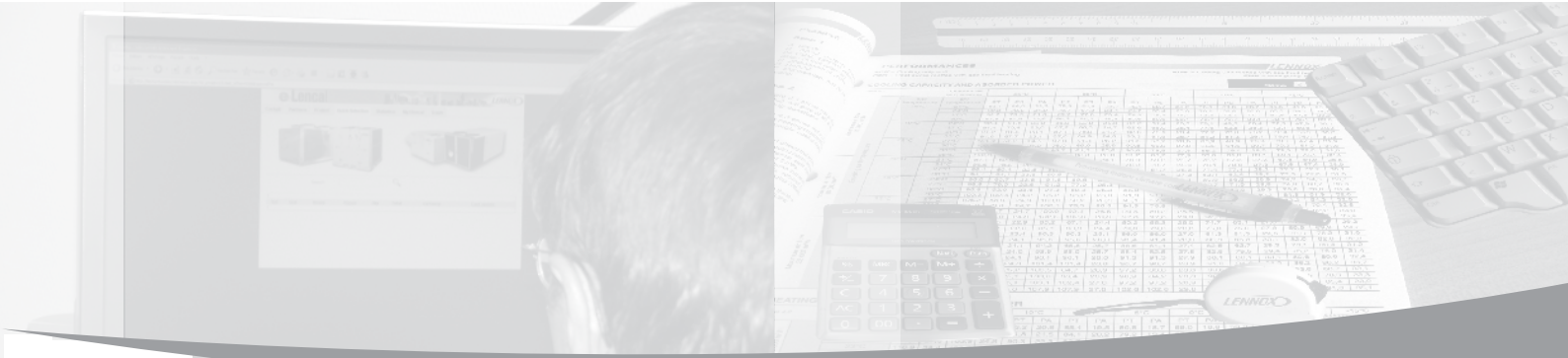


Application guide



ECOLEAN 20 - 200 kW

- EAC** Air cooled liquid chiller
- EAR** Air-to-water heat pump



ECOLEAN™

APPLICATION GUIDE

Ref : ECOLEAN-AGU-0611-E

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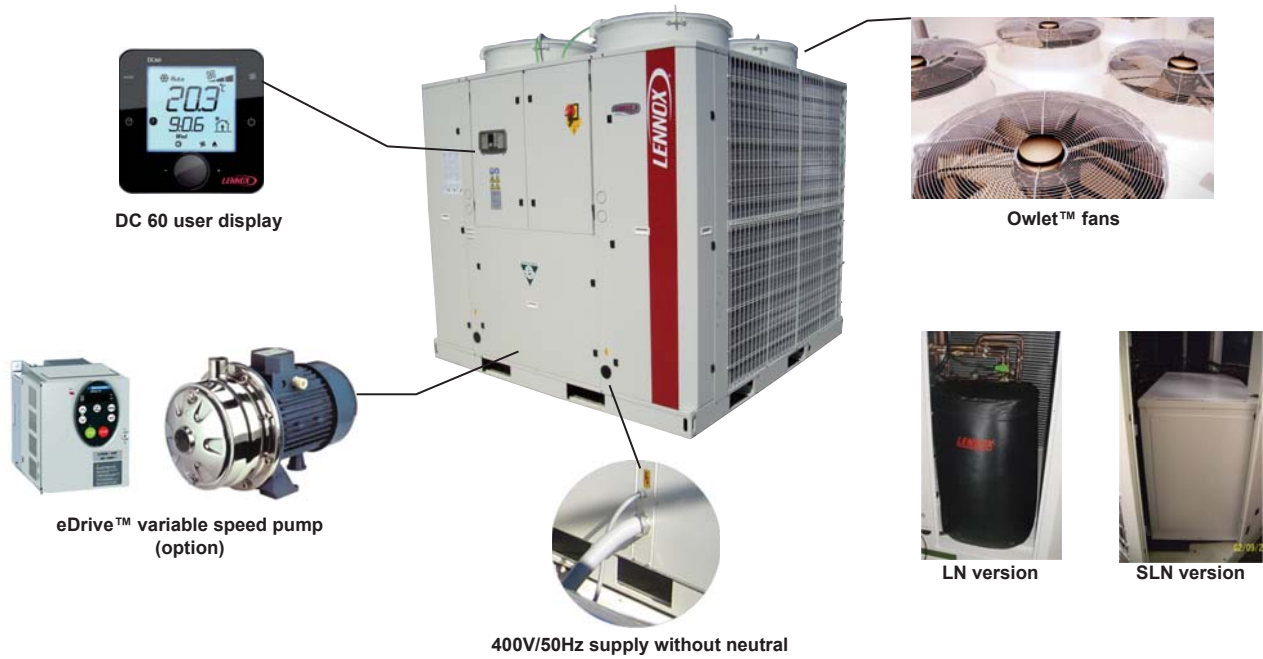
The manufacturing of ECOLEAN™ answers to ISO 9001 control quality system.

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EXAMPLE : EAC 100 3 SM4 HN LN

E	ECOLEAN™
A	Air cooled
C	C = Cooling only R = Reversible heat pump
100	Cooling capacity in kW
3	Number of compressors
S	S = Standard version F = Fan pressure version
M	R410 A refrigerant
4	Revision number
HN	--- = Basic HY = Hydraulic (pump) HN = Hydronic (pump + buffer tank)
LN	--- = Standard LN = Low noise SLN = Super low noise



The new generation of ECOLEAN offers an optimal solution to all air conditioning applications in light commercial and retail applications (Offices, shops, restaurants...) or applications in the industry.

This range is designed with the latest technologies to ensure high energy performance all along the year thanks to R410A multi scroll compressors, optimized heat exchange surface area associated with eDrive™ variable speed pump (optional).

Lennox has designed ECOLEAN targeting the lowest market noise level. This has been achieved by research and development innovations both on new fan blade technologies, noiseless compressor montage. ECOLEAN is achieving the best market acoustic performance thanks to the use of the latest generation of OWLET™ fans associated with acoustic compressor enclosure.

ECOLEAN™ range includes two basic models: Standard version (**S**) is mainly for outdoor installation and the fan pressure version (**F**) is suited for indoor installation where high available static pressure is required.

Each Ecolean standard model is available in 3 main versions to match every customer need.

- **Standard version (-)**: This version is featuring a standard efficiency unit with two speed fans.
- **Low noise version (LN)**: This version is featuring low noise performance (-7 dB(A) average reduction) thanks to a fan running in low fan speed and compressor noise insulated in a high performance acoustic jacket.
- **Super low noise version (SLN)**: This version is featuring very low noise performance (-10 dB(A) average reduction) thanks to a fan running in low fan speed and compressor noise insulated in a very high performance acoustic cabinet.
SLN version is not available for B & C boxes.

This range is also proposed with very compact integral hydraulic equipment (**HY version**). This one includes all the elements required for a right operation of the unit :

- single pump (twin pump as option),
- expansion vessel,
- air vent,
- pressure relief valves...

A version with a supplementary buffer tank (**HN version**) is available for cooling applications or heating applications where supplementary electric heaters into the tank can be provided.

- 1 compressor, 1 refrigerant circuit: Sizes **0251, 0291, 0351, 0431**.
- 2 compressors, 1 refrigerant circuit: Sizes **0472, 0552, 0672, 0812**.
- 3 compressors, 2 refrigerant circuits:..... Sizes **1003, 1103, 1203, 1303, 1403**.
- 4 compressors, 2 refrigerant circuits:..... Sizes **1604, 1804, 2104**.

GENERAL CHARACTERISTICS OF THE UNIT

The ECOLEAN unit is designed to be integrated into urban or residential environments. As main characteristics the ECOLEAN unit offers adjustable sound level performances during day and night to satisfy local environmental constraints.

CASING / CHASSIS

- Casing made of galvanized steel sheet metal painted with a white RAL 9002 powdered polyester paint and a RAL3003 red stripe.
- Rigid, hot dipped galvanized chassis.
- Unit lifting and handling via the base frame
- State of the art design with hidden compressors, fans and pump for perfect architectural integration.
- Side grilles as option to protect the unit during transportation and against human aggressions.

COMPRESSORS

- Exclusive Compliant Scroll® design with both axial and radial compliance to increase compressor operation tolerance to liquid refrigerant, substantially improving durability and reliability.
- Motor cooled by suction gas.
- Motor protection device against high temperature or over current situations.
- Discharge non-return valve.
- Crankcase heater.
- Direct on line start.
- Low noise scroll compressors insulated with a compressor acoustic jacket (LN version) or mounted in a sound-proofed technical cabinet (SLN version) to reduce noise emissions.
- Compressors mounted on high efficiency cellular polyurethane vibration absorbers.

PLATE HEAT EXCHANGERS

- Stainless steel plate brazed.
- Thermal insulation by top grade 10 mm plastic foam.
- Copper brazed Stainless steel plate heat exchanger.
- Water heat exchanger located in a technical cabinet protecting the insulation against climatic conditions (UV light, rain).

OUTDOOR EXCHANGER

- High performance coil with expanded copper tubes and high efficiency aluminium fins.

FANS

Standard version:

Fan-motor assembly using external rotor technology associated with OWLET™ high performance aluminium fan blades of the latest generation. Two speed axial fans 700/550 rpm or 900/700 rpm according to models, direct coupling, with available static pressure up to 75 Pa. For low noise and super low noise versions, the fans are running in low fan speed.

Pressure version version:

Two speed axial fans 1450/900 rpm, direct coupling, with available static pressure up to 250 pa. For fan pressure low noise and super low noise versions, the fans are running in low fan speed.

Noise setting capability per time zone (Performance mode, Quiet Mode or Quiet++ Mode). As an example, fan speed can be locked through the Climatic™ control to operate only in low speed during night or unoccupied periods.

REFRIGERATION CIRCUIT

ECOLEAN™ is using R410A refrigerant. Each circuit includes :

- Thermostatic expansion valve.
- Filter drier.
- High-pressure switch with automatic reset.
- Low-pressure switch with automatic reset (Heat pump units incorporate two of them, one for cooling cycle and one for heating cycle).
- Suction piping with thermal insulation.
- Temperature sensors and pressure transducers.
- Four-way valve and liquid receiver (heat pump units only).
- Leak-tight refrigerant circuit with brazing carried out under nitrogen by certified engineers.
- Pressure transducers (heat pump units only).
- Each refrigerant circuit is pressure and leak tested with a Hydrogen/Nitrogen mixture, and vacuumed before being charged with refrigerant. All units are then subjected to a complete functional and operational run test to guarantee perfect sealing before leaving the factory.

WATER CIRCUIT

- Water flow switch.
- Water filter.
- Hydraulic module with single pump and all necessary hydraulic devices (HY version).
- Hydraulic module with single pump, buffer tank and all necessary hydraulic devices (HN version).
- Twin pump as an option with operating time equalization and automatic change-over in case of a pump fault.
- Variable speed pump as an option to reduce annual pumping energy consumption based on a constant delta P or a constant delta T management.

ELECTRICAL BOX

- Unit electrical cabinet, components and wiring in compliance with EN 60204-1 electrical directive.
- 400V, 50 Hz, 3 phase power supply (without neutral) with a single point of power connection.
- IP54 protection class.
- Recognized brand electrical components for ease of maintenance.
- Compressor, fan and water pump working contactors.
- Main on/off switch mounted on the front panel.
- DC60 user interface mounted on the front panel.
- Door interlocked main on/off switch.
- 400/24 V transformer to supply the control circuit.
- Numbered electrical wires to facilitate maintenance and diagnostic.
- Variable Frequency Drive (VFD) to control the water pump speed (option).

CONTROL

CLIMATIC™ 60 microprocessor based control is providing the following functions :

- 7 scheduling time zones per day over 7 days to allow energy consumption and sound level management according to the building use and environmental constraints.
- PI control of the water temperature with operating time equalization of the compressors.
- Water set-point offset based on outdoor air temperature.
- Noise setting capability per time zone (Performance mode, Quiet Mode or Quiet++ Mode).
- Intelligent advanced control algorithm to protect the compressors against excessive short-cycling and to allow operation of the unit without buffer tank in most comfort air conditioning applications (e.g. unit with fan-coils). Refer to minimum installation water loop volume recommendations.
- Dynamic defrost to limit the number and the duration of the defrost cycles in winter for high performance of the unit (Dynamic Defrost patented).
- Automatic compressor unloading in case of excessive condensing pressure allowing the operation of the machine at high outdoor air temperature (operation extended up to 48°C ambient).
- Water pump control with operating time equalization and automatic change-over in case of a pump fault (Twin pump only).
- Variable water flow pump control to reduce annual pumping energy consumption based on a constant delta P or a constant delta T management.
- Master/slave or cascade control of 2, up to 8 chillers operating in parallel with operating time equalization and automatic change-over in case of a unit fault.

The DC60™ user interface is supplied as standard mounted on the front panel and is protected from rain and UV by a plastic cover.

The DC60™ user interface with graphical display is easy to use, intuitive. Main customer parameters can be read or modified without main power shut-off.

The DC60™ user interface is providing the following functions :

- Display and setting of hot and cold water temperatures.
- Display and setting of operating mode (cooling, heating, auto-matic).
- Display of occupancy mode (occupied, unoccupied).
- Main component status display.
- Alarm code and symbol display.
- Refrigerant LP and HP Display.

A remote DC60™ user interface can be supplied for remote control of the unit (option).

The DS60™ service display (optional) is a plug and play» controller that allows service people to read and modify all unit parameters (Unit settings, operating time and number of compressor starts, low and high pressure reading, read the history of last 32 faults...).

COMMUNICATION

The control board is equipped with a RS485 serial communication port to allow remote management through communication bus. According to the wished communication protocol, our control board can be fitted with ModBUS®, LonWorks® or BacNET® communication interface or Adalink™ supervision (options). The main control board has free dry contacts that allow remote control of the unit by wired cable:

- Remote ON/OFF of the unit.
- Remote alarm reset to re-start the unit.
- Alarm or alert indications.
- Free customer contact.



