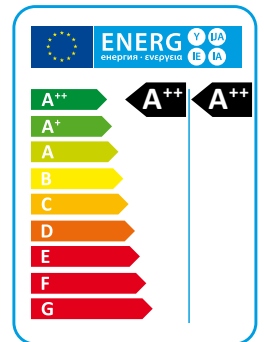


LZT

High efficiency air to water heat pumps with E.V.I. compressors



- CE
- R410A
- 20°C
- +43°C
- +65°C
- EVI
- E.C.
- FLOATING FRAME
- ZZ

The LZT 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 65°C and can operate down to -20°C ambient temperature.

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 in XL and NN versions 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).

Versions

- HH** Heating only.
- RV** Reversible heating/cooling.
- SA** Standard efficiency, AC fans.
- SE** Standard efficiency, EC fans.
- HA** High efficiency, AC fans.
- HE** High efficiency, EC fans.
- LS** Low noise.
- XL** Super low noise.
- NN** Ultra 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.

Heating only version (HH)

SA/LS/HH - P2S/P2U		252	302	452	502	602	752	852	1002	1202
Heating capacity (EN14511) ⁽¹⁾	kW	23,7	28,3	42,1	50,9	55,0	67,8	74,5	--	--
Total input power (EN14511) ⁽¹⁾	kW	5,5	6,8	10,3	12,3	13,4	16,3	18,1	--	--
COP (EN14511) ⁽¹⁾	W/W	4,31	4,16	4,11	4,14	4,12	4,16	4,12	--	--
Energy Class in low temperature ⁽²⁾		A+	A+	A+	A+	A+	A+	A+	--	--
SCOP low temperature ⁽²⁾	kWh/kWh	3,75	3,77	3,39	3,33	3,49	3,70	3,62	--	--
η _{s,h} low temperature ⁽²⁾	%	147,1	147,8	132,6	130,1	136,6	145,0	141,7	--	--
Energy Class in medium temperature ⁽²⁾		A+	A+	A+	A+	A+	A+	A+	--	--
SCOP medium temperature ⁽²⁾	kWh/kWh	3,04	3,07	2,89	2,87	2,93	3,06	3,03	--	--
η _{s,h} medium temperature ⁽²⁾	%	118,7	119,6	112,4	111,6	114,2	119,3	118,2	--	--
Sound power ⁽³⁾	dB (A)	78	78	79	80	80	80	80	--	--
Sound pressure ⁽⁴⁾	dB (A)	46	46	47	48	48	48	48	--	--
SE/LS/HH - P2S/P2U		252	302	452	502	602	752	852	1002	1202
Heating capacity (EN14511) ⁽¹⁾	kW	23,7	28,3	42,1	50,5	55,2	67,8	74,7	--	--
Total input power (EN14511) ⁽¹⁾	kW	5,3	6,7	9,9	12,8	13,8	16,1	18,1	--	--
COP (EN14511) ⁽¹⁾	W/W	4,47	4,22	4,25	3,95	4,00	4,21	4,13	--	--
Energy Class in low temperature ⁽²⁾		A++	A++	A+	A+	A+	A+	A+	--	--
SCOP low temperature ⁽²⁾	kWh/kWh	3,95	3,87	3,58	3,45	3,59	3,79	3,68	--	--
η _{s,h} low temperature ⁽²⁾	%	154,8	151,6	140,3	135,1	140,7	148,7	144,2	--	--
Energy Class in medium temperature ⁽²⁾		A+	A+	A+	A+	A+	A+	A+	--	--
SCOP medium temperature ⁽²⁾	kWh/kWh	3,17	3,13	3,02	2,99	3,02	3,13	3,10	--	--
η _{s,h} medium temperature ⁽²⁾	%	123,6	122,3	117,9	116,4	117,6	122,0	120,9	--	--
Sound power ⁽³⁾	dB (A)	78	78	79	80	80	80	80	--	--
Sound pressure ⁽⁴⁾	dB (A)	46	46	47	48	48	48	48	--	--
Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	--	--
Compressors / Circuits	n° / n°	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	--	--
Fans	n°	2	2	2	2	2	2	2	--	--
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	--	--
Refrigerant charge	Kg	5,5	5,7	8,3	8,4	9,3	14,6	14,9	--	--
Global warming potential (GWP)		2088	2088	2088	2088	2088	2088	2088	--	--
Equivalent CO ₂ charge	t	11,5	11,8	17,2	17,5	19,5	30,4	31,2	--	--

