB (A)	56	56	56	56	57	58	58	58	58	60	60

Performance refer to the following conditions:

(1)Heating: Ambient temperature 7°C DB, 6°C WB, water temperature 30/35°C.

(2)Sound power level in accordance with ISO 9614.

(3)Sound pressure level at 10 mt from the unit in free field conditions direction factor Q=2, calculated in accordance with ISO 9614.

(XL/HH) Super low noise - Heating only version		252	302	402	452	502	602	702	802	902	1002	1202
Energy Class in low temperature - According to EU reg. 811/2013		A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+
Heating capacity (EN14511) (1)	kW	24,8	34,2	39,3	47,5	55,5	66,2	73,5	80,5	97,5	109,4	127
Total input power (EN14511)(1)	kW	5,9	7,9	9,3	11,2	12,6	15,0	16,6	18,2	22,1	24,8	28,8
COP (EN14511) (1)	W/W	4,22	4,32	4,22	4,22	4,42	4,42	4,42	4,42	4,42	4,42	4,42
Power supply	V/Ph/Hz	400/3+N/50	400/3/50									
Max input current standard unit	A	18,5	24,8	33,4	35,8	45,8	47,8	57,6	69,6	75,6	81,6	87,6
Peak current standard unit	A	53,2	77,5	93,4	114,8	135,8	143,8	150,6	178,6	215,6	266,6	272,6
Peak current standard unit with soft starter (optional)	A	31,9	46,5	56,0	68,9	81,5	86,3	90,4	107,2	129,4	160,0	163,6
Max air flow in heating mode	m³/h	7200	14000	14000	14000	17000	33000	33000	33000	33000	33000	48000
Fans	n°	2	1	1	1	1	2	2	2	2	2	3
Compressors / Circuits	n°/n°	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1
Max sound power level in heating mode (2)	dB (A)	70	70	72	72	72	74	74	74	74	74	76
Max sound pressure level in heating mode (3)	dB (A)	42	42	44	44	44	46	46	46	46	46	48

(XL/HH) Super low noise - Heating only version		1402	1602	1802	2002	2504	3004	3204	3504	4004	4504	5004
Energy Class in low temperature - According to EU reg. 811/2013		A+	A+	A+	A+	A+	A+	A+	A+	---	---	---
Heating capacity (EN14511) (1)	kW	141,8	154,5	171,8	204,1	247,4	272,8	311,3	357,6	---	---	---
Total input power (EN14511)(1)	kW	32,1	35,8	39,8	46,2	58,6	66,1	73,7	84,7	---	---	---
COP (EN14511) (1)	W/W	4,42	4,32	4,32	4,42	4,22	4,13	4,22	4,22	---	---	---
Power supply	V/Ph/Hz	400/3/50										
Max input current standard unit	A	99,9	108,4	125,3	142,2	175,2	196,0	216,8	254,4	---	---	---
Peak current standard unit	A	323,4	331,9	359,3	386,8	360,2	400,2	440,3	488,4	---	---	---
Peak current standard unit with soft starter (optional)	A	194,0	199,1	215,6	232,1	216,1	240,1	264,2	293,0	---	---	---
Max air flow in heating mode	m³/h	48000	48000	48000	62000	83000	83000	85000	99000	---	---	---
Fans	n°	3	3	3	4	6	6	6	8	---	---	---
Compressors / Circuits	n°/n°	2/1	2/1	2/1	2/1	4/2	4/2	4/2	4/2	---	---	---
Max sound power level in heating mode (2)	dB (A)	76	76	76	78	80	80	80	81	---	---	---
Max sound pressure level in heating mode (3)	dB (A)	48	48	48	50	52	52	52	53	---	---	---