DC60 customer display



DS60 service display

OPTIONS	DESCRIPTION	MODELS
Coil treatment options		
Epoxy coated aluminium fins coils treated	Special protection of the aluminium condenser coil fins against aggressive external environmental conditions.	All
Electric options		
Soft starter	It is an electronic element, which reduces the peak compressor starting current up to 40%.	All
Three phase protection	It assures that the unit will not start operation in case of overvoltage, under voltage, phase reversal fault or phase failure.	All
Evaporator antifreeze protection	Resistance heater on the evaporator to be selected if no glycol water.	All
Tank antifreeze heater (400V/III)	It starts when water temperature in the buffer tank is lower than + 5°C.	HN version only
Water tank electrical heater (400V/III)	Heat pump units only. The heater works as anti-freeze heater and as supplementary heater, when inlet hot water reaches a temperature below a selected value (example: 30 °C) through an independent thermostat included.	EAR HN version only
Refrigerant circuit option		
Low leaving water temperature operation (+5 → -10°C)	Glycol % setting in factory that impacts the low pressure and evaporator anti-freeze values. Necessary for water outlet temperatures below +5°C and down to -10°C.	All
Winter operation down to -15°C ambient temperature	Unit fitted with variable speed fans. Continuous cooling operation down to -15°C outside air temperature. Strongly recommended for applications where cooling is required during winter (process, building with high internal loads).	EAC only
Hydraulic options		
Twin pump	It is formed by two water pumps mounted on parallel and with same characteristics as a single one. Only one pump is working while the other remains on stand-by.	HY and HN versions only
eDrive™ variable water flow	Variable speed pump and control equipment to reduce annual pumping energy consumption based on a constant delta T or a constant delta P management.	
Electronic flow switch	Unit fitted with a water electronic switch instead of a paddle switch. Very reliable water flow measurement and non sensitive to freezing risk.	All

OPTIONS	DESCRIPTION	MODELS
Control options		
Modbus communication interface	Communication card using ModBus/JBus protocol.	All
LonWorks® communication interface	Communication card using LonTalk® protocol.	All
BACnet® communication interface	Communication card using Bacnet® protocol.	All
Adalink supervision	Remote supervision of the unit via an intuitive web page	All
DC60 remote customer display 24V (supplied loose)	24V customer display located at 30 meters maximum from the unit. Remote customer parameter reading and modification.	All
BE60 extension board for additional inputs/ outputs	Relay card for remote control and alarm report using dry contacts, 24 Vac or 4-20 mA signals. See control manual.	All
DS60 Service display (supplied loose)	Display for service technicians.	All
Other Options		
Compressor acoustic jacket	Each compressor is fitted with a high performance acoustic jacket	For STD version only Included in LN version.
Anti-vibrations mounts rubber (supplied loose)	Reduction of the transmission of vibration to the ground and the general level.	All
Coils protection guards	The condenser coil protection grill prevents light damage to the coil when shipping and when installed.	All
Pallet packaging	Wooden pallet packaging with plastic bag. Unit protection during truck transshipment or container shipment. Warning: High cube container needed on D & E box.	All



eDrive™ variable speed pump (option)



STANDARD VERSION

ECOLEAN		EAC/EAR	0251SM	0291SM	0351SM	0431SM
Cooling mode						
Cooling capacity ⁽¹⁾		kW	22,1	25,9	32,0	37,6
Absorbed power ⁽¹⁾		kW	7,6	9,1	11,2	13,4
EER ⁽¹⁾			2,9	2,8	2,8	2,8
ESEER						
Heating mode (only EAR)						
Heating capacity ⁽²⁾		kW	23,6	27,6	33,6	37,8
Absorbed power ⁽²⁾		kW	7,9	9,2	11,2	13,0
COP ⁽²⁾			3,0	3,0	3,0	2,9
Electrical data						
Power supply			400V/3/50Hz			
Start-up intensity		A	95.6	102.1	136.1	149.7
Maximum current		A	22.3	23.8	27.4	32.8
Refrigeration circuit						
Number of circuits			1			
Compressor		Type	Scroll			
		Nr	1			
Evaporator		Type	AISI 316 stainless steel plate brazed with copper heat exchanger			
Capacity steps		%	0-100			
Refrigerant charge EAC/EAR		kg	5,5/5,8	6,1/6,5	7,6/8	9/9,5
Oil charge per compressor		l	3,25	3,25	3,29	3,25
Crankcase heater per compressor		W	90	90	90	90
Pressure drop						
Nominal water flow		m ³ /h	3,8	4,5	5,5	6,5
Pressure drop without water filter		kPa	31	27	35	32
Pressure drop with water filter		kPa	49	49	65	71
Hydraulic connection						
Type			Threaded-Female			
Diameter			1 1/2" G			
Condenser fan (helicoïdal)						
Number			1			
Nominal airflow rate ⁽¹⁾	m ³ /h	STD	9950	12900	12500	12250
		LN ⁽⁴⁾	8250	10500	10250	10000
Total motor power input	kW	STD	0,49	0,69	0,69	0,7
		LN ⁽⁴⁾	0,37	0,51	0,52	0,53
Fan speed	rpm	STD	930	927	925	920
		LN ⁽⁴⁾	786	773	768	762
Acoustic						
Sound power level ⁽³⁾	dB(A)	LN ⁽⁴⁾	76	76	77	78
		STD	71	70	71	72
Dimensions						
Width		mm	1195	1195	1195	1195
Depth		mm	980	980	980	980
Height		mm	1616	1635	1635	1635
Operation weight EAC / EAR		kg	238/243	246/251	263/271	292/300

(1) All data are at EUROVENT conditions : Water : 12°C / 7°C - Air ambient: 35°C

(2) All data are at EUROVENT conditions : Water : 40°C / 45°C - Air ambient: 7°C DB / 6°C WB

(3) Sound power level and sound pressure level at 10 m from the unit, in free field, conformity with ISO3744 norm

(4) Maximum sound power level only if "Quiet++" mode selected. If "Quiet" mode selected, the unit may operate the high fan speed to work at full load and avoid high pressure switch-off in case of very high or very low ambient temperatures

DATA FOR STANDARD UNITS.

FOR HYDRONIC OR HYDRAULIC VERSION, SEE PAGE 15.

STANDARD VERSION

ECOLEAN	EAC/EAR	0472SM	0552SM	0672SM	0812SM	
Cooling mode						
Cooling capacity ⁽¹⁾	kW	44,1	50,7	63,4	75,4	
Absorbed power ⁽¹⁾	kW	15,2	18,2	22,4	26,7	
EER ⁽¹⁾		2,9	2,8	2,8	2,8	
ESEER						
Heating mode (only EAR)						
Heating capacity ⁽²⁾	kW	47,8	54,7	68,0	75,7	
Absorbed power ⁽²⁾	kW	15,9	18,6	22,7	25,9	
COP ⁽²⁾		3,0	2,9	3,0	2,9	
Electrical data						
Power supply		400V/3/50Hz				
Start-up intensity	A	117.9	125.8	163.4	182.4	
Maximum current	A	43.4	46.2	53.4	64.2	
Refrigeration circuit						
Number of circuits		1				
Compressor	Type	Scroll				
	Nr	2				
Evaporator	Type	AISI 316 stainless steel plate brazed with copper heat exchanger				
Capacity steps	%	0-55-100				
Refrigerant charge EAC/EAR	kg	11/12,5	12,2/13,5	15.5/16	19,5/19,3	
Oil charge per compressor	l	2 x 3,25	2 x 3,25	2 x 3,25	2 x 3,25	
Crankcase heater per compressor	W	2 x 90				
Pressure drop						
Nominal water flow	m ³ /h	7,6	8,7	10,9	13,0	
Pressure drop without water filter	kPa	30	34	45	47	
Pressure drop with water filter	kPa	49	56	75	87	
Hydraulic connection						
Type		Threaded-Female				
Diameter		2" G				
Condenser fan (helicoïdal)						
Number		2				
Nominal airflow rate ⁽¹⁾	m ³ /h	STD	9950 + 9950	12900 + 12900	12500 + 12500	12250 + 12250
		LN ⁽⁴⁾	8250 + 8250	10500 + 10500	10250 + 10250	10000 + 10000
Total motor power input	kW	STD	0,49 + 0,49	0,69 + 0,69	0,69 + 0,69	0,7 + 0,7
		LN ⁽⁴⁾	0,37 + 0,37	0,51 + 0,51	0,52 + 0,52	0,53 + 0,53
Fan speed	rpm	STD	930/930	927/927	925/925	920/920
		LN ⁽⁴⁾	786/786	773/773	768/768	762/762
Acoustic						
Sound power level ⁽³⁾	dB(A)	LN ⁽⁴⁾	74	73	74	75
		STD	79	79	80	81
Dimensions						
Width	mm	1960	1960	1960	1960	
Depth	mm	1195	1195	1195	1195	
Height	mm	1616	1635	1635	1635	
Operation weight EAC / EAR	kg	470/480	482/492	518/534	562/578	

(1) All data are at EUROVENT conditions : Water : 12°C / 7°C - Air ambient: 35°C

(2) All data are at EUROVENT conditions : Water : 40°C / 45°C - Air ambient: 7°C DB / 6°C WB

(3) Sound power level and sound pressure level at 10 m from the unit, in free field, conformity with ISO3744 norm

(4) Maximum sound power level only if "Quiet++" mode selected. If "Quiet" mode selected, the unit may operate the high fan speed to work at full load and avoid high pressure switch-off in case of very high or very low ambient temperatures

DATA FOR STANDARD UNITS.

FOR HYDRONIC OR HYDRAULIC VERSION SEE PAGE 15.

STANDARD VERSION

ECOLEAN		EAC/EAR	1003SM	1103SM	1203SM	1303SM
Cooling mode						
Cooling capacity ⁽¹⁾		kW	88,2	102	112	126
Absorbed power ⁽¹⁾		kW	31,2	35,3	40,1	43,9
EER ⁽¹⁾			2,83	2,9	2,79	2,86
ESEER			4,19	3,97	3,83	3,87
Heating mode (only EAR)						
Heating capacity ⁽²⁾		kW	95,0	108	118	130,4
Absorbed power ⁽²⁾		kW	31,2	36	39,3	44,5
COP ⁽²⁾			3,05	3,00	3,00	2,92
Electrical data						
Power supply			400V/3/50Hz			
Start-up intensity		A	196,7	205,5	248,9	290,4
Maximum current		A	79,8	88,6	97,6	107,7
Refrigeration circuit						
Number of circuits			2			
Compressor		Type	Scroll			
		Nr	3			
Evaporator		Type	AISI 316 stainless steel plate brazed with copper heat exchanger			
Capacity steps		%	0 - 30 - 75 - 100			
Refrigerant charge EAC/EAR		kg	23,5/23,3	26/28	27/29,5	30/32,2
Oil charge per compressor		l	2 x 3,25 + 3,25	3 x 3,25 + 3,25	2 x 3,25 + 4,7	2 x 3,3 + 6,8
Crankcase heater per compressor		W	3 x 90	3 x 90	2 x 90 + 120	2 x 90 + 150
Pressure drop						
Nominal water flow		m ³ /h	15,2	17,6	19,2	21,6
Pressure drop without water filter		kPa	32	31	36	43
Pressure drop with water filter		kPa	40	44	51	64
Hydraulic connection						
Type			Threaded-Female			
Diameter			2 1/2" G			
Condenser fan (helical)						
Number			2			
Nominal airflow rate ⁽¹⁾	m ³ /h	STD	17000+17000	22500+17000	22500+17000	22500+22500
		LN & SLN ⁽⁴⁾	13500+13500	17500+13500	17500+13500	17500+17500
Total motor power input	kW	STD	1,05 + 1,05	2 + 1,05	2 + 1,05	2 + 2
		LN & SLN ⁽⁴⁾	0,77+0,77	1,25+0,77	1,25+0,77	1,25+1,25
Fan speed	rpm	STD	683/683	910/683	910/683	910/910
		LN & SLN ⁽⁴⁾	545/545	730/545	730/545	730/730
Acoustic						
Sound power level / Sound pressure level ⁽³⁾	dB(A)	SLN ⁽⁴⁾	72/40	75/43	76/44	78/46
		LN ⁽⁴⁾	75/43	76/44	79/47	81/49
		STD	80/48	82/50	85/53	87/55
Dimensions						
Width		mm	2250	2250	2250	2250
Depth		mm	1420	1420	1420	1420
Height		mm	2155	2155	2155	2155
Operation weight EAC / EAR		kg	640/663	809/831	938/964	990/1016

(1) All data are at EUROVENT conditions : Water : 12°C / 7°C - Air ambient: 35°C

(2) All data are at EUROVENT conditions : Water : 40°C / 45°C - Air ambient: 7°C DB / 6°C WB

(3) Sound power level and sound pressure level at 10 m from the unit, in free field, conformity with ISO3744 norm

(4) Maximum sound power level only if "Quiet++" mode selected. If "Quiet" mode selected, the unit may operate the high fan speed to work at full load and avoid high pressure switch-off in case of very high or very low ambient temperatures

DATA FOR STANDARD UNITS.

FOR HYDRONIC OR HYDRAULIC VERSION, SEE PAGE 15.

STANDARD VERSION

ECOLEAN		EAC/EAR	1403SM	1604SM	1804SM	2104SM
Cooling mode						
Cooling capacity ⁽¹⁾		kW	139	149	174	199
Absorbed power ⁽¹⁾		kW	48,3	54,1	60	71
EER ⁽¹⁾			2,87	2,76	2,9	2,8
ESEER			3,98	4,02	4,06	3,76
Heating mode (only EAR)						
Heating capacity ⁽²⁾		kW	143	159	180	205
Absorbed power ⁽²⁾		kW	48,2	53	61	71,9
COP ⁽²⁾			2,97	3,00	2,95	2,85
Electrical data						
Power supply	400V/3/50Hz					
Start-up intensity		A	301,2	248,9	302,9	357,7
Maximum current		A	118,5	132	151,6	175
Refrigeration circuit						
Number of circuits	2					
Compressor	Type	Scroll				
	Nr	3	4			
Evaporator	Type	AISI 316 stainless steel plate brazed with copper heat exchanger				
Capacity steps	%	0 - 30 - 75 - 100		0 - 30 - 60 - 80 - 100		
Refrigerant charge EAC/EAR	kg	33,7/35,5	36,2/40	45/52	47/54	
Oil charge per compressor	l	2x3,3 + 6,8	2x3,25 + 2x3,25	2x7,95 + 2x7,95	2x10,5 + 2x10,5	
Crankcase heater per compressor	W	2x90 + 150	4 x 90	2x90 + 2x120	2x90 + 2x150	
Pressure drop						
Nominal water flow		m ³ /h	23,9	25,7	29,9	34,2
Pressure drop without water filter		kPa	51	45	45	60
Pressure drop with water filter		kPa	78	61	68	91
Hydraulic connection						
Type	Threaded-Female					
Diameter	2 1/2" G		3" G			
Condenser fan (helicoïdal)						
Number			2	2	4	4
Nominal airflow rate ⁽¹⁾	m ³ /h	STD	22500+22000	23000+23000	26000+26000	36000+36000
		LN & SLN ⁽⁴⁾	17500+17200	18500+18500	19000+19000	27200+27200
Total motor power input	kW	STD	2 + 2	2 + 2	2,1 + 2,1	4 + 4
		LN & SLN ⁽⁴⁾	1,25 + 1,25	1,25 + 1,25	1,54 + 1,54	2,5 + 2,5
Fan speed	rpm	STD	910 + 908	920 + 920	675+675 +675+675	925+925 +925+925
		LN & SLN ⁽⁴⁾	730 + 750	740 + 740	518+518+ 518+518	700+700+ 700+700
Acoustic						
Sound power level / Sound pressure level ⁽³⁾	dB(A)	SLN ⁽⁴⁾	78/46	76/44	77/45	81/49
		LN ⁽⁴⁾	81/49	78/46	81/49	83/51
		STD	87/55	85/53	87/55	90/58
Dimensions						
Width		mm	2250	2250	2250	2250
Depth		mm	1420	2300	2300	2300
Height		mm	2155	2250	2250	2250
Operation weight EAC / EAR		kg	1019/1045	1328/1347	1683/1703	1703/1723

(1) All data are at EUROVENT conditions : Water : 12°C / 7°C - Air ambient: 35°C

(2) All data are at EUROVENT conditions : Water : 40°C / 45°C - Air ambient: 7°C DB / 6°C WB

(3) Sound power level and sound pressure level at 10 m from the unit, in free field, conformity with ISO3744 norm

(4) Maximum sound power level only if "Quiet++" mode selected. If "Quiet" mode selected, the unit may operate the high fan speed to work at full load and avoid high pressure switch-off in case of very high or very low ambient temperatures

DATA FOR STANDARD UNITS.

FOR HYDRONIC OR HYDRAULIC VERSION SEE PAGE 15.