HA/LS/HH - P2S/P2U		252	302	452	502	602	752	852	1002	1202
Heating capacity (EN14511) ⁽¹⁾	kW	23,8	29,4	41,6	51,2	58,0	66,7	80,8	88,4	102,5
Total input power (EN14511) ⁽¹⁾	kW	5,3	6,8	9,7	12,4	13,0	15,6	19,6	21,4	25,3
COP (EN14511) ⁽¹⁾	W/W	4,51	4,31	4,29	4,12	4,45	4,29	4,13	4,13	4,05
Energy Class in low temperature ⁽²⁾		A++	A++	A+	A+	A++	A++	A+	A+	A+
SCOP low temperature ⁽²⁾	kWh/kWh	3,96	3,89	3,63	3,55	3,94	3,95	3,43	3,50	3,48
η _{s,h} low temperature ⁽²⁾	%	155,3	152,5	142,1	139,1	154,6	154,9	134,3	137,1	136,2
Energy Class in medium temperature ⁽²⁾		A+	A+	A+	A+	A++	A+	A+	A+	A+
SCOP medium temperature ⁽²⁾	kWh/kWh	3,18	3,15	2,99	2,98	3,21	3,16	2,87	2,92	2,94
η _{s,h} medium temperature ⁽²⁾	%	124,3	122,9	116,6	116,2	125,5	123,4	111,9	113,6	114,6
Sound power ⁽³⁾	dB (A)	78	78	78	79	80	80	83	83	83
Sound pressure ⁽⁴⁾	dB (A)	46	46	46	47	48	48	51	51	51
HE/LS/HH - P2S/P2U		252	302	452	502	602	752	852	1002	1202
Heating capacity (EN14511) ⁽¹⁾	kW	24,0	29,5	41,8	50,3	58,3	66,9	81,3	88,5	102,7
Total input power (EN14511) ⁽¹⁾	kW	5,2	6,7	9,5	12,2	12,8	15,3	18,9	20,6	24,6
COP (EN14511) ⁽¹⁾	W/W	4,61	4,38	4,40	4,12	4,56	4,37	4,31	4,31	4,17
Energy Class in low temperature ⁽²⁾		A++	A++	A++	A++	A++	A++	A++	A++	A++
SCOP low temperature ⁽²⁾	kWh/kWh	4,10	3,96	3,87	3,83	4,08	4,06	3,83	3,85	3,84
η _{s,h} low temperature ⁽²⁾	%	160,8	155,5	151,6	150,3	160,1	159,4	150,1	150,8	150,6
Energy Class in medium temperature ⁽²⁾		A++	A++	A+	A+	A++	A++	A+	A+	A+
SCOP medium temperature ⁽²⁾	kWh/kWh	3,25	3,21	3,12	3,15	3,29	3,23	3,07	3,14	3,13
η _{s,h} medium temperature ⁽²⁾	%	127,0	125,2	121,7	123,0	128,5	126,0	119,7	122,5	122,2
Sound power ⁽³⁾	dB (A)	78	78	78	79	80	80	83	83	83
Sound pressure ⁽⁴⁾	dB (A)	46	46	46	47	48	48	51	51	51
Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Compressors / Circuits	n° / n°	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Fans	n°	2	2	2	2	2	2	2	2	2
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge	Kg	6,9	6,9	8,7	8,9	14,9	15,2	22,5	22,5	22,5
Global warming potential (GWP)		2088	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	14,5	14,5	18,1	18,6	31,2	31,7	46,9	46,9	46,9

Performances are referred to the following conditions:

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

(2) Average conditions, variable - Reg EU 811/2013

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

(4) Sound pressure level at 10 mt from the unit in free field conditions in accordance with ISO 3744.

Heating only version (HH)