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

(LS/RV) Low noise - Reversible version		252	302	402	452	502	602	702	802	902	1002	1202
Energy Class in low temperature - According to EU reg. 811/2013		A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+
Heating capacity (EN14511) (1)	kW	25,4	34,2	40,2	48,1	56,6	65,1	74,7	82	99,5	112,1	123,7
Total input power (EN14511)(1)	kW	5,8	7,8	8,9	11,5	12,9	14,5	17,4	19,1	22,6	25,5	28,1
COP (EN14511) (1)	W/W	4,40	4,40	4,50	4,20	4,40	4,50	4,30	4,30	4,40	4,40	4,40
Cooling capacity (EN14511) (2)	kW	19,2	26,8	31,1	39,2	45,2	52,0	62,9	69,1	79,6	89,1	97,7
Total input power (EN14511)(2)	kW	7,0	9,4	11,7	13,7	15,8	18,2	20,5	22,5	26,8	31,1	35,4
EER (EN14511) (2)	W/W	2,76	2,86	2,65	2,86	2,86	2,86	3,07	3,07	2,97	2,86	2,76
Power supply	V/Ph/Hz	400/3+N/50			400/3/50							
Max input current standard unit	A	18,5	24,8	33,4	35,8	45,8	47,8	57,6	69,6	75,6	81,6	87,6
Peak current standard unit	A	53,2	77,5	93,4	114,8	135,8	143,8	150,6	178,6	215,6	266,6	272,6
Peak current standard unit with soft starter (optional)	A	31,9	46,5	56,0	68,9	81,5	86,3	90,4	107,2	129,4	160,0	163,6
Max air flow in heating mode	m^3/h	9600	9600	12200	21000	21000	21000	42000	42000	42000	42000	42000
Max air flow in cooling mode	m^3/h	9600	9600	12200	21000	21000	21000	42000	42000	42000	42000	42000
Fans	n°	2	2	2	1	1	1	2	2	2	2	2
Compressors / Circuits	n°/n°	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1
Max sound power level in heating mode (3)	dB (A)	75	75	75	78	78	78	80	80	81	81	81
Max sound pressure level in heating mode (4)	dB (A)	47	47	47	50	50	50	52	52	53	53	53
Max sound power level in cooling mode (3)	dB (A)	75	75	75	78	78	78	80	80	81	81	81
Max sound pressure level in cooling mode (4)	dB (A)	47	47	47	50	50	50	52	52	53	53	53

(LS/RV) Low noise - Reversible version		1402	1602	1802	2002	2504	3004	3204	3504	4004	4504	5004
Energy Class in low temperature - According to EU reg. 811/2013		A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+
Heating capacity (EN14511) (1)	kW	143,9	158,3	177,1	192,1	246	279,4	306,8	338,2	394,1	448,3	483,2
Total input power (EN14511)(1)	kW	33,5	36,8	41,2	45,7	57,2	68,1	74,8	84,6	93,8	109,3	117,9
COP (EN14511) (1)	W/W	4,30	4,30	4,30	4,20	4,30	4,10	4,10	4,00	4,20	4,10	4,10
Cooling capacity (EN14511) (2)	kW	113,8	128,1	141,6	153,5	197,2	219,0	248,6	276,7	314,4	346,9	389,4
Total input power (EN14511)(2)	kW	38,3	43,2	49,5	57,9	71,5	82,7	90,2	104,4	118,6	136,4	147,0
EER (EN14511) (2)	W/W	2,97	2,97	2,86	2,65	2,76	2,65	2,76	2,65	2,65	2,54	2,65
Power supply	V/Ph/Hz	400/3/50										
Max input current standard unit	A	99,9	108,4	125,3	142,2	175,2	196,0	216,8	254,4	292,0	326,4	360,8
Peak current standard unit	A	323,4	331,9	359,3	386,8	360,2	400,2	440,3	488,4	536,6	611,4	686,2
Peak current standard unit with soft starter (optional)	A	194,0	199,1	215,6	232,1	216,1	240,1	264,2	293,0	322,0	366,8	411,7
Max air flow in heating mode	m^3/h	62000	62000	62000	62000	81500	110000	110000	110000	112000	135000	135000
Max air flow in cooling mode	m^3/h	62000	62000	62000	62000	81500	110000	110000	110000	112000	135000	135000
Fans	n°	3	3	3	3	4	6	6	6	6	8	8
Compressors / Circuits	n°/n°	2/1	2/1	2/1	2/1	4/2	4/2	4/2	4/2	4/2	4/2	4/2
Max sound power level in heating mode (3)	dB (A)	84	84	84	84	85	86	86	86	86	88	88
Max sound pressure level in heating mode (4)	dB (A)	56	56	56	56	57	58	58	58	58	60	60
Max sound power level in cooling mode (3)	dB (A)	84	84	84	84	85	86	86	86	86	88	88
Max sound pressure level in cooling mode (4)	dB (A)	56	56	56	56	57	58	58	58	58	60	60

Performance 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 12/7°C (RV versions Only).
(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.