STANDARD VERSION (SM)
AVAILABLE STATIC PRESSURE UP TO 75 Pa

B BOX

MODELS			0251SM	0291SM	0351SM	0431SM
Fan type			<i>Axial - Direct coupling - 400V/3</i>			
Fan number			1			
Nominal airflow rate	m³/h	STD	9950	12900	12500	12250
		LN	8250	10500	10250	10000
Total motor power input	kW	STD	0,49	0,69	0,69	0,7
		LN	0,37	0,51	0,52	0,53
Fan speed	rpm	STD	930	927	925	920
		LN	786	773	768	762

C BOX

MODELS			0472SM	0552SM	0672SM	0812SM
Fan type			<i>Axial - Direct coupling - 400V/3</i>			
Fan number			2			
Nominal airflow rate	m³/h	STD	9950 + 9950	12900 + 12900	12500 + 12500	12250 + 12250
		LN	8250 + 8250	10500 + 10500	10250 + 10250	10000 + 10000
Total motor power input	kW	STD	0,49 + 0,49	0,69 + 0,69	0,69 + 0,69	0,7 + 0,7
		LN	0,37 + 0,37	0,51 + 0,51	0,52 + 0,52	0,53 + 0,53
Fan speed	rpm	STD	930/930	927/927	925/925	920/920
		LN	786/786	773/773	768/768	762/762

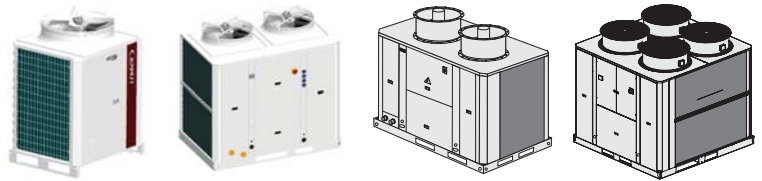
D BOX

MODELS			1003SM	1103SM	1203SM	1303SM	1403SM
Fan type			<i>Axial - Direct coupling - 400V/3</i>				
Fan number			2				
Nominal airflow rate	m³/h	STD	17000+17000	22500+17000	22500+17000	22500+22500	22500+22000
		LN & SLN	13500+13500	17500+13500	17500+13500	17500+17500	17500+17500
Total motor power input	kW	STD	1,05+1,05	2+1,05	2+1,05	2+2	2+2
		LN & SLN	0,77+0,77	1,25+0,77	1,25+0,77	1,25+1,25	1,25+1,25
Fan speed	rpm	STD	683+683	910+683	910+683	910+910	910+908
		LN & SLN	545+545	730+545	730+545	730+730	730+750

E BOX

MODELS			1604SM	1804SM	2104SM
Fan type			<i>Axial - Direct coupling - 400V/3</i>		
Fan number			2	4	
Nominal airflow rate	m³/h	STD	23000+23000	26000+26000	36000+36000
		LN & SLN	18500+18500	19000+19000	27200+27200
Total motor power input	kW	STD	2+2	2,1+2,1	4+4
		LN & SLN	1,25+1,25	1,54+1,54	2,5+2,5
Fan speed	rpm	STD	920+920	675+675+675+675	925+925+925+925
		LN & SLN	740+740	518+518+518+518	700+700+700+700

FAN PRESSURE VERSION (FM)
AVAILABLE STATIC PRESSURE UP TO 250 Pa



MODELS				0251 FM	0291 FM	0351 FM	0351 FM	0472 FM	0552 FM	0672 FM	0812 FM
Fan type				Axial - Direct coupling 3~400 V							
Fan number				1				2			
Available static pressure	76 Pa	Airflow rate	m ³ /h	STD	15608	15608	15299	14994	15608+ 15608	15299+ 15299	14994+ 14994
			LN	10736	10736	10662	10181	10736+ 10736	10662+ 10662	10181+ 10181	
		Power input	kW	STD	2.47	2.47	2.50	2.52	2.47+2.47	2.50+ 2.50	2.52+ 2.52
			LN	1.57	1.57	1.57	1.58	1.57+1.57		1.58+ 1.58	
	100 Pa	Airflow rate	m ³ /h	STD	14933	14933	14609	14293	14933+14933	14609+ 14609	14293+ 14293
			LN	9455	9455	9479	9045	9455+9455	9479+ 9479	9045+ 9045	
		Power input	kW	STD	2.49	2.49	2.52	2.53	2.49+2.49	2.52+ 2.52	2.53+ 2.53
			LN	1.59	1.59	1.59	1.59	1.59+1.59		1.59+ 1.59	
	125 Pa	Airflow rate	m ³ /h	STD	14102	14102	13813	13510	14102+14102	13813+ 13813	13510+ 13510
			LN	8304	8304	8316	8001	8304+8304	8316+ 8316	8001+ 8001	
		Power input	kW	STD	2.51	2.51	2.54	2.55	2.51+2.51	2.54+ 2.54	2.55+ 2.55
			LN	1.6	1.6	1.6	1.6	1.6+1.6		1.6+ 1.6	

MODELS				1003 ▶ 1403 FM	1604 FM	1804 - 2104 FM	
Fan type				Axial - Direct coupling High speed 3~400 V			
Fan number				2		4	
Available static pressure	76 Pa	Airflow rate	m ³ /h	STD	49920	50250	72500
			LN & SLN	36125	38215	61205	
		Power input	kW	STD	10,1	10,1	20,4
			LN & SLN	6,2	6,2	12,6	
	100 Pa	Airflow rate	m ³ /h	STD	48000	50000	72000
			LN & SLN	33700	35700	58500	
		Power input	kW	STD	10,1	10,1	20,5
			LN & SLN	6,3	6,3	12,6	
	125 Pa	Airflow rate	m ³ /h	STD	45920	49210	70420
			LN & SLN	30100	32100	54700	
		Power input	kW	STD	10,2	10,2	20,7
			LN & SLN	6,3	6,3	12,7	
	150 Pa	Airflow rate	m ³ /h	STD	44000	48000	68000
		Power input	kW	STD	10,2	10,2	20,8
	200 Pa	Airflow rate	m ³ /h	STD	40000	44000	60000
		Power input	kW	STD	10,3	10,3	21,1
250 Pa	Airflow rate	m ³ /h	STD	36000	38000	48000	
	Power input	kW	STD	10,4	10,4	21,4	

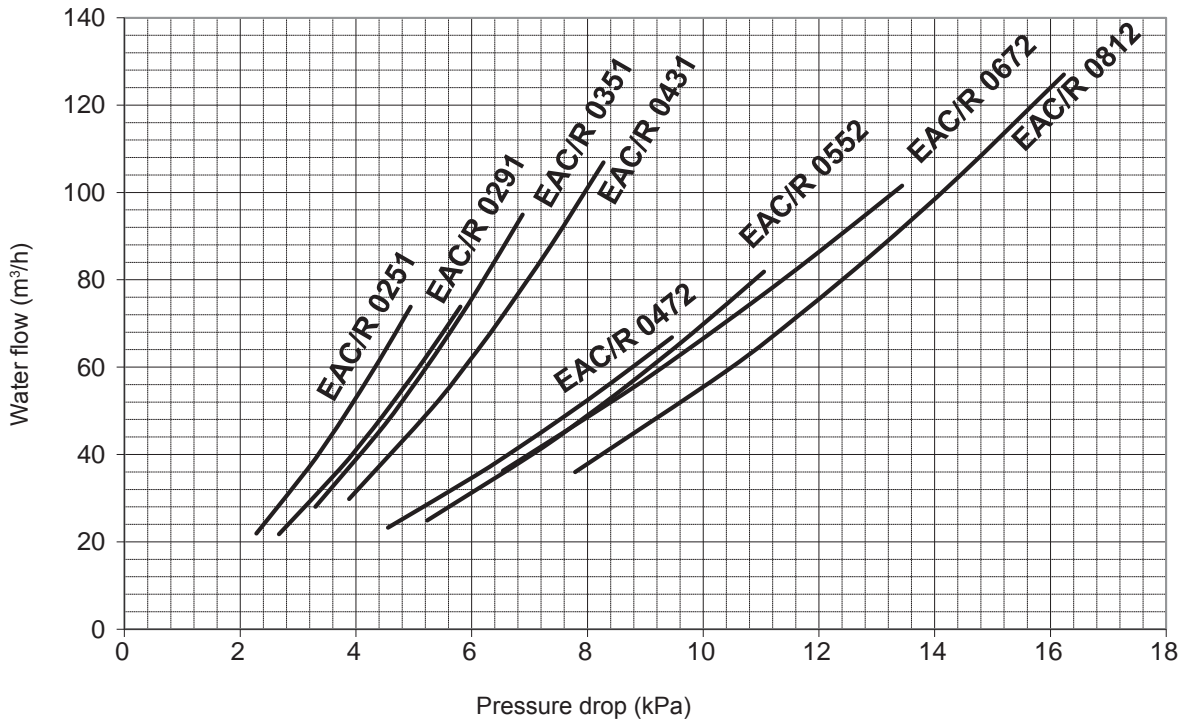


INSTALLATION ADVISE

The units **MUST** be fitted with a water filter at the inlet to the unit (trapping any particles with a diameter greater than 1 mm.)

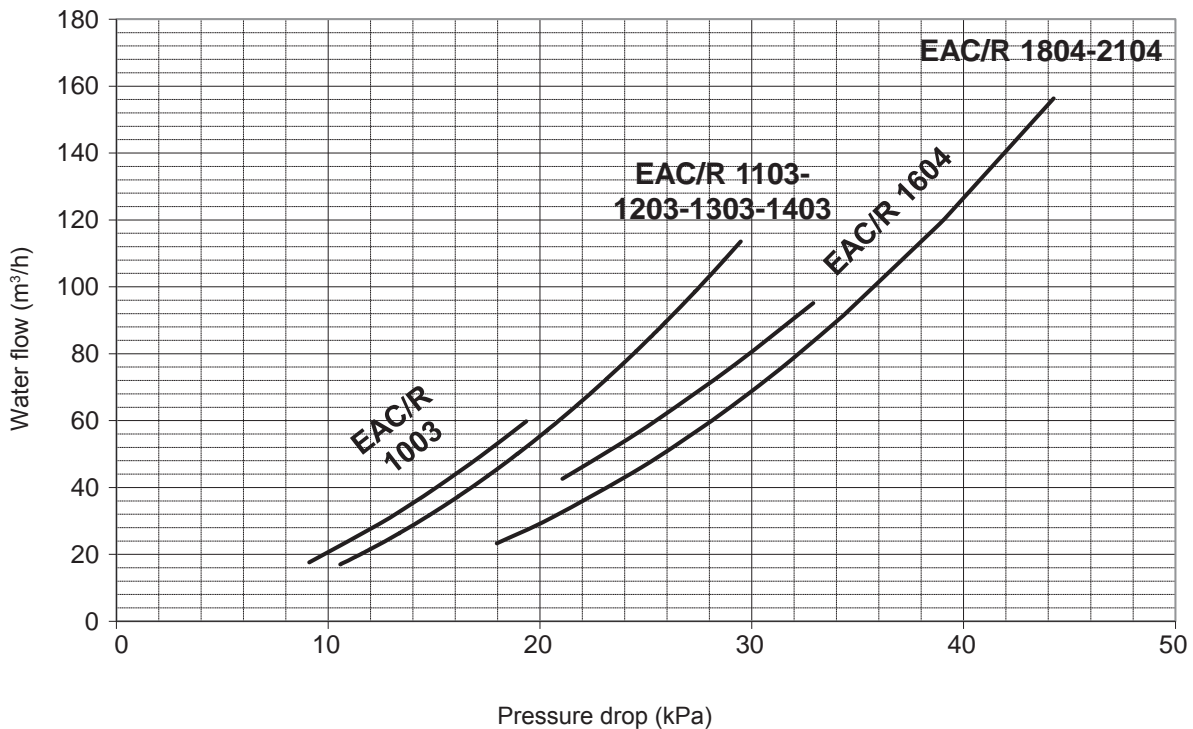
MODELS EAC / EAR 0251SM TO 0812SM

PRESSURE DROP + WATER FILTER ()*



MODELS EAC / EAR 1003SM TO 2104SM

PRESSURE DROP WITH WATER FILTER ()*



(*) Filter included as standard.

DESCRIPTION

All hydraulic accessories are integrated in the standard unit casing.

HYDRONIC AND HYDRAULIC VERSIONS COMPONENTS :

- Water tank (HN version only)
- Water pump
- Expansion vessel
- Water filter
- Safety valve
- Manometer
- Flow switch
- Water pressure transducer (when variable water flow option is selected)



TECHNICAL DATA

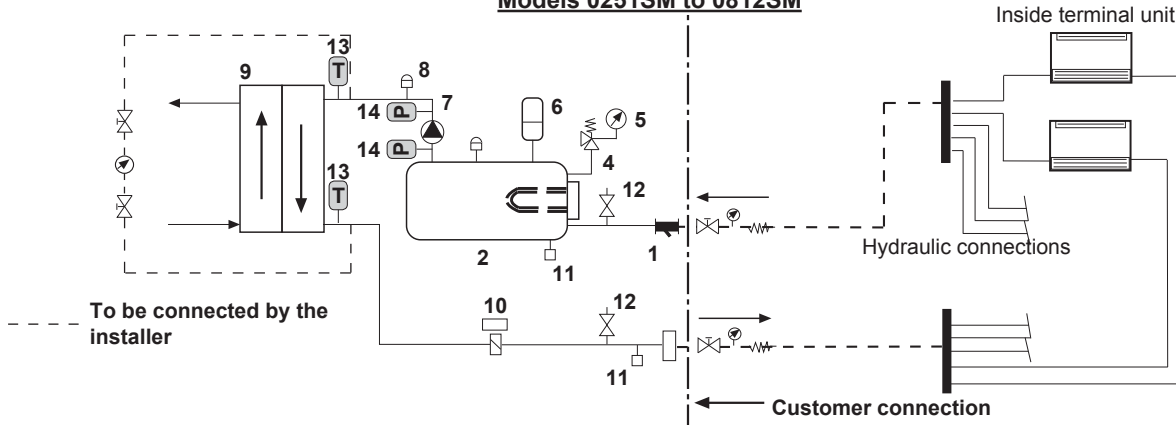
MODELS EAC / EAR HY - HN		0251	0291	0351	0431	0472	0552	0672	0812	
Single pump - Type		Horizontal multistage centrifugal pump								
Voltage	V	400V/3								
Absorbed power	kW	0,65	0,65	1,2	1,2	1,2	1,2	1,2	1,2	
Maximum current	A	1,76	1,76	3,1	3,1	3,1	3,1	3,1	3,1	
Expansion vessel	Capacity	12				18				
	Maximum pressure	4								
Available static pressure (nominal water flow)	kPa	183	170	248	171	234	213	161	110	
Nominal water flow	l/s	1,06	1,24	1,53	1,80	2,11	2,42	3,03	3,60	
Weight (to be added to the unit weight)	Hydraulic version	kg	19	19	22	22	32	32	31	31
	Hydronic version	kg	50	50	53	53	64	64	64	64
Hydraulic connections		1 1/2"G				2"G				
Water tank ⁽¹⁾	l	75	75	75	75	100	100	100	100	