HA/XL/HH - P2S/P2U		252	302	452	502	602	752	852	1002	1202
Heating capacity (EN14511) ⁽¹⁾	kW	24,0	29,6	41,1	48,9	57,4	65,5	80,1	87,3	100,7
Total input power (EN14511) ⁽¹⁾	kW	5,5	7,0	9,5	12,1	12,9	15,2	18,4	20,0	23,8
COP (EN14511) ⁽¹⁾	W/W	4,40	4,24	4,35	4,04	4,46	4,31	4,35	4,37	4,23
Energy Class in low temperature ⁽²⁾		A++	A++	A++	A++	A++	A++	A++	A++	A++
SCOP low temperature ⁽²⁾	kWh/kWh	3,85	3,84	3,84	3,83	4,03	4,01	3,83	3,91	3,84
$\eta_{s,h}$ low temperature ⁽²⁾	%	150,3	150,6	150,5	150,1	158,1	157,5	150,1	153,2	150,7
Energy Class in medium temperature ⁽²⁾		A+	A+	A+	A+	A++	A+	A+	A++	A+
SCOP medium temperature ⁽²⁾	kWh/kWh	3,05	3,13	3,11	3,14	3,27	3,20	3,13	3,21	3,18
$\eta_{s,h}$ medium temperature ⁽²⁾	%	119,0	122,2	121,4	122,4	127,6	124,8	122,0	125,5	124,3
Sound power ⁽³⁾	dB (A)	72	72	73	74	74	74	74	75	75
Sound pressure ⁽⁴⁾	dB (A)	40	40	41	42	42	42	42	43	43
HE/XL/HH - P2S/P2U		252	302	452	502	602	752	852	1002	1202
Heating capacity (EN14511) ⁽¹⁾	kW	24,0	30,0	41,2	49,2	57,4	65,6	79,9	87,2	100,7
Total input power (EN14511) ⁽¹⁾	kW	5,2	6,8	9,2	11,8	12,6	15,1	17,8	19,4	23,5
COP (EN14511) ⁽¹⁾	W/W	4,64	4,39	4,49	4,16	4,57	4,35	4,49	4,49	4,29
Energy Class in low temperature ⁽²⁾		A++	A++	A++	A++	A++	A++	A++	A++	A++
SCOP low temperature ⁽²⁾	kWh/kWh	4,10	3,87	4,00	3,84	4,21	4,16	4,04	4,06	3,93
$\eta_{s,h}$ low temperature ⁽²⁾	%	161,0	151,8	157,1	150,6	165,4	163,4	158,7	159,5	154,0
Energy Class in medium temperature ⁽²⁾		A++	A+	A++	A++	A++	A++	A++	A++	A++
SCOP medium temperature ⁽²⁾	kWh/kWh	3,24	3,14	3,24	3,16	3,38	3,29	3,26	3,33	3,25
$\eta_{s,h}$ medium temperature ⁽²⁾	%	126,5	122,7	126,6	123,4	132	128,6	127,3	130,0	126,9
Sound power ⁽³⁾	dB (A)	70	72	73	74	73	73	74	75	75
Sound pressure ⁽⁴⁾	dB (A)	38	40	41	42	41	41	42	43	43
Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Compressors / Circuits	n° / n°	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Fans	n°	2	2	2	2	2	2	2	2	2
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge	Kg	7,7	7,7	10,9	11,1	14,9	15,2	22,5	22,5	22,5
Global warming potential (GWP)		2088	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	16,2	16,2	22,7	23,2	31,2	31,7	46,9	46,9	46,9

HE/NN/HH - P2S/P2U		252	302	452	502	602	752	852	1002	1202
Heating capacity (EN14511) ⁽¹⁾	kW	23,4	30,5	41,1	54,2	60,7	70,4	79,5	90,3	104,9
Total input power (EN14511) ⁽¹⁾	kW	5,0	6,4	8,8	11,7	12,4	14,7	17,41	18,6	22,1
COP (EN14511) ⁽¹⁾	W/W	4,69	4,75	4,69	4,64	4,89	4,78	4,56	4,87	4,75
Energy Class in low temperature ⁽²⁾		A++	A++	A++	A++	A++	A++	A++	A++	A++
SCOP low temperature ⁽²⁾	kWh/kWh	4,30	4,35	4,23	4,10	4,37	4,40	4,22	4,42	4,31
$\eta_{s,h}$ low temperature ⁽²⁾	%	168,8	171,1	166,2	160,8	171,7	172,9	165,6	173,8	169,3
Energy Class in medium temperature ⁽²⁾		A++	A++	A++	A++	A++	A++	A++	A++	A++
SCOP medium temperature ⁽²⁾	kWh/kWh	3,34	3,48	3,42	3,34	3,47	3,45	3,38	3,52	3,50
$\eta_{s,h}$ medium temperature ⁽²⁾	%	130,7	138,0	133,7	130,5	135,9	134,9	132,2	137,9	137
Sound power ⁽³⁾	dB (A)	65	68	69	70	70	70	70	71	71
Sound pressure ⁽⁴⁾	dB (A)	33	36	37	38	38	38	38	39	39
Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Compressors / Circuits	n° / n°	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Fans	n°	2	2	2	2	2	2	2	3	3
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge	Kg	7,7	9,1	11,9	22,0	22,2	22,5	22,5	34,4	34,8
Global warming potential (GWP)		2088	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	16,2	18,9	24,8	46,0	46,4	46,9	46,9	71,8	72,7

Performances are referred to the following conditions:

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

(2) Average conditions, variable - Reg EU 811/2013

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

(4) Sound pressure level at 10 mt from the unit in free field conditions in accordance with ISO 3744.