(XL/RV) Super low noise - Reversible version		252	302	402	452	502	602	702	802	902	1002	1202
Energy Class in low temperature - According to EU reg. 811/2013		A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+
Heating capacity (EN14511) (1)	kW	24,8	34,2	39,3	47,5	55,5	66,2	73,5	80,5	97,5	109,4	127
Total input power (EN14511)(1)	kW	5,9	7,9	9,3	11,2	12,6	15,0	16,6	18,2	22,1	24,8	28,8
COP (EN14511) (1)	W/W	4,22	4,32	4,22	4,22	4,42	4,42	4,42	4,42	4,42	4,42	4,42
Cooling capacity (EN14511) (2)	kW	18,6	27,8	29,9	38,1	43,7	54,9	60,6	65,9	76,8	87,7	101,0
Total input power (EN14511)(2)	kW	7,0	9,4	11,3	13,8	15,3	17,3	19,7	22,2	26,8	30,6	32,9
EER (EN14511) (2)	W/W	2,65	2,97	2,65	2,76	2,86	3,18	3,07	2,97	2,86	2,86	3,07
Power supply	V/Ph/Hz	400/3+N/50	400/3/50									
Max input current standard unit	A	18,5	24,8	33,4	35,8	45,8	47,8	57,6	69,6	75,6	81,6	87,6
Peak current standard unit	A	53,2	77,5	93,4	114,8	135,8	143,8	150,6	178,6	215,6	266,6	272,6
Peak current standard unit with soft starter (optional)	A	31,9	46,5	56,0	68,9	81,5	86,3	90,4	107,2	129,4	160,0	163,6
Max air flow in heating mode	m^3/h	7200	14000	14000	14000	17000	33000	33000	33000	33000	33000	48000
Max air flow in cooling mode	m^3/h	7200	14000	14000	14000	17000	33000	33000	33000	33000	33000	48000
Fans	n°	2	1	1	1	1	2	2	2	2	2	3
Compressors / Circuits	n°/n°	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1
Max sound power level in heating mode (3)	dB (A)	70	70	72	72	72	74	74	74	74	74	76
Max sound pressure level in heating mode (4)	dB (A)	42	42	44	44	44	46	46	46	46	46	48
Max sound power level in cooling mode (3)	dB (A)	70	70	72	72	72	74	74	74	74	74	76
Max sound pressure level in cooling mode (4)	dB (A)	42	42	44	44	44	46	46	46	46	46	48

(XL/RV) Super low noise - Reversible version		1402	1602	1802	2002	2504	3004	3204	3504	4004	4504	5004
Energy Class in low temperature - According to EU reg. 811/2013		A+	A+	A+	A+	A+	A+	A+	A+	---	---	---
Heating capacity (EN14511) (1)	kW	141,8	154,5	171,8	204,1	247,4	272,8	311,3	357,6	---	---	---
Total input power (EN14511)(1)	kW	32,1	35,8	39,8	46,2	58,6	66,1	73,7	84,7	---	---	---
COP (EN14511) (1)	W/W	4,42	4,32	4,32	4,42	4,22	4,13	4,22	4,22	---	---	---
Cooling capacity (EN14511) (2)	kW	109,4	121,7	132,4	155,8	195,9	217,0	235,1	278,8	---	---	---
Total input power (EN14511)(2)	kW	38,2	42,5	50,0	54,4	68,5	78,8	88,7	101,2	---	---	---
EER (EN14511) (2)	W/W	2,86	2,86	2,65	2,86	2,86	2,76	2,65	2,76	---	---	---
Power supply	V/Ph/Hz	400/3/50								---	---	---
Max input current standard unit	A	99,9	108,4	125,3	142,2	175,2	196,0	216,8	254,4	---	---	---
Peak current standard unit	A	323,4	331,9	359,3	386,8	360,2	400,2	440,3	488,4	---	---	---
Peak current standard unit with soft starter (optional)	A	194,0	199,1	215,6	232,1	216,1	240,1	264,2	293,0	---	---	---
Max air flow in heating mode	m^3/h	48000	48000	48000	62000	83000	83000	85000	99000	---	---	---
Max air flow in cooling mode	m^3/h	48000	48000	48000	62000	83000	83000	85000	99000	---	---	---
Fans	n°	3	3	3	4	6	6	6	8	---	---	---
Compressors / Circuits	n°/n°	2/1	2/1	2/1	2/1	4/2	4/2	4/2	4/2	---	---	---
Max sound power level in heating mode (3)	dB (A)	76	76	76	78	80	80	80	81	---	---	---
Max sound pressure level in heating mode (4)	dB (A)	48	48	48	50	52	52	52	53	---	---	---
Max sound power level in cooling mode (3)	dB (A)	76	76	76	78	80	80	80	81	---	---	---
Max sound pressure level in cooling mode (4)	dB (A)	48	48	48	50	52	52	52	53	---	---	---