MODELS EAC / EAR HY - HN		1003	1103	1203	1303	1403	1604	1804	2104	
Single pump - Type		Single speed centrifugal pump								
Voltage	Bar	400V/3								
Absorbed power	kPa	2,45	2,45	2,45	2,45	2,93	2,93	3,7	4	
Maximum current	l/s	4,95	4,95	4,95	4,95	4,8	4,8	6,8	9,2	
Expansion vessel	Capacity	35				50				
	Maximum pressure	4								
Available static pressure (nominal water flow)	kPa	186	175	161	137	117	129	153	202	
Nominal water flow rate	l/s	4,21	4,89	5,34	6,01	6,63	7,13	8,31	9,51	
Weight (to be added to the unit weight)	Hydraulic version (HY)	kg	26	26	26	26	29	74	92/97	92/97
	Hydronic version (HN)	kg	81	81	81	81	84	144	162/167	162/167
Hydraulic connections		2 1/2"G				DN 80				
Water tank ⁽¹⁾	l	240	240	240	240	240	350	350	350	

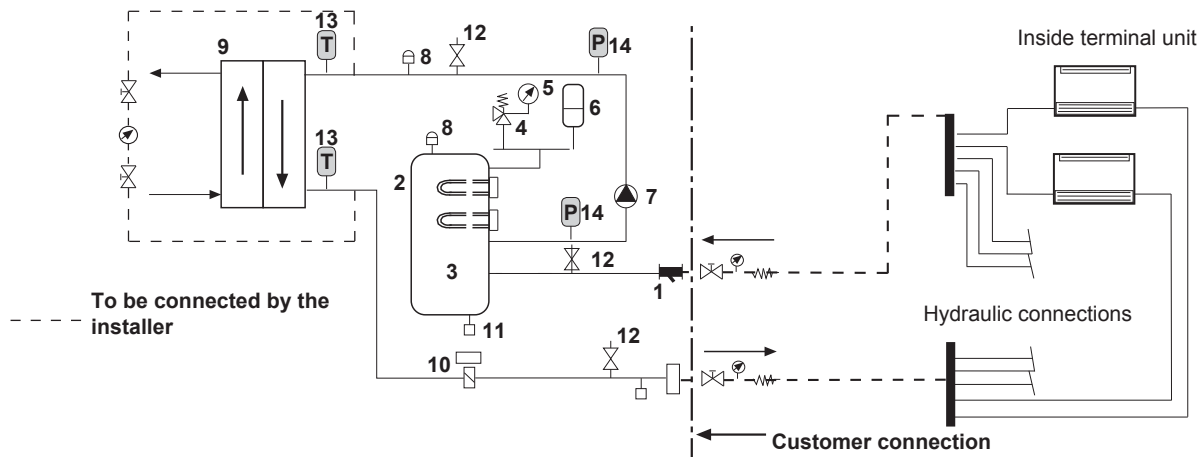
(1) Only for HN version

HYDRONIC VERSION (HN)

Models 0251SM to 0812SM



Models 1003 to 2104



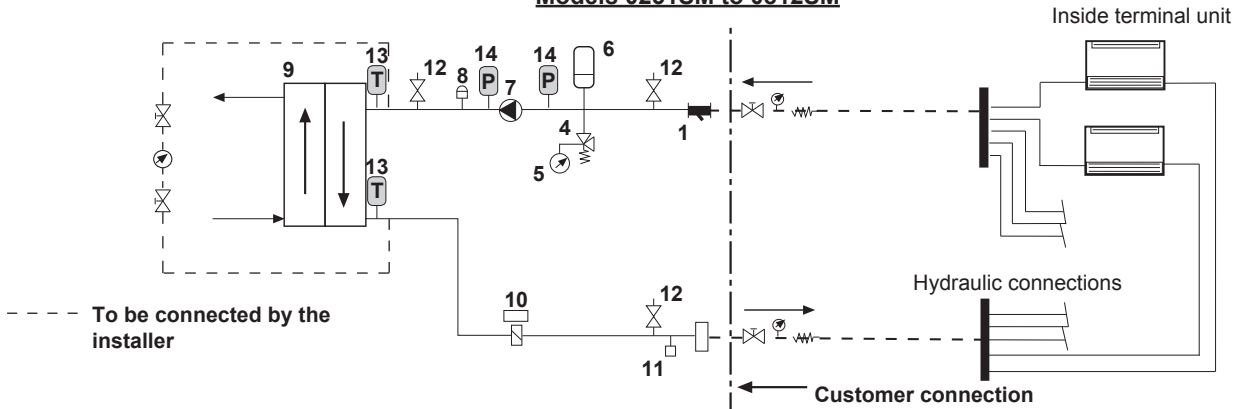
COMPONENTS:

HYDRONIC VERSION (HN)	STANDARD VERSION
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	1,8,9,10,12

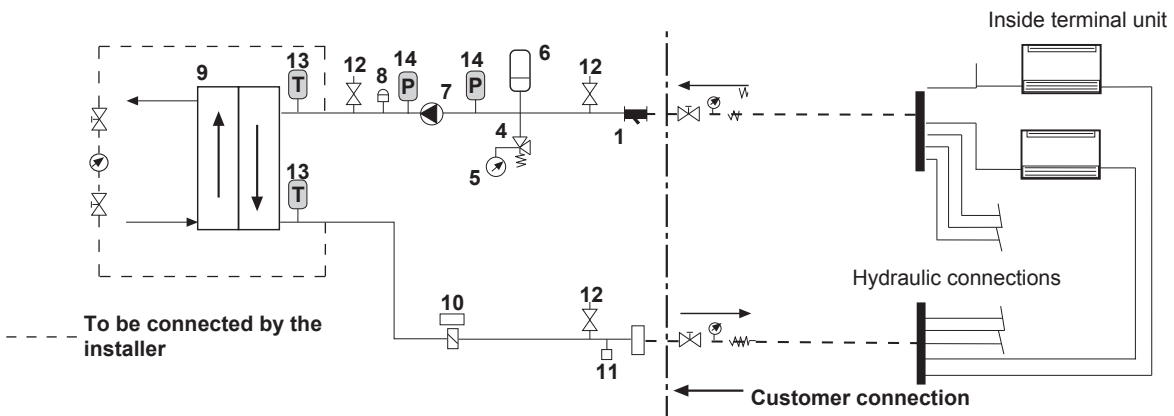
1	Detachable water filter	6	Expansion vessel	11	Drain valve
2	Water tank	7	Water pump	12	Pressure check points
3	Water tank heater (in option)	8	Air purge valve	13	Water temperature sensor
4	Safety valve	9	Plate exchanger	14	Water pressure transducer (when variable water flow option is selected)
5	Manometer	10	Flow switch		

HYDRAULIC VERSION (HY) AND STANDARD

Models 0251SM to 0812SM



Models 1003 to 2104



COMPONENTS

HYDRAULIC VERSION (HY)	STANDARD VERSION
1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	1,8,9,10,12

1 Detachable water filter	6 Expansion vessel	11 Drain valve
2 Water tank	7 Water pump	12 Pressure check points
3 Water tank heater (in option)	8 Air purge valve	13 Water temperature sensor
4 Safety valve	9 Plate exchanger	14 Water pressure transducer (when variable water flow option is selected)
5 Manometer	10 Flow switch	

AVAILABLE STATIC PRESSURE OF THE UNIT

WATER FLOW AND AVAILABLE STATIC PRESSURE

(Factory supplied; standard water pump and filter).

MODELS		EAC / EAR 0251					EAC / EAR 291				
Water flow	l/s	0,88	0,99	1,06	1,22	1,37	1,03	1,16	1,24	1,43	1,61
	m ³ /h	3,16	3,56	3,80	4,40	4,95	3,72	4,18	4,45	5,16	5,81
Available static pressure	kPa	205	192	183	158	131	197	180	170	137	100

MODELS		EAC / EAR 0351					EAC / EAR 0431			
Water flow	l/s	1,22	1,38	1,53	1,70	1,91	1,47	1,66	1,80	2,04
	m ³ /h	4,40	4,95	5,50	6,12	6,88	5,30	5,96	6,47	7,36
Available static pressure	kPa	319	288	248	192	110	275	221	171	72

MODELS		EAC / EAR 0472					EAC / EAR 0552				
Water flow	l/s	1,68	1,89	2,11	2,34	2,63	1,96	2,21	2,42	2,73	3,07
	m ³ /h	6,05	6,81	7,59	8,41	9,46	7,07	7,96	8,72	9,82	11,05
Available static pressure	kPa	262	249	234	217	192	248	230	213	185	152

MODELS		EAC / EAR 0672					EAC / EAR 0812			
Water flow	l/s	2,39	2,69	3,03	3,32	3,73	2,89	3,25	3,60	4,01
	m ³ /h	8,60	9,68	10,90	11,94	13,44	10,39	11,69	12,98	14,43
Available static pressure	kPa	217	192	161	131	86	186	150	110	61

MODELS		EAC / EAR 1003					EAC / EAR 1103				
Water flow	l/s	3,44	3,87	4,21	4,78	5,38	3,86	4,34	4,89	5,36	6,03
	m ³ /h	12,38	13,93	15,17	17,20	19,35	13,90	15,63	17,61	19,30	21,72
Available static pressure	kPa	203	194	186	170	152	201	190	175	160	136

MODELS		EAC / EAR 1203					EAC / EAR 1303				
Water flow	l/s	4,38	4,92	5,34	6,08	6,84	4,85	5,46	6,01	6,74	7,58
	m ³ /h	15,76	17,72	19,23	21,88	24,62	17,48	19,66	21,62	24,27	27,31
Available static pressure	kPa	189	174	161	134	102	176	157	137	106	65

MODELS		EAC / EAR 1403					EAC / EAR 1604				
Water flow	l/s	5,24	5,90	6,63	7,27	8,19	5,85	6,58	7,13	8,12	9,14
	m ³ /h	18,86	21,22	23,87	26,17	29,48	21,06	23,69	25,66	29,22	32,90
Available static pressure	kPa	158	139	117	96	63	160	143	129	101	70

MODELS		EAC / EAR 1804					EAC / EAR 2104				
Water flow	l/s	6,88	7,74	8,31	9,55	10,7	7,86	8,85	9,51	10,9	12,2
	m ³ /h	24,77	27,86	29,93	34,37	38,70	28,3	31,86	34,23	39,3	44,25
Available static pressure	kPa	199	172	153	109	64	260	226	202	147	88

NOTE: Flow data indicated in tables are between a minimum and a maximum water flow.
 With the twin pumps kit, the available static pressure will decrease 5% from the data shown above.

Unit conversion :
 Pressure 1KPa = 1/9,8 m.c.a. = 0,01 bar
 1 bar = 10 m.c.a. = 100 kPa

GLYCOL SOLUTION UNIT



If the outside temperature where the system is to be installed or the water outlet temperature is likely to drop below 5°C, it is very important to use glycol anti-freeze.

The amount of anti-freeze required will vary depending on the minimum ambient temperature or the water outlet temperature. When the percentage of glycol increases the standard pump flow decreases, the pressure drop increases and the cooling and thermal capacities drop. As a result the minimum flow must be multiplied by the coefficient shown in the table:

	Minimum ambient temperature or water outlet temperature			
	+ 5 °C → 0 °C	0 °C → - 5 °C	-5°C → - 5 °C	- 10 °C → - 15 °C
Ethylene glycol %	10%	20%	30%	35%
Pressure drop	1,05	1,10	1,15	1,18
Water flow	1,02	1,05	1,08	1,10
Power input	0,997	0,996	0,995	0,994
Capacities Cooling mode	0,995	0,985	0,975	0,965
Capacities Heating mode	0,994	0,993	0,99	0,987

Example : 10 % glycol in EAC 1003 SM
 Pressure drop : 210 x 1,05
 Minimum flow : 12,38 m³/h x 1,02
 System capacity x 0,99

WATER FLOW VOLUME

MINIMUM WATER VOLUME IN THE INSTALLATION

Thanks to a specific control algorithm and anti-short compressor cycling control, ECOLEAN™ can work with minimum water loop volume as defined here below. This can eliminate the need for a buffer tank in most of air-conditioning applications (e.g. ECOLEAN™ application with fan-coil units):

$$V_{\text{MINI}} = 3 \text{ LITERS / KW}$$

Important note: In case ECOLEAN™ is used in air-conditioning applications with a short water system (e.g. ECOLEAN™ application with air handling units) or in case ECOLEAN™ is used for industrial process cooling, it is mandatory to use a buffer tank (EAC HN version). For heat-pump applications, we do recommended to use a buffer tank (EAR HN version) to keep constant water temperature during defrost cycle. Additionally, ECOLEAN™ can be delivered with additional electric heaters fitted into the buffer tank to meet heating demand in case of very low outdoor air temperature.

MAXIMUM WATER VOLUME IN THE INSTALLATION

The units with Hydronic or Hydraulic module include a expansion vessel. The table below details the maximum water volume in the system.

If the water volume in the system is greater than that detailed in the table. it will be necessary to add additional expansion vessel(s). The system design must allow for water expansion and contraction.

MODELS	0251 ► 0431	0472 ► 0812	1003 ► 1403	1604 - 2104
SOLUTION	Maximum water volume in liters			
WATER	550	850	1600	2250
WATER + 10% glycol	400	650	1225	1725
WATER + 20% glycol	350	475	1075	1500
WATER + 30% glycol	300	450	925	1300
WATER + 35% glycol	225	325	700	1000

MINIMUM WATER FLOW THROUGH THE EVAPORATOR

In case of installation with fixed speed pump, to prevent from freezing risk, the flow rate through the evaporator must be higher than the minimum flow given in the table below.

In case of variable primary flow, the pump speed must be controlled through the CLIMATIC™ control. Additionally, the hydraulic system must be properly designed and balanced to ensure a right water flow distribution through the chiller evaporator and the terminal units. This is especially important when the system is designed with fan coils equipped with two-way valves. When the two-way valves are closing in response to building load change, it is important that the system is designed to ensure a minimum evaporator flow that is always minimum 60% of the chiller's design flow rate. This can be done with a bypass from chilled water supply to chilled water return opened via a signal from a flow meter.

Additionally, some terminals can be fitted with three way control valves in order to ensure the flow will not drop below the minimum value at any load condition as indicated in the table below.

ECOLEAN Models	Capacity (kW)	Water flow rate (m³/h)			
		Minimum (with eDrive™ variable speed pump)	Minimum (with fixed speed pump)	Nominal	Maximum
0251	22,1	2,3	3,16	3,8	4,95
0291	25,9	2,7	3,72	4,5	5,81
0351	32	3,3	4,4	5,5	6,88
0431	37,6	3,9	5,3	6,5	7,36
0472	44,1	4,6	6,05	7,6	9,46
0552	50,7	5,2	7,07	8,7	11,05
0672	63,4	6,5	8,6	10,9	13,44
0812	75,4	7,8	10,39	13,0	14,43
1003	88,2	9,1	12,38	15,17	19,35
1103	102	10,5	13,9	17,61	21,72
1203	112	11,6	15,76	19,23	24,62
1303	126	13	17,48	21,62	27,31
1403	139	14,3	18,86	23,87	29,48
1604	149	15,4	21,06	25,66	32,9
1804	174	18,0	24,7	29,9	38,7
2104	199	20,5	28,3	34,2	44,2

Important note : The water flow must not vary by more than 10% per minute. If the flow rate changes more rapidly, the system should contain a minimum of 6,5 litres of water per kW instead of 3 l/kW.

WATER TANK HEATER (OPTION)

On cooling only units with buffer tank (HN version), water tank anti-freeze protection option includes an immersion heater with safety thermostat.

On heat pump units with buffer tank (HN version), it is possible to have anti-freeze plus supplementary electric water heater. This includes an immersion electric heater with safety thermostat and adjustable heater thermostat.

Tank anti-freeze heater:

It starts when water temperature in the buffer tank is lower than + 5 °C (Not for units with low water temperature kit).