Reversible heating/cooling version (RV)

HA/XL/RV - P2S/P2U		252	302	452	502	602	752	852	1002	1202
Heating capacity (EN14511) ⁽¹⁾	kW	24,0	29,6	41,1	48,9	57,4	65,5	80,1	87,3	100,7
Total input power (EN14511) ⁽¹⁾	kW	5,5	7,0	9,5	12,1	12,9	15,2	18,4	20,0	23,8
COP (EN14511) ⁽¹⁾	W/W	4,40	4,24	4,35	4,04	4,46	4,31	4,35	4,37	4,23
Energy Class in low temperature ⁽²⁾		A++	A++	A++	A++	A++	A++	A++	A++	A++
SCOP low temperature ⁽²⁾	kWh/kWh	3,85	3,84	3,84	3,83	4,03	4,01	3,83	3,91	3,84
η _{s,h} low temperature ⁽²⁾	%	150,3	150,6	150,5	150,1	158,1	157,5	150,1	153,2	150,7
Energy Class in medium temperature ⁽²⁾		A+	A+	A+	A+	A++	A+	A+	A++	A+
SCOP medium temperature ⁽²⁾	kWh/kWh	3,05	3,13	3,11	3,14	3,27	3,20	3,13	3,21	3,18
η _{s,h} medium temperature ⁽²⁾	%	119,0	122,2	121,4	122,4	127,6	124,8	122,0	125,5	124,3
Cooling capacity (EN14511) ⁽³⁾	kW	21,0	26,3	36,8	44,5	52,1	59,7	71,2	77,1	88,7
Total input power (EN14511) ⁽³⁾	kW	7,2	9,7	13,2	17,3	18,9	24,0	23,7	26,2	32,6
EER (EN14511) ⁽³⁾	W/W	2,90	2,73	2,78	2,57	2,75	2,49	3,00	2,95	2,72
Sound power ⁽⁴⁾	dB (A)	72	72	73	74	74	74	74	75	75
Sound pressure ⁽⁵⁾	dB (A)	40	40	41	42	42	42	42	43	43
HE/XL/RV - P2S/P2U		252	302	452	502	602	752	852	1002	1202
Heating capacity (EN14511) ⁽¹⁾	kW	24,0	30,0	41,2	49,2	57,4	65,6	79,9	87,2	100,7
Total input power (EN14511) ⁽¹⁾	kW	5,2	6,8	9,2	11,8	12,6	15,1	17,8	19,4	23,5
COP (EN14511) ⁽¹⁾	W/W	4,64	4,39	4,49	4,16	4,57	4,35	4,49	4,49	4,29
Energy Class in low temperature ⁽²⁾		A++	A++	A++	A++	A++	A++	A++	A++	A++
SCOP low temperature ⁽²⁾	kWh/kWh	4,10	3,87	4,00	3,84	4,21	4,16	4,04	4,06	3,93
η _{s,h} low temperature ⁽²⁾	%	161,0	151,8	157,1	150,6	165,4	163,4	158,7	159,5	154,0
Energy Class in medium temperature ⁽²⁾		A++	A+	A++	A++	A++	A++	A++	A++	A++
SCOP medium temperature ⁽²⁾	kWh/kWh	3,24	3,14	3,24	3,16	3,38	3,29	3,26	3,33	3,25
η _{s,h} medium temperature ⁽²⁾	%	126,5	122,7	126,6	123,4	132	128,6	127,3	130,0	126,9
Cooling capacity (EN14511) ⁽³⁾	kW	21,0	26,9	37,2	44,7	52,0	59,5	70,6	76,9	88,1
Total input power (EN14511) ⁽³⁾	kW	7,0	9,1	12,7	17,0	18,8	24,0	24,2	26,3	32,9
EER (EN14511) ⁽³⁾	W/W	2,98	2,94	2,93	2,63	2,78	2,48	2,92	2,92	2,68
Sound power ⁽⁴⁾	dB (A)	70	72	73	74	73	73	74	75	75
Sound pressure ⁽⁵⁾	dB (A)	38	40	41	42	41	41	42	43	43
Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Compressors / Circuits	n° / n°	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Fans	n°	2	2	2	2	2	2	2	2	2
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge	Kg	7,7	7,7	10,9	11,1	14,9	15,2	22,5	22,5	22,5
Global warming potential (GWP)		2088	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	16,2	16,2	22,7	23,2	31,2	31,7	46,9	46,9	46,9
HE/NN/RV - P2S/P2U		252	302	452	502	602	752	852	1002	1202
Heating capacity (EN14511) ⁽¹⁾	kW	23,4	30,5	41,1	54,2	60,7	70,4	79,5	90,3	104,9
Total input power (EN14511) ⁽¹⁾	kW	5,0	6,4	8,8	11,7	12,4	14,7	17,41	18,6	22,1
COP (EN14511) ⁽¹⁾	W/W	4,69	4,75	4,69	4,64	4,89	4,78	4,56	4,87	4,75
Energy Class in low temperature ⁽²⁾		A++	A++	A++	A++	A++	A++	A++	A++	A++
SCOP low temperature ⁽²⁾	kWh/kWh	4,30	4,35	4,23	4,10	4,37	4,40	4,22	4,42	4,31
η _{s,h} low temperature ⁽²⁾	%	168,8	171,1	166,2	160,8	171,7	172,9	165,6	173,8	169,3
Energy Class in medium temperature ⁽²⁾		A++	A++	A++	A++	A++	A++	A++	A++	A++
SCOP medium temperature ⁽²⁾	kWh/kWh	3,34	3,48	3,42	3,34	3,47	3,45	3,38	3,52	3,50
η _{s,h} medium temperature ⁽²⁾	%	130,7	138,0	133,7	130,5	135,9	134,9	132,2	137,9	137
Cooling capacity (EN14511) ⁽³⁾	kW	20,1	26,2	36,0	46,4	53,3	61,6	68,9	79,0	91,9
Total input power (EN14511) ⁽³⁾	kW	7,6	9,2	13,6	14,9	16,8	20,9	25,6	24,7	29,8
EER (EN14511) ⁽³⁾	W/W	2,62	2,86	2,64	3,11	3,18	2,95	2,69	3,20	3,08
Sound power ⁽⁴⁾	dB (A)	65	68	69	70	70	70	70	71	71
Sound pressure ⁽⁵⁾	dB (A)	33	36	37	38	38	38	38	39	39
Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Compressors / Circuits	n° / n°	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Fans	n°	2	2	2	2	2	2	2	3	3
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant charge	Kg	7,7	9,1	11,9	22,0	22,2	22,5	22,5	34,4	34,8
Global warming potential (GWP)		2088	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	16,2	18,9	24,8	46,0	46,4	46,9	46,9	71,8	72,7