Performance 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 12/7°C (RV versions Only).
(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.

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. All screws and rivets used are made from stainless steel. The standard colour of the units is RAL9018.

REFRIGERANT CIRCUIT

The refrigerant utilised is R410A. The refrigerant circuit is assembled using internationally recognised brand name components with all brazing and welding being performed in accordance with ISO 97/23. The refrigerant circuit includes: sight glass, filter drier, two thermal expansion valves (one for cooling mode, one for heating mode) with external equalizer, 4 way reversing valve, check valves, liquid receiver, Schrader valves for maintenance and control, pressure safety device (for compliance with PED regulations). The circuit also includes an AISI316 stainless steel heat exchanger that is used as an economizer plus an additional expansion valve for refrigerant vapour injection.

COMPRESSORS

The compressors used are a high performance scroll type that incorporates a special scroll design which enhances the efficiency of the refrigerant cycle when the source temperature is low. In all units the compressors are connected in tandem.
The compressors are all supplied with a crankcase heater and thermal overload protection by a klixon embedded in the motor winding. They are mounted in a separate enclosure in order to be separated from the air stream thus enabling them to be maintained even if the unit is operating. Access to this enclosure is by the front panel of the unit. The crankcase heater is always powered when the compressor is in stand-by.

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. The use 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.

FANS

The fans are direct drive axial type with aluminium aerofoil blades, are statically and dynamically balanced and are supplied complete with a safety fan guard complying with the requirements of EN 60335.
They are fixed to the unit frame via rubber anti-vibration mountings. The electric motors, in LS versions are 6 poles type rotating at approximately 900 rpm. In the XL versions the fans are 8 poles type (approx 600 rpm). As standard, all units are fitted with a pressure operated fan speed controller. The motors are fitted with integrated thermal overload protection and have a moisture protection rating of IP 54.

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. If required (available as an option), the microprocessor can be configured in order for it to connect to a site BMS system thus enabling remote control and management.
The Hidros technical department can discuss and evaluate, in conjunction with the customer, solutions using MODBUS protocols.

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, domestic hot water supply and return temperature sensors (only versions SW6), 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,

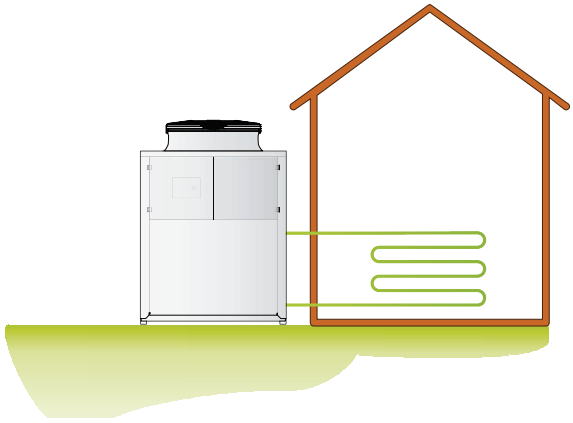
which can be used to stop the pump use during periods of stand-by, when the water temperature reaches the set point. Doing this the power consumption of the unit is strongly reduced. The probe sensor must be positioned in the hydraulic compensator present at the screening technique. The domestic hot water circuit (only versions P4S and P4U) is already equipped with this probe, but it must be installed in the user circuit.

VERSIONS

HH heating only versions are available in the P2U, P2S and P4S configuration only.