Water tank electrical heater:

Heat pump units only.

The heater works as anti-freeze heater as explained before and as supplementary heater, when inlet warm water reaches a temperature below a value selected (example: 30 °C) through an independent thermostat included.

Power consumption is:

MODELS		0251SM ▶ 0431SM	0472SM ▶ 0812SM	1003SM ▶ 1403SM	1604SM - 2104SM
Voltage	V	400V/3			
Tank anti-freeze heater	kW	2,25	2,25	6,0	9,0
Water tank electrical heater*	kW	9	12	24	36

(*) Heat pump units only

eDrive™ TECHNOLOGY, THE RIGHT CHOICE TO SAVE 75% OF PUMP ENERGY COSTS.

In a water system, one major contributor to annual energy consumption is the pump motor. Pumping energy cost can represent 20% of the total cost of owning a chiller. This ratio can be even bigger for a heat-pump.

eDrive™ variable speed driven pump is contributing to continuous Lennox efforts to save energy while exploring possibilities to reduce installation cost.

eDrive™ variable speed driven pump benefits:

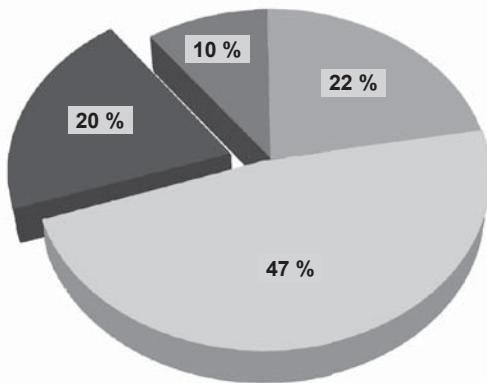
- Cost savings on the energy consumption especially at part-load conditions and during off period. 75% of this energy could be saved !
- Cost savings on the initial system cost. Fewer pumps and piping connections than primary–secondary systems, terminal units equipped with two-way control valves instead of three-way valves, elimination of water flow set valve.
- Flexibility and accuracy in the pump operation control (smooth start and stop, gradual change of speed, accuracy and stability of control)
- Reduction of the repeated stress on the pump and piping resulting in longer equipment life time (elimination of the «hammer blow» in pipes).
- Elimination of the start-up current thanks to variable frequency drive that controls a gradual pump motor supply.

Designing a VWF chilled water plant that performs reliably at all load conditions requires careful attention to chiller design. Thanks to the newest generation of chiller controllers and intensive testing, ECOLEAN can now reliably maintain the desired chilled water temperature with a flow range from 60% to 100% that gives up to 75% annual energy savings.

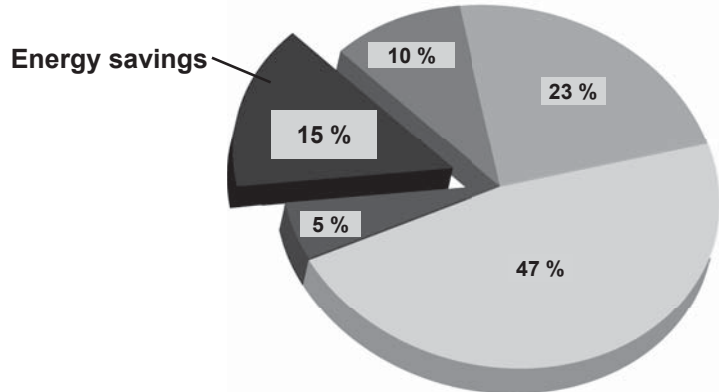
LENNOX eDrive™ Technology modulates the Water Flow especially in Part-Load Conditions through a Specific Algorithm and a Variable Frequency Driver.

Typical cost split in a chiller through 15-year lifespan

Chiller with fixed speed pump



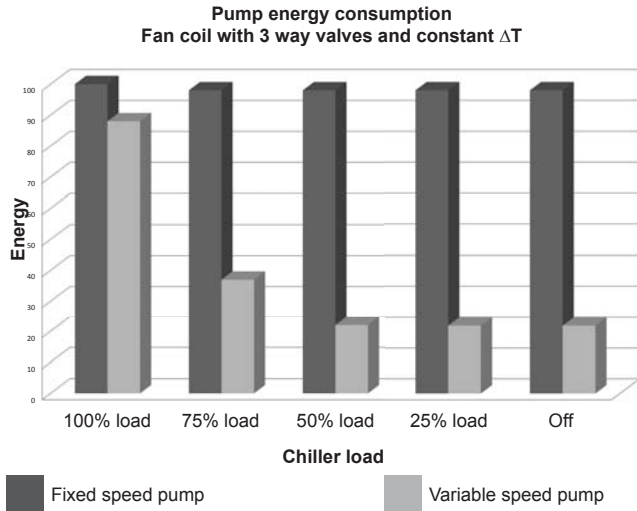
Chiller with variable speed pump



Cooling energy cost	Maintenance cost
Equipment cost	Pump energy cost

eDrive™ VARIABLE WATER FLOW SAVES YOUR MONEY IN THE ENERGY COST

- Through the elimination of the energy normally lost in the water flow control valve during unit full-load operation (Variable water flow = perfect pump curve adjustment to the required nominal water flow and delta P)
- Through pump rotation speed reduction during unit part-load operation.
- Thanks to pump running at minimum speed during Chiller “off” period (night, unoccupied)

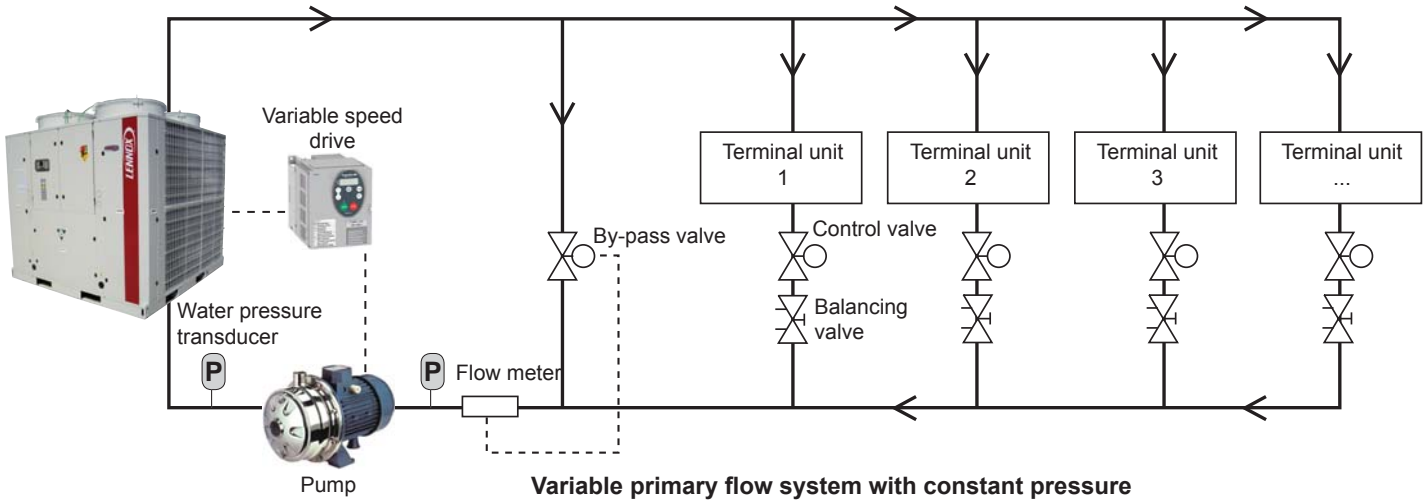


PUMP AFFINITY LAWS

“The power required for pumps varies as the cube of the flow rate.”

20% water flow reduction = 50% energy reduction.
40% water flow reduction = 80% energy reduction.

eDrive™ VARIABLE WATER FLOW MAY SAVE MONEY IN THE SYSTEM DESIGN COST



A variable primary flow design uses fewer components than primary–secondary systems as the pumps of the secondary distribution loop and the mixing tank are eliminated.

When compared with constant primary flow systems, terminal units can be equipped with two-way control valves instead of three-way valves often used in constant volume systems. Using two-way valves instead of three-way valves on fan coils represent a budget reduction that pays for the variable frequency driver cost. On top of that, the water flow set valve is eliminated as the pump adjustment to real installation needs can be done electronically. These factors may reduce the initial cost of the chilled water system

eDrive™ VARIABLE WATER FLOW BY LENNOX

3 control modes available :

Constant speed

- Interest to set the right installation design flow (avoid setting valve).

Constant Delta P (setting to declare the required working pressure)

- Easy to install and operate with 2 way valves installation.

Constant Delta T (Setting to declare the required delta T)

- Need a good installation with well balanced circuits to ensure good flow distribution when the flow is reduced.
- Installation with terminal units fitted with 3-way valves.

Operation for each mode:

- Constant delta P : the eDrive™ regulation is managing the pump to maintain the required delta P in order to keep constant the customer available static pressure. When the terminals control valves close in response to decreased building loads, the pump controller slows the pump speed to maintain the target delta P. In this mode the pump does not detect terminal capacity reduction (fan speed staging)
- Constant Delta T : the eDrive™ regulation is managing the pump to maintain the required Delta T. When the Delta T is increasing in response to the number of compressors running, the pump controller increases the speed of the pump. Conversely, when the compressors are stopping in response to decreased building loads, the pump controller slows the pump speed to maintain the target Delta T.

Safety parameters:

- If the evaporating pressure reaches the low limit (risk of evaporator frosting), the flow is increased.
- If the outlet evaporator temperature reaches the low limit, the flow is set to the maximum.
- When the pump speed varies and the flow switch trips, the flow is automatically increased.
- During defrost procedure (HP), the flow is set to the maximum.
- Pump motor supply range from 30 Hz minimum to 50Hz maximum. Minimum pump motor frequency set at 30 Hz. Below this value, risk of pump motor failure due to overheat.
- For safe operation of the chiller, the unit is protected by the flow switch.
- Minimum and maximum admissible water flow per unit size: with constant delta T, the flow may vary from 60% to 100% of the selected pump nominal flow.
- Maximum change in flow rate through the evaporator: a 10% per minute change in flow rate is admissible in most of air conditioning applications.

Installation instructions to respect in case of variable primary flow:

- The hydraulic system will have to be properly designed and balanced to ensure a right water flow distribution through the chiller evaporator and the terminal units.
- The hydraulic system will have to be properly designed to respect minimum and maximum water flow through each chiller following the values given by the manufacturer.
- In case of system designed with terminals equipped with 2 way valves, the hydraulic system will need to have a bypass flow to ensure a minimum water flow through the chiller evaporator.
- The minimum water flow through the chiller evaporator will need to respect a minimum value that is 60% of the nominal chiller water flow.
- The flow bypass from chilled water supply to chilled water return can be done with a motorized bypass valve opened via a signal from a flow meter.
- For safe operation some terminals can be equipped with three way control valves in order to ensure the flow will not drop below the minimum value at any load condition.
- The water flow must not vary by more than 10% per minute. If the flow rate changes more rapidly, the system should contain a minimum of 6,5 liters of water per kW instead of 3 liters/kW.
- Check the control valve authority in low load periods, especially in case of long pipe hydraulic systems.

STANDARD FAN UNITS

EAC EAR	Spectrum per octave band dB(A)								Global sound power Lw dB(A)
	Hz	125	250	500	1000	200	400	800	
0251 S	LN	66,8	68,6	70,7	64,7	63,4	58,6	54,5	71
	STD	69,5	65,0	69,5	69,9	70,3	67,6	61,7	76
0291 S	LN	63,8	66,4	68,8	65,4	62,1	57,3	53,5	70
	STD	70,4	67,2	70,2	70,8	69,6	66,4	60,9	76
0351 S	LN	68,5	66,3	69,8	65,2	63,7	60,7	57,3	71
	STD	70,6	67,2	70,8	72,1	71,4	67,6	63,4	77
0431 S	LN	72,7	71,3	70,4	68,2	68,3	64,8	60,5	74
	STD	70,5	67,1	69,9	72,6	73,7	68,6	64,3	78
0472 S	LN	69,9	71,7	73,7	67,7	66,4	61,6	57,5	74
	STD	72,5	68,0	72,5	72,9	73,3	70,6	64,7	79
0552 S	LN	66,9	69,4	71,8	68,4	65,1	60,3	56,5	73
	STD	73,4	70,2	73,2	73,8	72,6	69,4	64,0	79
0672 S	LN	71,5	69,3	72,8	68,2	66,7	63,7	60,3	74
	STD	73,6	70,2	73,9	75,1	74,4	70,7	66,5	80
0812 S	LN	71,2	71,8	72,4	69,0	69,0	65,5	61,9	75
	STD	73,5	70,1	72,9	75,6	76,7	71,6	67,4	81
1003 S	SLN	66,9	68,3	69,4	66,0	65,3	61,3	57,7	72
	LN	68,7	71,3	72,5	68,6	67,5	64,0	60,6	75
	STD	69,6	69,2	73,9	75,3	75,4	71,0	66,5	80
1103 S	SLN	70,6	69,2	71,5	68,0	68,6	64,3	60,7	75
	LN	72,2	71,4	73,5	69,4	69,8	66,2	62,7	76
	STD	75,6	76,2	77,2	76,8	77,1	72,8	68,5	82
1203 S	SLN	69,2	74,4	73,9	68,2	69,7	63,8	59,2	76
	LN	71,3	78,7	77,5	70,5	72,4	66,1	60,9	79
	STD	75,7	78,1	78,6	78,4	80,7	73,7	67,7	85
1303 S	SLN	69,0	76,3	75,2	71,0	72,1	66,2	60,6	78
	LN	70,9	79,7	78,3	73,3	74,5	68,7	62,7	81
	STD	77,9	80,1	80,1	81,0	82,3	76,2	70,9	87
1403 S	SLN	69,2	76,5	74,8	71,0	72,4	66,5	60,9	78
	LN	70,6	80,0	78,2	73,6	74,9	69,3	63,7	81
	STD	77,9	80,1	79,9	81,2	82,7	76,5	71,2	87
1604 S	SLN	71,9	71,5	71,7	69,7	70,9	66,2	62,3	76
	LN	73,2	74,4	74,5	71,6	72,6	68,7	65,0	78
	STD	77,9	78,8	79,0	78,5	79,8	74,9	70,5	85
1804 S	SLN	69,7	77,2	75,4	68,8	71,1	64,8	59,5	77
	LN	71,7	81,7	79,7	72,2	74,8	68,1	62,4	81
	STD	73,2	77,8	78,7	80,2	83,4	75,2	68,6	87
2104 S	SLN	69,4	79,2	77,3	73,6	75,0	68,7	62,4	81
	LN	70,9	82,7	80,8	76,1	77,5	71,4	65,0	83
	STD	80,9	83,1	82,6	83,7	85,2	78,9	73,4	90

SLN Super low noise version **LN** Low noise version **STD** Standard version

Global sound power level measured in compliance with ISO standard 3744 and according Eurovent standards.