Performances are referred to the following conditions:

- (1) Heating: Ambient temperature 7°C DB, 6°C WB, water temperature 30/35°C.
- (2) Average conditions, variable - Reg EU 811/2013

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

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

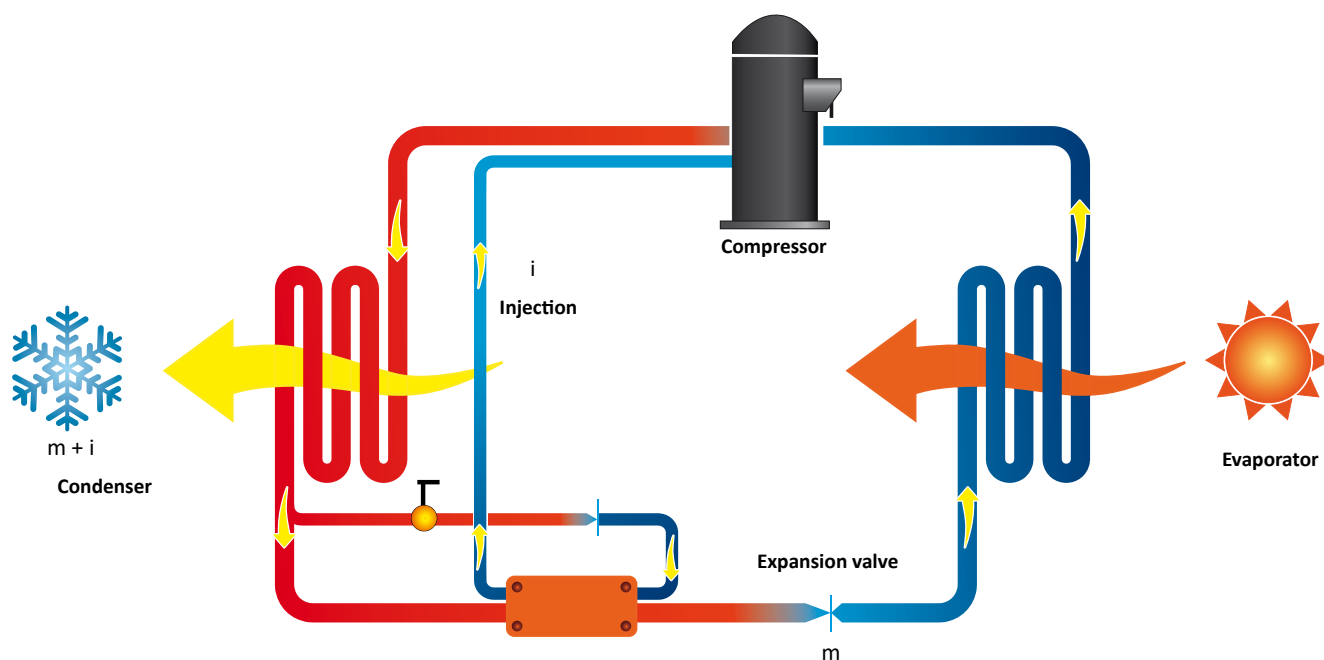
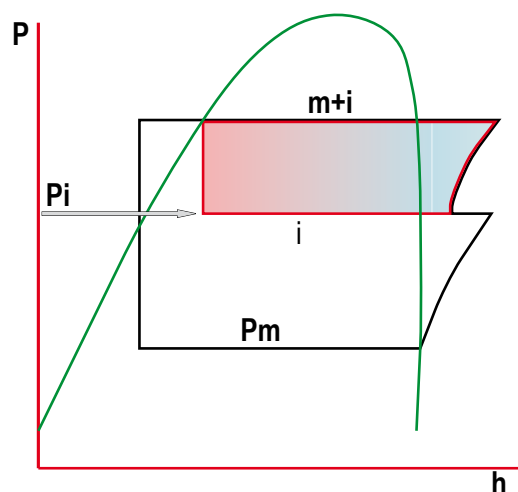
(5) Sound pressure level at 10 mt from the unit in free field conditions in accordance with ISO 3744.