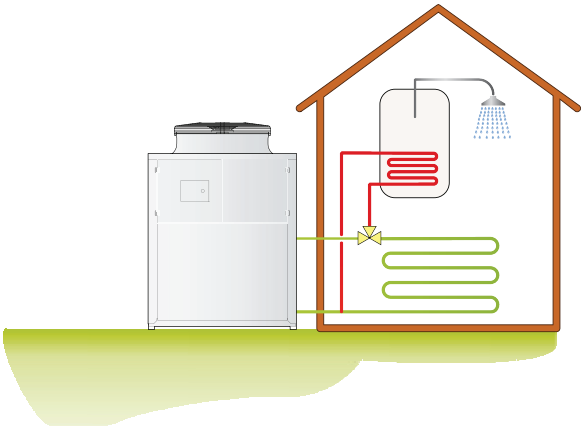
VERSION P2U

This is a two pipe version that can produce hot water for heating (HH heating only) and hot or cold water in the RV version. The RV is used with two pipe water based change-over systems. It is not able to produce domestic hot water.



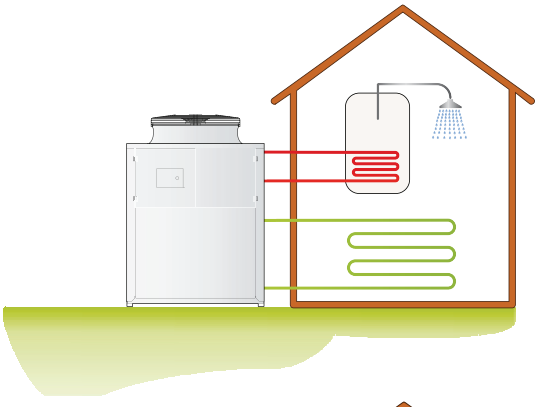
VERSION P2S

This is a two pipe version that can, in addition to producing hot water for heating (HH version) and hot and cold water in the RV version can also generate domestic hot water. The controller has dual heating set points (heating and DHW) and can also control a three port diverting valve that directs the DHW to the cylinder. DHW production has priority irrespective of the mode of operation of the unit. The unit is normally used with two pipe water based change-over systems.



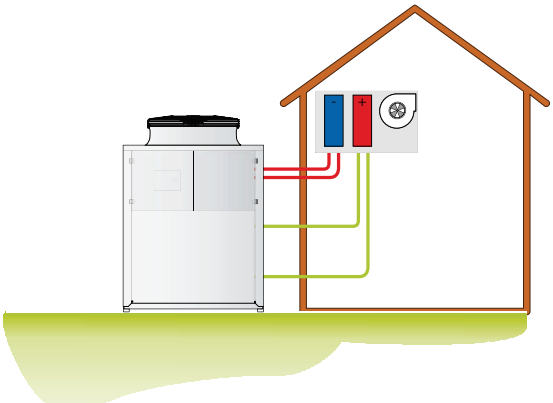
VERSION P4S

This is a four pipe version that can produce hot water for heating (HH version), hot and cold water for cooling and domestic hot water (only RV versions) in all operational modes using an independent water circuit. When cooling, DHW generation is by heat recovery. This unit is normally used with two pipe water based change-over systems with the DHW circuit being separate.