UNITS WITH HIGH PRESSURE FANS

EAC EAR	Spectrum per octave band dB(A)								Global sound power Lw dB(A)
	Hz	125	250	500	1000	200	400	800	
0251 F	LN	80,3	76,4	76,6	77,6	75,1	70,1	62,1	82
	STD	88,1	82,2	81,5	83,6	81,3	78,0	69,9	88
0291 F	LN	80,2	76,1	76,4	77,6	75,1	70,1	61,9	82
	STD	88,1	82,2	81,5	83,6	81,3	77,9	69,8	88
0351 F	LN	80,4	76,1	76,6	77,6	75,2	70,3	62,7	82
	STD	88,1	82,2	81,6	83,7	81,4	78,0	70,1	88
0431 F	LN	80,4	76,4	76,5	77,7	75,4	70,6	63,3	82
	STD	88,1	82,2	81,5	83,8	81,7	78,1	70,3	88
0472 F	LN	83,3	79,4	79,6	80,6	78,1	73,1	65,1	85
	STD	91,1	85,2	84,5	86,6	84,3	81,0	72,9	91
0552 F	LN	83,3	79,1	79,4	80,7	78,1	73,1	65,0	85
	STD	91,1	85,2	84,5	86,7	84,3	80,9	72,8	91
0672 F	LN	83,4	79,1	79,6	80,6	78,2	73,3	65,8	85
	STD	91,1	85,2	84,6	86,7	84,4	81,0	73,2	91
0812 F	LN	83,4	79,4	79,5	80,7	78,4	73,6	66,3	85
	STD	91,1	85,2	84,5	86,8	84,7	81,1	73,3	91
1003 F	SLN	84,3	80,8	80,3	83,9	79,5	72,1	66,8	87
	LN	84,3	81,1	80,6	83,9	79,6	72,4	67,3	87
	STD	96,4	93,6	91,6	93,0	89,3	86,3	81,9	97
1103 F	SLN	84,4	80,9	80,4	83,9	79,6	72,4	67,2	87
	LN	84,5	81,1	80,8	83,9	79,7	72,7	67,8	87
	STD	96,4	93,6	91,6	93,1	89,4	86,3	81,9	97
1203 F	SLN	84,3	81,5	80,8	83,9	79,7	72,3	67,0	87
	LN	84,4	82,8	81,8	84,0	80,0	72,7	67,3	87
	STD	96,4	93,6	91,7	93,1	89,7	86,4	81,9	97
1303 F	SLN	84,3	81,9	81,1	84,0	79,9	72,6	67,2	87
	LN	84,4	83,2	82,1	84,1	80,4	73,3	67,7	87
	STD	96,4	93,6	91,7	93,2	89,9	86,5	82,1	97
1403 F	SLN	84,3	82,0	81,0	84,0	79,9	72,7	67,2	87
	LN	84,4	83,3	82,1	84,1	80,5	73,6	68,0	87
	STD	96,4	93,6	91,7	93,2	89,9	86,5	82,1	97
1604 F	SLN	84,5	81,1	80,5	83,9	79,7	72,6	67,6	87
	LN	84,5	81,5	80,9	84,0	80,0	73,3	68,6	87
	STD	96,4	93,6	91,6	93,1	89,5	86,4	82,0	97
1804 F	SLN	87,3	84,5	93,6	86,9	82,7	75,2	69,7	90
	LN	87,3	85,8	84,6	87,0	83,1	75,6	70,1	90
	STD	99,4	96,6	94,6	96,1	92,7	89,3	84,9	100
2104 F	SLN	87,3	84,9	83,9	86,9	82,9	75,5	69,9	90
	LN	87,3	86,2	84,9	87,1	83,4	76,3	70,5	90
	STD	99,4	96,6	94,6	96,2	92,9	89,5	85,0	100

F SLN	Fan pressure and super low noise version	F LN	Fan pressure and low noise version	F STD	Fan pressure version with high fan speed
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Global sound power level measured in compliance with ISO standard 3744 and according Eurovent standards.

STANDARD FAN UNITS WITHOUT AIR DUCTS

COOLING MODE

MODELS EAC / EAR	0251SM ▶ 0431 SM		0472 SM ▶ 0812 SM		1003 SM ▶ 2104 SM	
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
Outlet chilled water temperature	+5 °C	+14 °C	+5 °C	+14 °C	+5 °C	+14 °C
Inlet chilled water temperature	+10 °C	+22 °C	+9 °C	+22 °C	+8 °C	+22 °C
Air inlet temperature ⁽¹⁾	+6 °C	+ 48 °C	+6 °C	+ 48 °C	+6 °C	+ 48 °C

NOTE: With outdoor temperatures below +5°C, add glycol
 (1) : Minimum air inlet temperature is -15°C with "winter operation" option (EAC).

HEATING MODE

MODELS EAR	0251SM ▶ 2104SM	
	MINIMUM	MAXIMUM
Hot water outlet temperature (operation)	+25 °C	+50 °C
Hot water inlet temperature (start)	+10 °C	+43 °C
Difference hot water inlet / outlet	+3 °C	+8 °C
Air inlet temperature	-12 °C	+23 °C

OUTSIDE THESE VALUES, PLEASE CONSULT US

COOLING ONLY UNITS (EAC)

	0251 -> 0351 0472 -> 0812 1103-1303-1403-1804-2104	0431-812- 1003-1604	1203
A	+ 14°C	+ 11°C	+ 7°C

(1) : With -15°C winter operation option

HEAT PUMP UNITS (EAR)

COOLING MODE

HEATING MODE

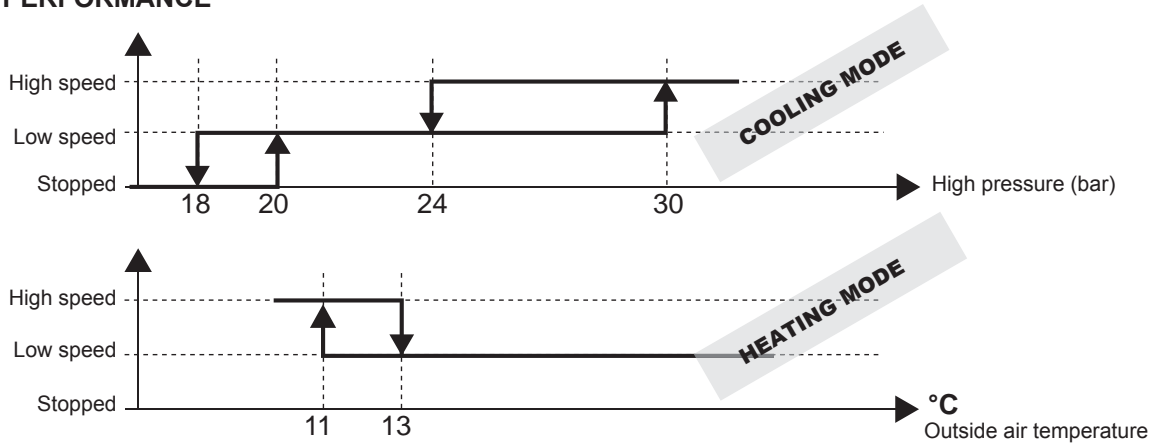
	0251 -> 0351 0472 -> 0812 1103-1303-1403-1804-2104	0431-812- 1003-1604	1203
A	+ 14°C	+ 11°C	+ 7°C

NOTE: With outdoor temperatures below +5°C, add glycol.
 * : Operating limits with "PERFORMANCE" or "QUIET" control configuration (Possible with STD & LN versions)
 With "QUIET ++" see capacity tables of LN & SLN versions.
 SLN version non available for B & C boxes
 (2) : See drawings on next pages.

CONDENSER FAN MANAGEMENT

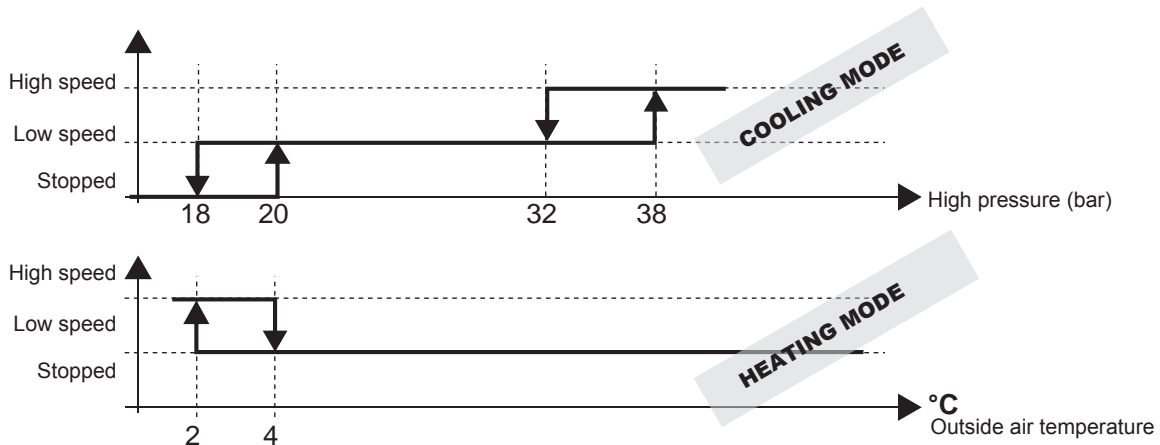
The maximum sound level and fan strategies can be adjusted with CLIMATIC™ 60 control according to the schedule mode. Three different modes can be selected. See below operation mode for all of them.

HIGH PERFORMANCE



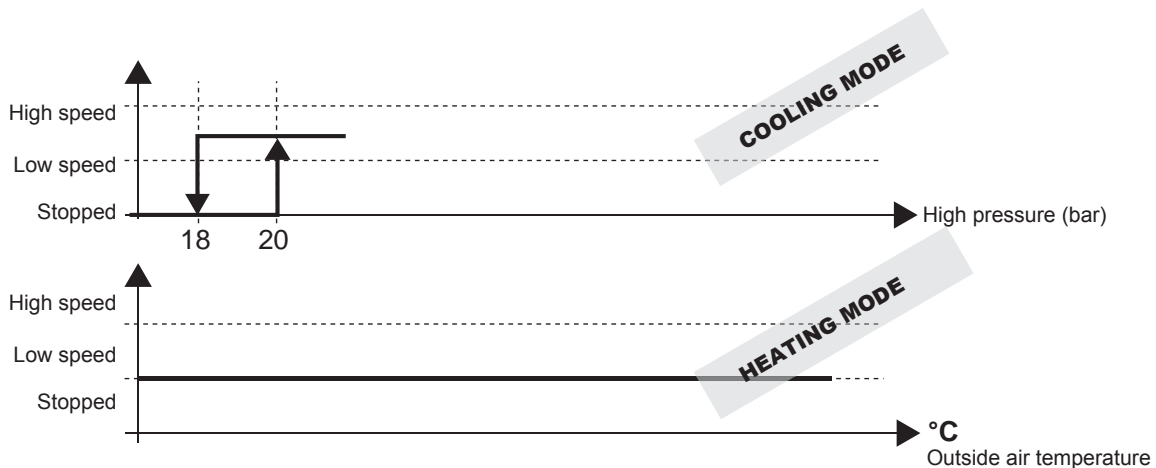
QUIET

In this mode, the fan capacity is limit, according to the desired sound level. For fan using low/high speed, the high speed is locked. In case of too high condensing temperature, the CLIMATIC™ 60 unlocks the limit or the high speed to prevent from compressor unloading.

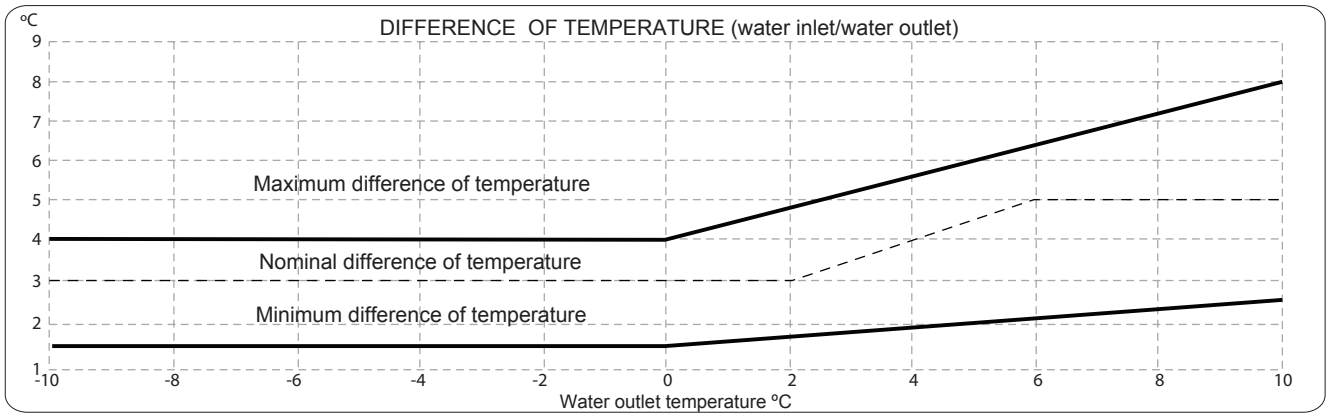


QUIET ++

This mode is similar to the “QUIET” mode, except that the fan speed limit or the high speed is never unlocked. In case of too high condensing temperature, the CLIMATIC™ 60 will unload compressor to prevent from HP safety.

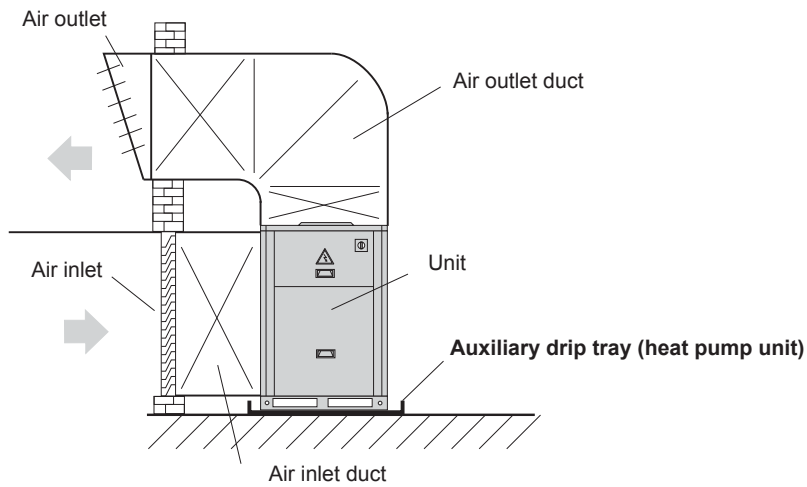


UNITS WITH LOW WATER TEMPERATURE KIT (OPTION)



UNIT INSTALLATION INSIDE

LOCATION INSIDE



For location inside, keep in mind following advice:

-In heat pump units during defrost cycle, the units produce a great amount of water melting the ice off coils. If you wish to drain the water, an auxiliary drip tray, should to be installed below the unit to collect and carry out water where desired.

-Air duct installation:

If air duct has been installed, the operating limits get reduced (see operation limits section in this manual).

