

**Condenserless units
and heat pumps
with hermetic scroll compressors**

38 ÷ 272 kW



To select the right condenser,
see table of evaporator unit/condenser combinations



SIGMA 2002/LC

Condenserless unit

Unit frame

Self supporting frame, made of galvanized sheet steel with RAL 7032 powder coating baked at 180°C to provide a durable weatherproof finish. Models 3.2 to 7.2 and model 14.4 are completely enclosed by painted steel panels fully lined with a sound absorbing material. On models 8.2 to 13.2 only the upper compartment, which contains the compressors, is fully enclosed on all sides by painted steel panels fully lined with a sound absorbing material. On models 8.2 to 13.2 only the upper compartment, which contains the compressors, and the separator between this compartment and the lower part of the unit are enclosed by painted steel panels fully lined with a sound absorbing material. Models 16.4 to 26.4 do not have panels.

Compressors

Hermetic scroll type with orbital motion, connected in tandem and equipped with oil level sight glass, oil equalisation line and Klixon internal thermal protection.

Evaporator

Brazed plate type in 316 AISI stainless steel. Thermal insulation of evaporator is provided by closed cell expanded material. Each evaporator is equipped with a low water temperature probe for antifreeze protection and each unit is equipped as standard with a mechanical flow switch.

Refrigerant circuits

Comprising: liquid line shut-off valve, charge connection, liquid sight-glass, filter dryer, solenoid valve on the liquid line, thermostatic expansion valve with external pressure equalisation, high and low pressure switches for 2-compressor models. For 4-compressor

models high and low pressure values and relative condensing and evaporating temperatures are measured by pressure transducers which enable them to be read directly from the display. The high pressure side of the circuit is equipped with high pressure switches and relief valves.

Electrical panel

The electrical panel includes:

- main switch
- fuses for protecting power and control circuits
- compressor contactors
- µchiller microprocessor for 2-compressor units and PCO2 for 4-compressors.

Controls and safety devices

- high pressure switch with manual reset;
- high pressure relief valve;
- a low water temperature probe for antifreeze protection at the outlet of each evaporator;
- mechanical flow switch supplied as standard with the unit;
- compressor thermal overload protection.

Testing

Oil charging and and a dry run test are carried out in the factory. The units are delivered with the refrigerant circuit charged with nitrogen.

SIGMA 2002/LC/HP

Condenserless unit reverse cycle

The unit reverses the refrigerant flow. In addition to the components of version SIGMA 2002, this unit includes:

Refrigerant circuit

4-way reversing valve, liquid receivers.

ACCESSORY VERSIONS

SIGMA 2002/LC/DC

Unit with heat recovery condenser.

SIGMA 2002/LC/DS

Unit with desuperheaters

SIGMA 2002/LC/LN

Low noise unit

The units are completely enclosed by painted steel panels lined with sound absorbing material having an intermediate layer of high acoustic impedance material.

MAIN ACCESSORIES

- Double set point
- Power factor correction $\cos \varnothing \geq 0.9$ at nominal operating conditions
- Serial interface
- Remote user terminal panel (in addition to the standard terminal)
- Rubber antivibration mounts
- Timber crate packing.

SIGMA 2002/LC - R407C TECHNICAL DATA

Unit size		3.2	4.2	5.2	6.2	7.2
Nominal cooling capacity (*)	kW	38,3	46,2	53,9	62,4	70,8
Nominal heating capacity (**)	kW	39,2	47,8	55,5	64,1	72,7
Compressor						
Quantity/Refrigerant circuits	n°	2/1	2/1	2/1	2/1	2/1
Cooling power input(*)	kW	12,3	14,8	17,1	19,6	22,2
Heating power input(**)	kW	12,5	15,4	17,8	20,3	22,7
Capacity steps	%	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100
Evaporator characteristics						
Water flow rate	l/s	1,830	2,210	2,580	2,980	3,380
Pressure drop	kPa	41,1	37,1	32,3	29,9	29,4
Noise level (***)						
Basic unit	dB(A)	55,0	55,2	55,3	55,8	56,2
LN version	dB(A)	53,6	53,8	53,7	54,3	54,7
Power supply	V/ph/Hz	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50
Dimensions and weight						
Width	mm	1334	1334	1334	1334	1334
Depth	mm	867	867	867	867	867
Height	mm	962	962	962	962	962
Operating weight	kg	364	386	393	412	430

Unit size		8.2	9.2	10.2	12.2	13.2	14.4
Nominal cooling capacity (*)	kW	81,4	96,0	110,6	123,5	136,4	141,6
Nominal heating capacity (**)	kW	84,2	99,1	114	127,6	141,3	145,4
Compressor							
Quantity/Refrigerant circuits	n°	2/1	2/1	2/1	2/1	2/1	4/2
Cooling power input(*)	kW	26	30,6	35,3	39,2	43,2	44,4
Heating power input(**)	kW	26,7	31,2	35,7	39,5	43,4	45,5
Capacity steps	%	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100	0-25-50-75-100
Evaporator characteristics							
Water flow rate	l/s	81,400	4,590	5,280	5,9	6,51	6,76
Pressure drop	kPa	26,0	34,4	30,8	29,5	30,7	29,5
Noise level (***)							
Basic unit	dB(A)	59,5	60,0	60,6	60,9	61,3	59,5
LN version	dB(A)	56,1	56,2	56,3	56,6	57,0	57,3
Power supply	V/ph/Hz	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50
Dimensions and weight							
Width	mm	1356	1356	1356	1356	1356	1426
Depth	mm	768	768	768	768	768	768
Height	mm	1700	1700	1700	1700	1700	1787
Operating weight	kg	450	525	605	641	686	768

Unit size		16.4	18.4	20.4	24.4	26.4
Nominal cooling capacity (*)	kW	162,8	192	221,2	247	272,7
Nominal heating capacity (**)	kW	168,4	198,2	227,2	255,3	282,6
Compressor						
Quantity/Refrigerant circuits	n°	4/2	4/2	4/2	4/2	4/2
Cooling power input(*)	kW	52	61,3	70,6	78,4	86,3
Heating power input(**)	kW	53,4	62,4	71,4	79,1	86,8
Capacity steps	%	0-25-50-75-100	0-25-50-75-100	0-25-50-75-100	0-25-50-75-100	0-25-50-75-100
Evaporator characteristics						
Water flow rate	l/s	7,78	9,17	10,57	11,8	13,03
Pressure drop	kPa	29	34,5	30,8	29,5	30,7
Noise level (***)						
Basic unit	dB(A)	77,0	78,0	78,5	59,2	79,5
LN version	dB(A)	59,5	61,0	61,8	62,1	62,5
Power supply	V/ph/Hz	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50
Dimensions and weight						
Width	mm	2726	2726	2726	2726	2726
Depth	mm	945	945	945	945	945
Height	mm	1700	1700	1700	1700	1700
Operating weight	kg	860	1000	1124	1136	1162

(*) Condensation temperature 50 °C; evaporator inlet/outlet water temperature 12-7 °C.

(**) Condenser inlet/outlet water temperature 40-45 °C; evaporation temperature -5 °C.

(***) Sound pressure levels measured in free field conditions at 1m from the unit on the side of the electrical panel, according to ISO 3746.

This datasheet gives the characteristic data of the basic and standard versions of the series; for details refer to the specific documentation