What is the E.V.I. Technology (Enhanced Vapour Injection)?

Heat pumps utilise scroll compressors that are equipped with E.V.I. technology, a versatile method of improving system capacity and efficiency. EVI stands for “Economised Vapour Injection.”

The technology involves injecting refrigerant vapour into the middle of the compression process, a procedure that significantly boosts capacity and efficiency. Each scroll compressor used in these units is similar to a two-stage compressor with built-in inter-stage cooling. The process begins when a portion of the condenser liquid is extracted and expanded through an expansion valve.

The low temperature liquid/gas mixture produced is injected into a heat exchanger that operates as a sub cooler. Any liquid is evaporated and the vapour produced is superheated.



The superheated vapour is then injected into an intermediate port in the scroll compressor. This cold vapour reduces the temperature of the compressed gas thus enabling the compressor to raise the pressure to levels (and temperatures) beyond that possible with a single stage scroll. The additional sub cooling of the main volume of liquid refrigerant increases the evaporator capacity. This compressor technology generates a larger pressure ratio between condensing and evaporating pressures, with significant performance

improvement. Using this technology enables Hidros units to produce hot water up to 65°C and the ability to operate down to -20°C ambient temperature.

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

Units use scroll compressors that are equipped with E.V.I. technology, a versatile method of improving system capacity and efficiency. EVI stands for "Enhanced Vapour Injection." The technology involves injecting refrigerant vapour into the middle of the compression process, a procedure that significantly boosts capacity and efficiency. Each scroll compressor used in these units is similar to a two-stage compressor with built-in inter-stage cooling. The process begins when a portion of the condenser liquid is extracted and expanded through an expansion valve. The low temperature liquid/gas mixture produced is injected into a heat exchanger that operates as a sub cooler. Any liquid is evaporated and the vapour produced is superheated.

The superheated vapour is then injected into an intermediate port in the scroll compressor. This cold vapour reduces the temperature of the compressed gas thus enabling the compressor to raise the pressure to levels (and temperatures) beyond that possible with a single stage scroll. The additional sub cooling of the main volume of liquid refrigerant increases the evaporator capacity. This compressor technology generates a larger pressure ratio between condensing and evaporating pressures, with significant performance improvement. 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. All heat exchangers are supplied standard with fins hydrophilic coating.

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 antivibration mountings. In the LS versions the fans are 6 poles type (approx 900 rpm), in the XL versions the fans are 8 poles type (approx 600 rpm), in the NN versions the fans are 12 poles type (approx 450 rpm). 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 MOD-BUS protocols.

Electric enclosure

The enclosure is manufactured in order to comply with the requirements of the electromagnetic compatibility standards CEE EN60204. 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), overload switches, control circuit automatic breakers, compressor contactors, automatic switches 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 P2S), 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 P2S) is already equipped with this probe, but it must be installed in the user circuit.

Versions

Version HH

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

Version RV

This version uses 2 hydraulic connections and is able to produce hot water in winter and cold water in summer. The unit is combined with a 2-pipe system.

SA Version

Standard efficiency version, according to ERP2018 standard. Unit equipped with AC fans.

SE Version

Standard efficiency version, according to ERP2018 standard. Unit equipped with EC fans.

HA Version

High efficiency version, according to ERP2018 standard. Unit equipped with AC fans.

HE Version

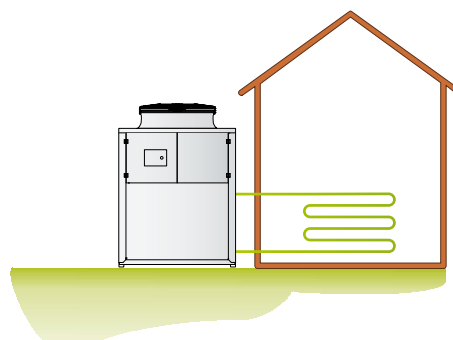
High efficiency version, according to ERP2018 standard. Unit equipped with EC fans.

Version LS

This version includes the complete acoustic insulation of the unit with compressor jackets and insulating material made with high density media and the interposition of heavy bitumen layer.