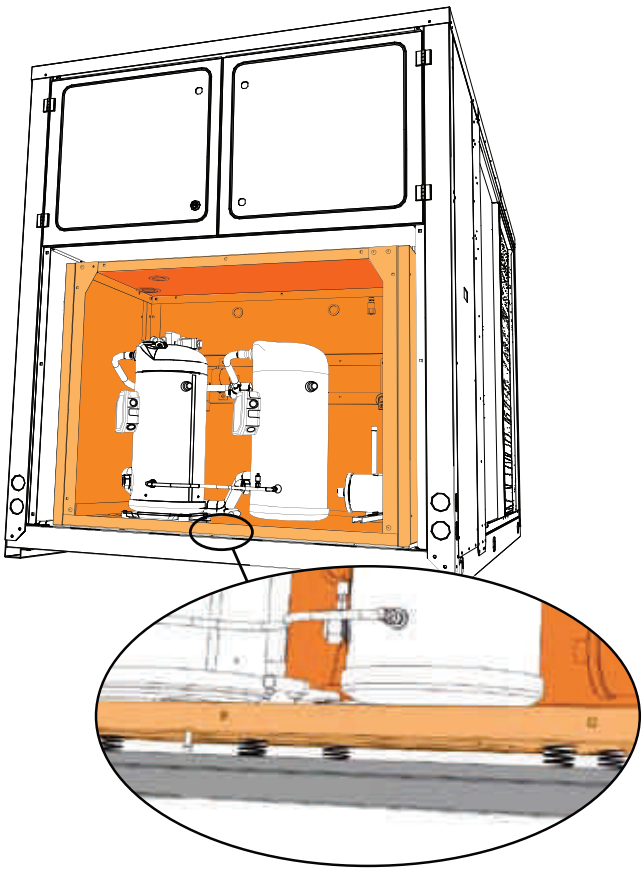
VERSION P4U

This is a four pipe version that provides a modern approach to four pipe water based systems. Instead of using a boiler and chiller, this unit can generates hot water in one circuit, cold water in the other circuit either individually or simultaneously. When operating in simultaneous mode the heating capacity is equal to the cooling duty plus the power input to the compressors. The operating efficiency in this mode is extremely high. Domestic hot water production for this version is not available.

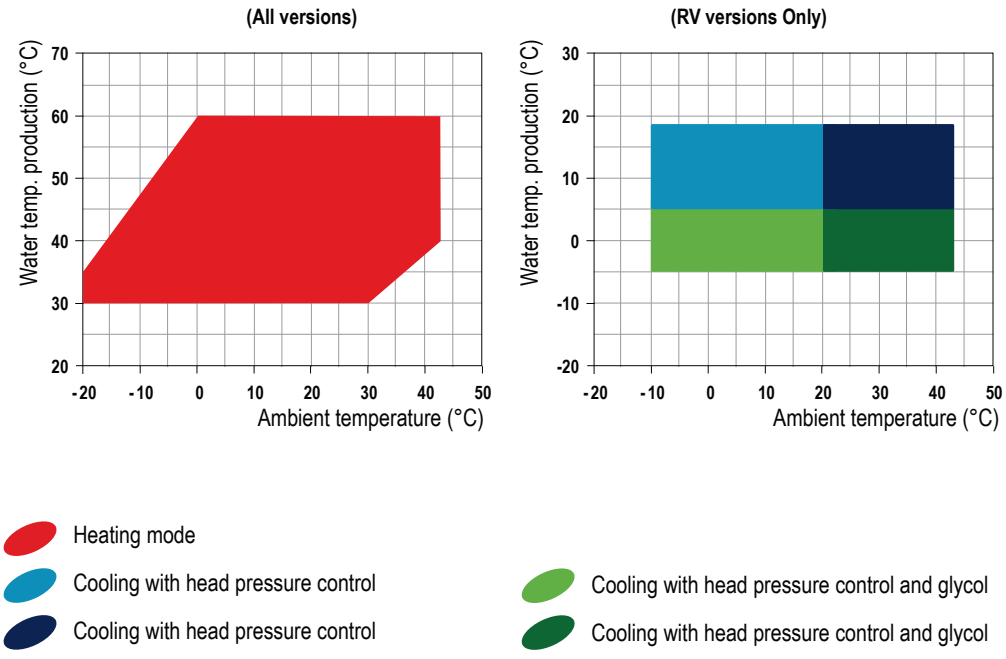


NOISE REDUCTION

All units in XL version are supplied, as standard, with the latest 'Floating Frame' technology that completely isolates the compressors from the main casing, thereby eliminating vibration and noise from this source. The 'Floating Frame' is a special vibration and acoustic damping system that consists of a base plate and acoustic enclosure that houses the compressors. The base plate is separated from the supporting frame of the unit by soft steel springs that have a high damping power. Within the enclosure, the compressors are mounted on rubber shock absorbers on the floating base plate. The enclosure is manufactured from galvanized steel sandwich panels that have a micro-perforated inner skin and a core of 50 mm thick, high density (40 kg/m^3) mineral wool. The entire arrangement provides a double damping system and acoustic attenuation. The compressor refrigerant pipes are connected to the 'fridge circuit via "anaconda" flexible connections. Flexible connections are also used on the water pipework within the unit. The combination of these systems results in an overall noise reduction in the region of 10-12 dB(A).