STANDARD VERSION (SM)

MODELS		0251SM	0291SM	0351SM	0431SM	0472SM	0552SM	0672SM	0812SM
Maximum power (kW)	STD	10,6	12,5	16,3	17,6	21,2	25,0	32,5	35,2
	LN	10.5	12.3	16.1	17.4	21.0	24.6	32.1	34.9
Maximum Current (A)	STD	22.3	23.8	27.4	32.8	44.5	47.5	54.7	65.5
	LN	21.7	23.1	26.7	32.1	43.5	46.2	53.4	64.2
Locked rotor amps (A)	STD	112.3	119.8	159.8	175.8	134.5	143.5	187.1	208.5
	LN	111.7	119.1	159.1	175.1	133.5	142.2	185.8	207.2
Starting current (A) (*)	STD	95,6	102,1	136,1	149,7	117,9	125,8	163,4	182,4
	LN	95.1	101.4	135.4	149.0	116.8	124.5	162.1	181.1

MODELS		1003SM	1103SM	1203SM	1303SM	1403SM	1604SM	1804SM	2104SM
Maximum power (kW)	STD	42,6	51,1	56,7	62,3	65	71,6	83,0	96,2
	LN & SLN	42,0	50,0	55,6	60,8	63,5	70,1	81,9	93,6
Maximum Current (A)	STD	79,8	88,6	97,6	107,7	118,5	132,0	151,6	175
	LN & SLN	78,0	86,0	95,0	104,3	115,1	128,6	148,0	168,2
Locked rotor amps (A)	STD	222,8	231,6	282,6	331,2	342,0	275	336,6	398,5
	LN & SLN	221	229	280,0	327,8	338,6	271,6	333,0	391,7
Starting current (A) (*)	STD	196,7	205,5	248,8	290,4	301,2	248,9	302,9	357,7
	LN & SLN	194,9	202,9	246,3	287,0	297,8	245,5	299,3	350,9

Not included water pump consumptions of the Hydronic or Hydraulic version (see page 15).
 Maximum power calculated for compressor operation at +12,5/65°C.
 (*) Starting current 2 cycles later from compressor starts (4 mseg).

FAN PRESSURE VERSION (FM)

MODELS		0251FM	0291FM	0351FM	0431FM	0472FM	0552FM	0672FM	0812FM
Maximum power (kW)	STD	12,7	14,4	18,2	19,5	24,8	28,2	35,7	38,3
	LN	11.6	13.3	17.2	18.5	23.3	26.7	34.3	37.0
Maximum Current (A)	STD	23,7	24,7	28,3	33,7	47,4	49,4	56,6	67,4
	LN	25.8	26.8	30.4	35.8	51.6	53.6	60.8	71.6
Locked rotor amps (A)	STD	113.7	120.7	160.7	176.7	137.4	145.4	189.0	210.4
	LN	115.8	122.8	162.8	178.8	141.6	149.6	193.2	214.6
Starting current (A) (*)	STD	97,1	103	137	150,6	120,8	127,7	165,3	184,3
	LN	99.2	105.1	139.1	152.7	125.0	131.9	169.5	188.5

MODELS		1003FM	1103FM	1203FM	1303FM	1403FM	1604FM	1804FM	2104FM
Maximum power (kW)	STD	50,9	58,4	64	68,7	71,4	78	100,2	109,6
	LN & SLN	46,8	54,3	59,9	64,6	67,3	73,9	91,5	100,9
Maximum Current (A)	STD	92,2	99,4	108,4	116,9	127,7	141,2	177	194
	LN & SLN	85	92,2	101,2	109,7	120,5	134	162	179
Locked rotor amps (A)	STD	235,2	242,4	293,4	340,4	351,2	284,2	362	417,5
	LN & SLN	228	235,2	286,2	333,2	344	277	347	402,5
Starting current (A) (*)	STD	209,1	216,3	259,7	299,6	310,4	258,1	328,3	376,7
	LN & SLN	201,9	209,1	252,5	292,4	303,2	250,9	313,3	361,7

(1) : Quiet ++
 Not included water pump consumptions of the Hydronic or Hydraulic version (see page 15).
 Maximum power calculated for compressor operation at +12,5/65°C.
 (*) Starting current 2 cycles later from compressor starts (4 mseg).

**COOLING MODE
STANDARD VERSION**

**EAC / EAR
0251 ► 0812**

Water outlet temperature	MODELS	Air inlet temperature															
		28 °C				30 °C				32 °C				35 °C			
		Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa
6 °C	0251 SM	23,0	6,7	4,0	52,1	22,6	6,9	3,9	50,6	22,2	7,2	3,8	49,1	21,4	7,6	3,7	46,6
	0291 SM	27,2	8,0	4,7	52,6	26,7	8,3	4,6	50,9	26,1	8,6	4,5	49,2	25,1	9,0	4,3	46,5
	0351 SM	33,3	9,9	5,7	70,0	32,7	10,2	5,6	68,0	32,1	10,6	5,5	65,9	31,1	11,1	5,3	62,5
	0431 SM	39,2	11,8	6,8	75,8	38,5	12,2	6,6	73,5	37,8	12,6	6,5	71,1	36,5	13,3	6,3	67,2
	0472 SM	45,9	13,4	7,9	51,5	45,1	13,8	7,8	50,2	44,2	14,3	7,6	48,8	42,8	15,1	7,4	46,5
	0552 SM	53,1	15,9	9,1	60,5	52,1	16,5	9,0	58,6	51,0	17,1	8,8	56,7	49,2	18,0	8,5	53,5
	0672 SM	65,9	19,8	11,3	79,7	64,8	20,5	11,1	77,8	63,6	21,1	10,9	75,6	61,6	22,2	10,6	72,3
	0812 SM	78,8	23,6	13,6	93,1	77,3	24,4	13,3	90,3	75,8	25,2	13,0	87,2	73,3	26,6	12,6	82,4
7 °C	0251 SM	23,7	6,8	4,1	54,6	23,3	7,0	4,0	53,1	22,8	7,2	3,9	51,5	22,1	7,6	3,8	49
	0291 SM	28,0	8,0	4,8	55,0	27,4	8,3	4,7	53,3	26,9	8,6	4,6	51,5	25,9	9,1	4,5	49
	0351 SM	34,3	10,0	5,9	73,5	33,7	10,3	5,8	71,4	33,0	10,6	5,7	69,1	32,0	11,2	5,5	66
	0431 SM	40,4	11,9	6,9	79,5	39,6	12,3	6,8	77,1	38,9	12,7	6,7	74,6	37,6	13,4	6,5	71
	0472 SM	47,3	13,5	8,1	53,8	46,5	13,9	8,0	52,4	45,6	14,4	7,8	50,9	44,1	15,2	7,6	49
	0552 SM	54,7	16,0	9,4	63,4	53,6	16,6	9,2	61,5	52,5	17,2	9,0	59,4	50,7	18,1	8,7	56
	0672 SM	67,9	20,0	11,7	83,1	66,7	20,6	11,5	81,1	65,5	21,3	11,3	78,9	63,4	22,4	10,9	75
	0812 SM	81,0	23,8	13,9	97,7	79,5	24,6	13,7	94,7	78,0	25,4	13,4	91,6	75,4	26,8	13,0	86
9 °C	0251 SM	25,2	6,9	4,3	59,9	24,7	7,1	4,2	58,2	24,2	7,3	4,2	56,4	23,4	7,7	4,0	53,6
	0291 SM	29,6	8,1	5,1	60,2	29,0	8,4	5,0	58,3	28,4	8,7	4,9	56,4	27,4	9,2	4,7	53,3
	0351 SM	36,3	10,1	6,2	80,7	35,6	10,5	6,1	78,3	35,0	10,8	6,0	75,9	33,9	11,4	5,8	72,0
	0431 SM	42,7	12,1	7,3	87,2	41,9	12,5	7,2	84,6	41,1	12,9	7,1	81,8	39,7	13,6	6,8	77,4
	0472 SM	50,1	13,6	8,6	58,4	49,2	14,1	8,5	56,9	48,3	14,6	8,3	55,4	46,8	15,4	8,0	52,9
	0552 SM	57,9	16,2	10,0	69,4	56,8	16,8	9,8	67,3	55,6	17,4	9,6	65,1	53,7	18,4	9,2	61,6
	0672 SM	71,9	20,3	12,4	90,2	70,6	20,9	12,1	87,9	69,3	21,6	11,9	85,6	67,1	22,7	11,5	81,8
	0812 SM	85,6	24,2	14,7	107,4	84,0	25,0	14,5	104,1	82,4	25,8	14,2	100,6	79,7	27,2	13,7	95,1
11 °C	0251 SM	26,6	7,0	4,6	65,4	26,1	7,2	4,5	63,6	25,6	7,4	4,4	61,6	24,8	7,8	4,3	58,6
	0291 SM	31,3	8,3	5,4	65,6	30,7	8,5	5,3	63,6	30,0	8,9	5,2	61,5	29,0	9,3	5,0	58,2
	0351 SM	38,3	10,3	6,6	88,3	37,6	10,6	6,5	85,7	36,9	11,0	6,3	83,1	35,8	11,5	6,2	78,9
	0431 SM	45,0	12,3	7,7	95,5	44,2	12,7	7,6	92,6	43,3	13,2	7,5	89,6	41,9	13,9	7,2	84,8
	0472 SM	53,0	13,8	9,1	63,3	52,0	14,3	9,0	61,7	51,0	14,8	8,8	60,0	49,5	15,6	8,5	57,3
	0552 SM	61,2	16,5	10,5	75,8	60,0	17,0	10,3	73,5	58,8	17,6	10,1	71,1	56,8	18,6	9,8	67,3
	0672 SM	75,9	20,6	13,1	97,5	74,6	21,2	12,8	95,1	73,2	21,9	12,6	92,5	70,9	23,1	12,2	88,5
	0812 SM	90,2	24,7	15,5	117,7	88,6	25,5	15,2	114,0	86,9	26,3	14,9	110,2	84,1	27,7	14,5	104,2

Nominal conditions	Wf Water flow in m³ per hour
Pc Cooling capacity in kW	Dp Water pressure drop in kPa
Pe(c) Total power input in kW (compressor and fan motor)	
Available static pressure 0 Pa	Water ΔT 5 °C
Fouling factor 0,44 m²C/kW	

**COOLING MODE
STANDARD VERSION**

**EAC / EAR
1003 ▶ 2104**

Water outlet temperature	MODELS	Air inlet temperature															
		28 °C				30 °C				32 °C				35 °C			
		Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa
6 °C	1003 SM	92	27,3	15,9	45,2	91	28,3	15,6	43,8	88,7	29,3	15,3	42,3	85,7	31,0	14,7	39,9
	1103 SM	106	31,3	18,3	50,7	105	32,3	18,0	49,1	103	33,3	17,7	47,4	99,4	35,1	17,1	44,8
	1203 SM	117	35,4	20,1	60,3	114	36,5	19,7	58,4	112	37,8	19,3	56,4	109	39,8	18,7	53,2
	1303 SM	131	39,0	22,5	73,1	129	40,2	22,1	70,9	126	41,5	21,7	68,6	122	43,6	21,0	64,9
	1403 SM	145	42,9	24,9	79,6	142	44,2	24,5	77,3	139	45,7	24,0	74,9	135	47,9	23,2	71,0
	1604 SM	156	47,7	26,8	64,7	153	49,2	26,3	62,7	150	50,9	25,8	60,5	145	53,6	25,0	57,2
	1804 SM	181	53,1	31,1	77,3	178	54,8	30,6	74,4	174	56,6	30,0	71,5	169	59,6	29,1	66,8
	2104 SM	207	63,5	35,6	102,6	203	65,4	35,0	98,9	199	67,3	34,3	95,0	193	70,5	33,2	88,9
7 °C	1003 SM	95	27,5	16,4	47,4	93	28,5	16,0	45,9	91,3	29,5	15,7	44,3	88,2	31,2	15,2	43,0
	1103 SM	110	31,5	18,9	53,4	108	32,5	18,5	51,8	106	33,6	18,2	50,0	102	35,3	17,6	47,0
	1203 SM	120	35,7	20,7	63,5	118	36,8	20,3	61,5	116	38,1	19,9	59,4	112	40,1	19,2	57,0
	1303 SM	135	39,3	23,2	76,8	132	40,5	22,8	74,5	130	41,8	22,3	72,1	126	43,9	21,6	69,0
	1403 SM	149	43,3	25,6	83,3	146	44,6	25,2	80,9	143	46,0	24,7	78,4	139	48,3	23,9	76,0
	1604 SM	160	48,1	27,6	67,8	157	49,7	27,1	65,7	154	51,3	26,5	63,5	149	54,1	25,7	61,0
	1804 SM	186	53,5	32,1	82,3	183	55,2	31,5	79,3	180	57,0	30,9	76,2	174	60,0	29,9	73,0
	2104 SM	213	64,0	36,6	109,3	209	65,8	36,0	105,3	205	67,8	35,3	101,2	199	71,0	34,2	95,0
9 °C	1003 SM	101	28,0	17,3	52,0	99	28,9	17,0	50,4	96,6	30,0	16,6	48,7	93,4	31,7	16,1	46,0
	1103 SM	116	32,0	20,0	59,3	114	33,0	19,6	57,4	112	34,1	19,3	55,5	108	35,8	18,7	52,5
	1203 SM	127	36,3	21,9	70,1	125	37,5	21,5	67,9	122	38,7	21,0	65,6	118	40,8	20,4	62,0
	1303 SM	143	39,9	24,5	84,6	140	41,1	24,1	82,0	137	42,4	23,6	79,4	133	44,5	22,9	75,2
	1403 SM	158	43,9	27,1	91,2	155	45,3	26,6	88,6	152	46,7	26,1	85,8	147	49,1	25,3	81,5
	1604 SM	169	48,9	29,1	74,4	166	50,5	28,6	72,1	163	52,2	28,0	69,7	158	55,0	27,1	65,9
	1804 SM	197	54,4	34,0	93,1	194	56,1	33,4	89,7	190	57,9	32,7	86,1	184	60,9	31,7	80,6
	2104 SM	226	64,8	38,8	123,5	222	66,7	38,1	119,0	218	68,7	37,4	114,3	211	72,0	36,3	107,0
11 °C	1003 SM	106	28,4	18,3	57,0	104	29,4	17,9	55,2	102	30,5	17,6	53,4	98,7	32,2	17,0	50,4
	1103 SM	123	32,5	21,1	65,5	121	33,5	20,7	63,5	118	34,6	20,4	61,4	115	36,3	19,7	58,1
	1203 SM	134	37,0	23,1	77,2	132	38,1	22,7	74,8	129	39,4	22,2	72,3	125	41,5	21,5	68,3
	1303 SM	151	40,5	25,9	92,8	148	41,8	25,5	90,1	145	43,1	25,0	87,2	141	45,2	24,2	82,6
	1403 SM	166	44,7	28,6	99,5	163	46,1	28,1	96,6	160	47,5	27,6	93,7	155	49,9	26,7	89,0
	1604 SM	179	49,8	30,7	81,5	175	51,4	30,2	79,0	172	53,2	29,6	76,3	166	56,0	28,6	72,2
	1804 SM	209	55,3	35,9	104,8	205	57,0	35,3	101,0	201	58,9	34,6	97,0	195	62,0	33,6	90,9
	2104 SM	239	65,8	41,0	139,0	234	67,7	40,3	134,0	230	69,7	39,6	128,8	223	73,0	38,4	120,6

Nominal conditions	Wf Water flow in m³ per hour
Pc Cooling capacity in kW	Dp Water pressure drop in kPa
Pe(c) Total power input in kW (compressor and fan motor)	
Available static pressure 0 Pa	Water ΔT 5 °C
Fouling factor 0,44 m²C/kW	