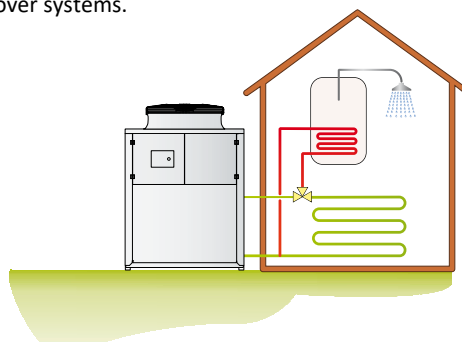
P2U Version

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.



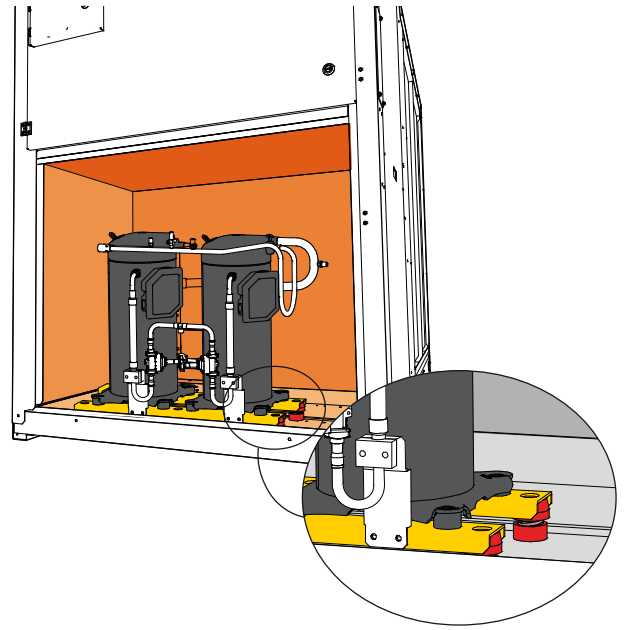
P2S Version

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.



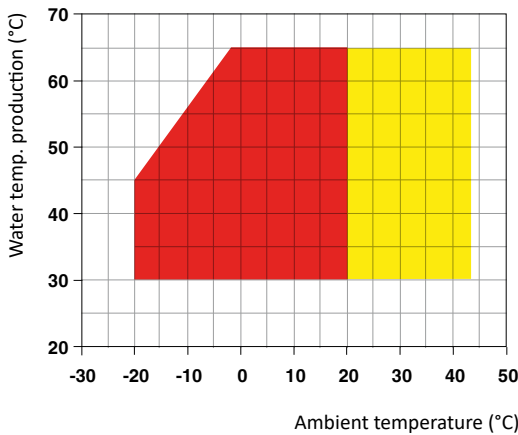
**Super low noise and ultra low noise versions
HA/XL - HE/XL and HE/NN**

All HA and HE units in XL and NN versions 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/m³) mineral wool. The entire arrangement provides a double damping system and acoustic attenuation. The compressor refrigerant pipes are connected to the refrigerant circuit through "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).

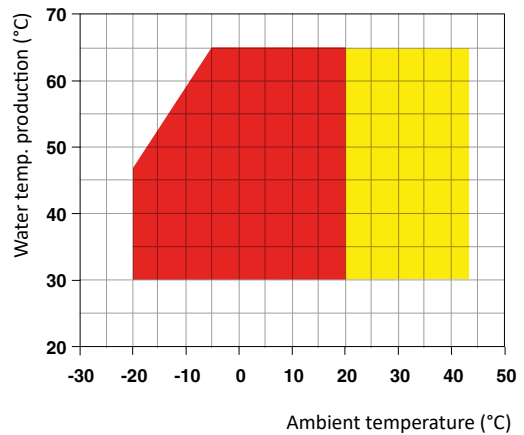


Operation limits

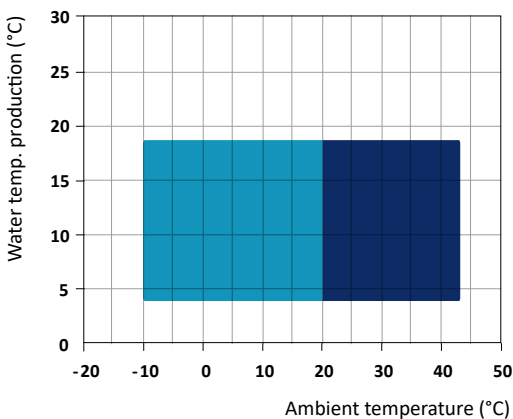
(SA/SE versions)



(HA/HE versions)



(RV versions Only)