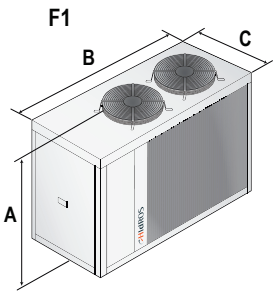
OPERATION LIMITS

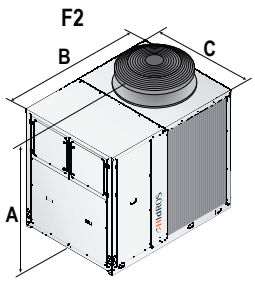


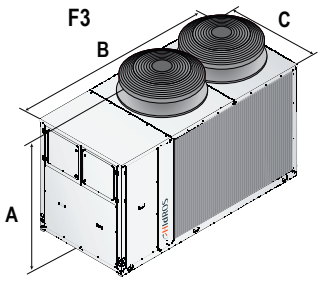
- Heating mode
- Cooling with head pressure control
- Cooling with head pressure control
- Cooling with head pressure control and glycol
- Cooling with head pressure control and glycol

LHA Options	Code	252-402	452-602	702-1202
Flow switch		●	●	●
User water strainer		●	●	●
Evap/cond.press. control by transducer and fan speed control	DCCF	●	●	●
Fresh air temperature probe for set-point compensation	SOND	●	●	●
Specific software for operation priorities		●	●	●
Remote ON/OFF digital input		●	●	●
Summer/Winter digital input		●	●	●
Floating frame technology	LS	–	–	–
Floating frame technology	XL	●	●	●
Condensate discharge drip tray with antifreeze heater	BRCA	●	●	●
E.C. fans (NN versions)	VECE	○	○	○
E.C. fans (XL versions)	VECE	○	○	○
High static pressure E.C. fans	VECC	○	○	○
Cascade control system via RS485	SGRS	○	○	○
Unit performance optimizer	SODP	○	○	○
Hydraulic kit with one pump with tank - user circuit	A1ZZU	○	○	○
Hydraulic kit with two pumps with tank - user circuit	A2ZZU	–	–	○
Hydraulic kit with one pump without tank - user circuit	A1NTU	○	○	○
Hydraulic kit with two pumps without tank - user circuit	A2NTU	–	–	○
Hydraulic kit with one pump without tank - recovery circuit	A1NTR	○	○	○
Hydraulic kit with two pumps without tank - recovery circuit	A2NTR	–	–	○
User and recovery heat exchanger antifreeze kit	RAEV2/4	●	●	●
Rubber anti-vibration mountings	KAVG	○	○	○
Hydraulic circuit antifreeze kit	KP	○	○	○
Electronic Soft starter	DSSE	○	○	○
Remote control panel	PCRL	○	○	○
Serial interface card RS485 with MODBUS protocol	INSE	○	○	○
Electronic thermostatic valve	VTEE	○	○	○

● Standard, ○ Optional, – Not available.







Frame LS Version

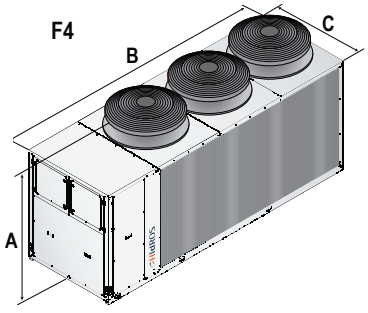
Mod.	Frame	Fans	A (mm)	B (mm)	C (mm)	Kg
252/LS	F1	2	1470	1900	880	540
302/LS	F1	2	1470	1900	880	550
402/LS	F1	2	1470	1900	880	570
452/LS	F2	1	1820	2200	1150	760
502/LS	F2	1	1820	2200	1150	780
602/LS	F2	1	1820	2200	1150	810
702/LS	F3	2	1820	2900	1150	1100
802/LS	F3	2	1820	2900	1150	1120
902/LS	F3	2	1820	2900	1150	1140
1002/LS	F3	2	1820	2900	1150	1180
1202/LS	F3	2	1820	2900	1150	1210

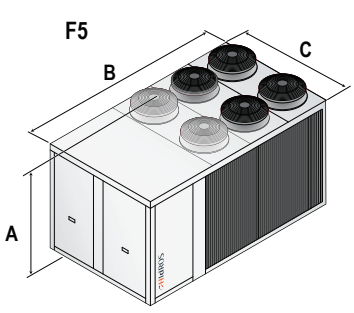
Frame XL Version

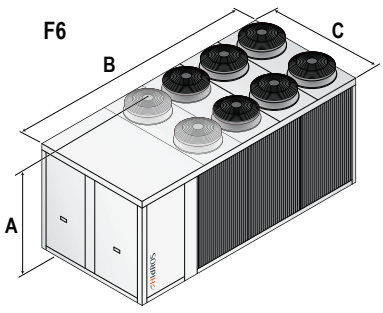
Mod.	Frame	Fans	A (mm)	B (mm)	C (mm)	Kg
252/XL	F1	2	1470	1900	880	540
302/XL	F2	1	1820	2200	1150	730
402/XL	F2	1	1820	2200	1150	750
452/XL	F2	1	1820	2200	1150	760
502/XL	F2	1	1820	2200	1150	780
602/XL	F3	2	1820	2900	1150	1070
702/XL	F3	2	1820	2900	1150	1100
802/XL	F3	2	1820	2900	1150	1120
902/XL	F3	2	1820	2900	1150	1140
1002/XL	F3	2	1820	2900	1150	1180
1202/XL	F4	3	1820	3900	1150	1380

LHA Options	Code	1402-2002	2504-3204	4004-5004
Flow switch		●	●	●
User water strainer		●	●	●
Evap/cond.press. control by transducer and fan speed control	DCCF	●	●	●
Fresh air temperature probe for set-point compensation	SOND	●	●	●
Specific software for operation priorities		●	●	●
Remote ON/OFF digital input		●	●	●
Summer/Winter digital input		●	●	●
Floating frame technology	LS	–	–	–
Floating frame technology	XL	●	●	●
Condensate discharge drip tray with antifreeze heater	BRCA	●	●	●
E.C. fans (NN versions)	VECE	○	○	○
E.C. fans (XL versions)	VECE	○	○	○
High static pressure E.C. fans	VECC	○	○	○
Cascade control system via RS485	SGRS	○	○	○
Unit performance optimizer	SODP	○	○	○
Hydraulic kit with one pump with tank - user circuit	A1ZZU	○	○	○
Hydraulic kit with two pumps with tank - user circuit	A2ZZU	○	○	○
Hydraulic kit with one pump without tank - user circuit	A1NTU	○	○	○
Hydraulic kit with two pumps without tank - user circuit	A2NTU	○	○	○
Hydraulic kit with one pump without tank - recovery circuit	A1NTR	○	○	○
Hydraulic kit with two pumps without tank - recovery circuit	A2NTR	○	○	○
User and recovery heat exchanger antifreeze kit	RAEV2/4	●	●	●
Rubber anti-vibration mountings	KAVG	○	○	○
Hydraulic circuit antifreeze kit	KP	○	○	○
Electronic Soft starter	DSSE	○	○	○
Remote control panel	PCRL	○	○	○
Serial interface card RS485 with MODBUS protocol	INSE	○	○	○
Electronic thermostatic valve	VTEE	○	○	○

● Standard, ○ Optional, – Not available.







Frame LS Version

Mod.	Frame	Fans	A (mm)	B (mm)	C (mm)	Kg
1402/LS	F4	3	1820	3900	1150	1430
1602/LS	F4	3	1820	3900	1150	1510
1802/LS	F4	3	1820	3900	1150	1560
2002/LS	F4	3	1820	3900	1150	1590
2504/LS	F5	4	2350	4206	2210	3120
3004/LS	F5	6	2350	4206	2210	3170
3204/LS	F5	6	2350	4206	2210	3220
3504/LS	F5	6	2350	4206	2210	3270
4004/LS	F6	6	2350	4856	2210	3610
4504/LS	F6	8	2350	4856	2210	3670
5004/LS	F6	8	2350	4856	2210	3720

Frame XL Version

Mod.	Frame	Fans	A (mm)	B (mm)	C (mm)	Kg
1402/XL	F4	3	1820	3900	1150	1430
1602/XL	F4	3	1820	3900	1150	1510
1802/XL	F4	3	1820	3900	1150	1560
2002/XL	F5	4	2350	4206	2210	2790
2504/XL	F5	6	2350	4206	2210	3150
3004/XL	F5	6	2350	4206	2210	3170
3204/XL	F6	6	2350	4856	2210	3220
3504/XL	F6	8	2350	4856	2210	3270
4004/XL	---	---	---	---	---	---
4504/XL	---	---	---	---	---	---
5004/XL	---	---	---	---	---	---