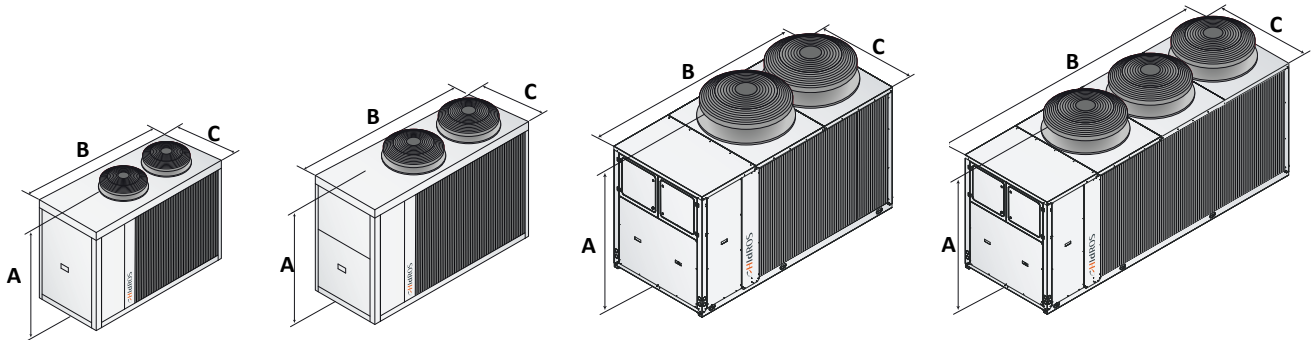


- Heating mode
- Heating mode with head pressure control (DCCF)
- Cooling with head pressure control (DCCF)
- Cooling mode

LZT		252	302	452	502	602	752	852	1002	1202
Flow switch		●	●	●	●	●	●	●	●	●
User circuit water strainer		○	○	○	○	○	○	○	○	○
“Floating frame” Technology - LS Version		-	-	-	-	-	-	-	-	-
“Floating frame” Technology - XL - NN Version		●	●	●	●	●	●	●	●	●
E.C. fans - SA/LS versions	VECE	-	-	-	-	-	-	-	-	-
E.C. fans - SE/LS versions	VECE	●	●	●	●	●	●	●	●	●
E.C. fans - HA/LS - HA/XL versions	VECE	-	-	-	-	-	-	-	-	-
E.C. fans - HE/LS - HE/XL - HE/NN versions	VECE	●	●	●	●	●	●	●	●	●
Condensate discharge drip tray with antifreeze heater	BRCA	○	○	○	○	○	○	○	○	○
Condensing pressure control by transducer & EC Fans (only for SE and HE)		●	●	●	●	●	●	●	●	●
Evap/cond. press. control by transducer and fan speed control (only SA - HA)DCCF		○	○	○	○	○	○	○	○	○
Antifreeze kit for 2 pipe units	RAEV2	○	○	○	○	○	○	○	○	○
Electronic soft starter	DSSE	○	○	○	○	○	○	○	○	○
Serial interface card RS485	INSE	○	○	○	○	○	○	○	○	○
Rubber anti-vibration mountings	KAVG	○	○	○	○	○	○	○	○	○
Remote control panel	PCRL	○	○	○	○	○	○	○	○	○
Electronic expansion valve	VTEE	○	○	○	○	○	○	○	○	○
Cascade control system via RS485	SGRS	○	○	○	○	○	○	○	○	○
Hydraulic kit with one pump with tank *	A1ZZU	○	○	○	○	○	○	○	○	○
Hydraulic kit with two pumps with tank *	A2ZZU	○	○	○	○	○	○	○	○	○
Hydraulic kit with one pump without tank *	A1NTU	○	○	○	○	○	○	○	○	○
Hydraulic kit with two pumps without tank *	A2NTU	○	○	○	○	○	○	○	○	○

* Not available for NN versions

● Standard ○ Optional – Not available



		252	302	452	502	602	752	852	1002	1202
A	SA-SE/LS	1470	1470	1670	1670	1670	1820	1820	--	--
B	SA-SE/LS	1910	1910	2200	2200	2200	2905	2905	--	--
C	SA-SE/LS	900	900	900	900	900	1150	1150	--	--
Kg	SA-SE/LS	550	560	610	650	740	890	910	--	--
A	HA-HE/LS	1470	1470	1670	1670	1820	1820	1820	1820	1820
B	HA-HE/LS	1910	1910	2200	2200	2905	2905	2905	2905	2905
C	HA-HE/LS	900	900	900	900	1150	1150	1150	1150	1150
Kg	HA-HE/LS	560	570	720	680	1060	1070	1120	1160	1240
A	HA-HE/XL	1470	1470	1670	1670	1820	1820	1820	1820	1820
B	HA-HE/XL	1910	1910	2200	2200	2905	2905	2905	2905	2905
C	HA-HE/XL	900	900	900	900	1150	1150	1150	1150	1150
Kg	HA-HE/XL	570	590	720	730	1080	1090	1140	1170	1250
A	HE/NN	1470	1670	1820	1820	1820	1820	1820	1820	1820
B	HE/NN	1910	2200	2905	2905	2905	2905	2905	3965	3965
C	HE/NN	900	900	1150	1150	1150	1150	1150	1150	1150
Kg	HE/NN	570	700	1080	1100	1110	1120	1140	1560	1580