COOLING MODE
LN VERSION

EAC / EAR
0251 ▶ 0812

Water outlet temperature	MODELS	Air inlet temperature															
		28 °C				30 °C				32 °C				35 °C			
		Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa
6 °C	0251 SM	22,6	6,8	3,9	50,6	22,2	7,0	3,8	49,1	21,7	7,3	3,7	47,5	20,9	7,7	3,6	44,9
	0291 SM	26,6	8,1	4,6	50,7	26,0	8,4	4,5	49,1	25,5	8,7	4,4	47,4	24,5	9,2	4,2	44,7
	0351 SM	32,5	10,2	5,6	67,4	32,0	10,5	5,5	65,4	31,3	10,8	5,4	63,3	30,3	11,4	5,2	59,8
	0431 SM	38,2	12,2	6,6	72,5	37,5	12,6	6,5	70,2	36,7	13,0	6,3	67,7	35,4	13,7	6,1	63,8
	0472 SM	45,1	13,5	7,8	50,2	44,2	14,0	7,6	48,8	43,3	14,6	7,5	47,4	41,9	15,4	7,2	45,1
	0552 SM	52,0	16,2	8,9	58,4	50,9	16,7	8,8	56,6	49,8	17,4	8,6	54,6	48,0	18,4	8,3	51,5
	0672 SM	64,4	20,3	11,1	77,1	63,3	20,9	10,9	75,2	62,1	21,6	10,7	73,1	60,0	22,8	10,3	69,6
	0812 SM	76,7	24,4	13,2	89,0	75,2	25,2	12,9	86,0	73,6	26,0	12,7	83,0	71,1	27,4	12,2	78,0
7 °C	0251 SM	23,3	6,8	4,0	53,0	22,8	7,1	3,9	51,4	22,3	7,3	3,8	49,7	21,6	7,8	3,7	47
	0291 SM	27,3	8,1	4,7	53,0	26,8	8,4	4,6	51,4	26,2	8,8	4,5	49,6	25,3	9,3	4,3	47
	0351 SM	33,5	10,2	5,8	70,8	32,9	10,6	5,7	68,7	32,3	10,9	5,5	66,4	31,2	11,5	5,4	63
	0431 SM	39,3	12,3	6,8	76,0	38,5	12,7	6,6	73,5	37,7	13,2	6,5	70,9	36,4	13,9	6,3	67
	0472 SM	46,4	13,6	8,0	52,3	45,5	14,1	7,8	50,9	44,6	14,7	7,7	49,4	43,1	15,5	7,4	47
	0552 SM	53,5	16,3	9,2	61,2	52,4	16,9	9,0	59,3	51,3	17,5	8,8	57,2	49,4	18,5	8,5	54
	0672 SM	66,4	20,5	11,4	80,5	65,2	21,1	11,2	78,5	63,9	21,8	11,0	76,2	61,7	22,9	10,6	73
	0812 SM	78,8	24,6	13,6	93,3	77,3	25,4	13,3	90,2	75,7	26,2	13,0	86,9	73,0	27,6	12,6	82
9 °C	0251 SM	24,6	6,9	4,2	57,9	24,2	7,2	4,2	56,2	23,7	7,5	4,1	54,4	22,9	7,9	3,9	51,6
	0291 SM	28,9	8,3	5,0	57,9	28,3	8,6	4,9	56,1	27,7	8,9	4,8	54,2	26,7	9,4	4,6	51,2
	0351 SM	35,5	10,4	6,1	77,9	34,8	10,7	6,0	75,5	34,1	11,1	5,9	72,9	32,9	11,7	5,7	68,8
	0431 SM	41,5	12,6	7,1	83,2	40,7	13,0	7,0	80,5	39,8	13,4	6,8	77,6	38,4	14,1	6,6	73,1
	0472 SM	49,1	13,9	8,4	56,8	48,2	14,4	8,3	55,2	47,2	14,9	8,1	53,6	45,7	15,8	7,9	51,1
	0552 SM	56,6	16,5	9,7	67,0	55,5	17,1	9,5	64,9	54,3	17,8	9,3	62,7	52,4	18,8	9,0	59,2
	0672 SM	70,4	20,8	12,1	87,5	69,1	21,4	11,9	85,2	67,6	22,2	11,6	82,7	65,3	23,3	11,2	78,6
	0812 SM	83,2	25,1	14,3	102,2	81,5	25,9	14,0	98,8	79,8	26,7	13,7	95,3	77,0	28,1	13,3	89,6
11 °C	0251 SM	26,0	7,1	4,5	63,1	25,5	7,3	4,4	61,3	25,0	7,6	4,3	59,3	24,2	8,0	4,2	56,3
	0291 SM	30,5	8,4	5,3	63,1	29,9	8,7	5,1	61,1	29,3	9,0	5,0	59,1	28,3	9,6	4,9	55,8
	0351 SM	37,5	10,6	6,5	85,4	36,8	10,9	6,3	82,7	36,0	11,3	6,2	79,8	34,7	11,9	6,0	75,1
	0431 SM	43,7	12,8	7,5	90,9	42,8	13,2	7,4	87,9	41,9	13,7	7,2	84,8	40,5	14,4	7,0	79,8
	0472 SM	51,9	14,1	8,9	61,4	50,9	14,6	8,8	59,8	49,9	15,2	8,6	58,0	48,2	16,0	8,3	55,3
	0552 SM	59,8	16,8	10,3	73,0	58,6	17,4	10,1	70,8	57,4	18,0	9,9	68,4	55,4	19,1	9,5	64,7
	0672 SM	74,4	21,2	12,8	94,8	73,0	21,8	12,6	92,1	71,4	22,6	12,3	89,3	68,9	23,8	11,8	84,8
	0812 SM	87,6	25,6	15,1	111,8	85,9	26,4	14,8	108,1	84,1	27,3	14,5	104,2	81,1	28,7	14,0	98,0

Nominal conditions	Wf Water flow in m³ per hour
Pc Cooling capacity in kW	Dp Water pressure drop in kPa
Pe(c) Total power input in kW (compressor and fan motor)	
Available static pressure 0 Pa	
Fouling factor 0,44 m²C/kW	Water ΔT 5 °C

**COOLING MODE
LN & SLN VERSIONS**

**EAC / EAR
1003 ▶ 2104**

Water outlet temperature	MODELS	Air inlet temperature															
		28 °C				30 °C				32 °C				35 °C			
		Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa	Pc kW	Pe(c) kW	Wf m³/h	Dp kPa
6 °C	1003 SM	90	27,8	15,5	43,2	88	29,0	15,1	41,5	85,4	30,2	14,7	39,7	81,9	32,1	14,1	37,0
	1103 SM	105	31,6	18,1	49,4	103	32,8	17,6	47,4	100	34,1	17,2	45,3	96,1	36,1	16,5	42,1
	1203 SM	114	36,0	19,6	57,9	111	37,4	19,1	55,4	108	38,9	18,6	53,0	104	41,3	17,9	49,4
	1303 SM	128	39,2	22,1	70,7	125	40,7	21,6	67,9	122	42,3	21,0	65,1	118	44,7	20,2	60,9
	1403 SM	141	43,3	24,3	76,4	138	45,0	23,7	73,6	134	46,7	23,1	70,6	129	49,4	22,2	66,2
	1604 SM	152	48,6	26,2	62,1	149	50,4	25,6	59,6	145	52,3	24,9	57,1	139	55,4	23,9	53,2
	1804 SM	172	55,2	29,6	69,7	168	57,4	28,9	66,1	164	59,7	28,2	62,6	157	63,4	27,0	57,4
	2104 SM	203	62,0	35,0	99,0	199	64,2	34,2	94,3	194	66,6	33,4	89,6	187	70,5	32,1	82,6
7 °C	1003 SM	92	28,1	15,9	45,3	90	29,3	15,5	43,4	87,8	30,5	15,1	41,6	84,2	32,4	14,5	43,0
	1103 SM	108	31,9	18,6	52,0	105	33,1	18,1	49,9	103	34,4	17,7	47,7	99	36,4	17,0	47,0
	1203 SM	117	36,4	20,1	60,8	114	37,8	19,7	58,2	111	39,3	19,2	55,7	107	41,7	18,4	57,0
	1303 SM	132	39,6	22,7	74,1	129	41,1	22,2	71,2	126	42,7	21,6	68,3	121	45,2	20,8	69,0
	1403 SM	145	43,8	25,0	79,9	142	45,4	24,4	76,9	138	47,1	23,8	73,8	133	49,8	22,8	76,0
	1604 SM	157	49,1	26,9	65,1	153	51,0	26,3	62,4	149	52,9	25,6	59,7	143	55,9	24,6	61,0
	1804 SM	177	55,9	30,5	73,9	173	58,1	29,7	70,1	168	60,4	29,0	66,4	162	64,1	27,8	73,0
	2104 SM	209	62,6	36,0	105,2	204	64,9	35,2	100,2	199	67,3	34,3	95,1	192	71,1	33,0	95,0
9 °C	1003 SM	98	28,7	16,8	49,5	95	29,9	16,4	47,5	92,7	31,1	16,0	45,5	88,9	33,1	15,3	42,4
	1103 SM	114	32,6	19,6	57,5	111	33,8	19,2	55,1	109	35,1	18,7	52,6	104	37,1	18,0	48,9
	1203 SM	124	37,3	21,3	66,8	121	38,7	20,7	64,0	118	40,2	20,2	61,2	113	42,6	19,4	57,0
	1303 SM	139	40,5	24,0	81,3	136	42,0	23,4	78,1	133	43,6	22,8	74,9	128	46,1	21,9	69,9
	1403 SM	153	44,8	26,3	87,0	149	46,4	25,7	83,7	146	48,1	25,1	80,4	140	50,9	24,1	75,3
	1604 SM	165	50,2	28,4	71,2	161	52,1	27,7	68,3	157	54,0	27,0	65,3	150	57,1	25,9	60,8
	1804 SM	187	57,3	32,2	82,9	182	59,5	31,4	78,6	178	61,9	30,6	74,4	170	65,6	29,3	68,2
	2104 SM	221	63,8	38,0	118,3	216	66,1	37,2	112,6	211	68,6	36,3	106,9	203	72,4	34,9	98,4
11 °C	1003 SM	103	29,4	17,7	54,1	100	30,5	17,3	51,9	98	31,8	16,8	49,6	93,7	33,7	16,1	46,3
	1103 SM	120	33,3	20,7	63,3	117	34,6	20,2	60,6	115	35,9	19,7	57,9	110	37,9	18,9	53,8
	1203 SM	130	38,2	22,4	73,3	127	39,7	21,9	70,2	124	41,2	21,3	67,1	119	43,6	20,5	62,4
	1303 SM	147	41,4	25,3	88,9	143	42,9	24,7	85,4	140	44,5	24,1	81,8	134	47,0	23,1	76,4
	1403 SM	161	45,8	27,7	94,6	157	47,4	27,1	91,0	153	49,2	26,4	87,3	147	51,9	25,3	81,8
	1604 SM	174	51,3	29,9	77,7	169	53,2	29,1	74,5	165	55,2	28,4	71,2	158	58,3	27,2	66,3
	1804 SM	197	58,7	33,9	92,5	192	61,0	33,0	87,8	187	63,4	32,2	83,1	180	67,2	30,9	76,1
	2104 SM	233	65,1	40,1	132,5	228	67,5	39,2	126,1	222	69,9	38,2	119,7	214	73,8	36,8	110,2

Pc	Nominal conditions Cooling capacity in kW	Wf	Water flow in m³ per hour
Pe(c)	Total power input in kW (compressor and fan motor)	Dp	Water pressure drop in kPa

Available static pressure	0 Pa	Water ΔT	5 °C
Fouling factor	0,44 m²C/kW		

**HEATING MODE
STANDARD VERSION**

**EAR
0251 ▶ 0812**

Water outlet temperature	MODELS	Air inlet temperature															
		- 10 °C				- 5 °C				0 °C				5 °C			
		Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa
35 °C	0251 SM	15,6	6,3	2,7	28,2	18,2	6,3	3,1	36,1	20,9	6,3	3,6	44,6	23,5	6,3	4,0	53,7
	0291 SM	18,3	7,3	3,1	28,2	21,4	7,3	3,7	36,0	24,4	7,3	4,2	44,4	27,4	7,3	4,7	53,3
	0351 SM	22,3	8,7	3,8	36,1	26,1	8,9	4,5	46,7	29,7	9,0	5,1	58,1	33,3	9,1	5,7	70,2
	0431 SM	25,0	10,0	4,3	35,4	29,2	10,2	5,0	45,9	33,2	10,4	5,7	57,3	37,3	10,5	6,4	69,5
	0472 SM	31,6	12,7	5,4	30,0	36,9	12,6	6,4	37,6	42,3	12,6	7,3	45,7	47,6	12,7	8,2	54,2
	0552 SM	36,2	14,6	6,2	32,9	42,4	14,7	7,3	42,2	48,4	14,7	8,3	52,2	54,4	14,7	9,4	62,9
	0672 SM	45,2	17,5	7,8	46,4	52,8	17,9	9,1	57,9	60,2	18,2	10,4	70,0	67,5	18,5	11,6	82,5
	0812 SM	50,1	20,0	8,6	42,9	58,5	20,4	10,1	55,8	66,7	20,7	11,5	70,0	74,7	21,0	12,9	85,1
40 °C	0251 SM	15,4	7,1	2,7	27,8	18,0	7,1	3,1	35,4	20,5	7,0	3,5	43,5	23,1	7,0	4,0	52,2
	0291 SM	18,1	8,2	3,1	27,8	21,1	8,2	3,6	35,3	24,0	8,2	4,1	43,3	27,0	8,2	4,6	51,9
	0351 SM	22,2	9,6	3,8	35,6	25,8	9,8	4,4	45,8	29,3	9,9	5,0	56,7	32,8	10,1	5,6	68,3
	0431 SM	24,9	11,1	4,3	35,2	28,9	11,3	5,0	45,3	32,9	11,5	5,7	56,3	36,8	11,7	6,3	67,9
	0472 SM	31,2	14,3	5,4	29,5	36,5	14,2	6,3	36,9	41,6	14,2	7,2	44,7	46,7	14,2	8,0	52,8
	0552 SM	35,9	16,6	6,2	32,4	41,8	16,5	7,2	41,3	47,7	16,5	8,2	50,9	53,5	16,5	9,2	61,1
	0672 SM	44,8	19,4	7,7	45,9	52,2	19,8	9,0	57,0	59,4	20,1	10,2	68,6	66,4	20,4	11,4	80,6
	0812 SM	49,9	22,1	8,6	42,6	58,0	22,6	10,0	55,1	66,0	23,0	11,3	68,7	73,8	23,3	12,7	83,2
45 °C	0251 SM	15,3	8,0	2,6	27,3	17,7	7,9	3,1	34,6	20,2	7,9	3,5	42,5	22,6	7,9	3,9	50,7
	0291 SM	18,0	9,3	3,1	27,3	20,8	9,3	3,6	34,6	23,7	9,2	4,1	42,3	26,5	9,2	4,6	50,4
	0351 SM	21,9	10,7	3,8	35,1	25,4	10,9	4,4	44,8	28,9	11,0	5,0	55,3	32,2	11,1	5,5	66,4
	0431 SM	n/a	n/a	n/a	n/a	28,7	12,5	4,9	44,7	32,5	12,8	5,6	55,2	36,3	12,9	6,2	66,4
	0472 SM	30,9	16,2	5,3	29,1	35,9	16,1	6,2	36,2	40,9	16,0	7,0	43,6	45,8	15,9	7,9	51,4
	0552 SM	35,5	18,8	6,1	31,8	41,2	18,7	7,1	40,4	46,9	18,7	8,1	49,6	52,5	18,6	9,0	59,4
	0672 SM	n/a	n/a	n/a	n/a	51,5	21,9	8,9	56,0	58,5	22,3	10,1	67,1	65,3	22,6	11,2	78,6
	0812 SM	n/a	n/a	n/a	n/a	57,5	25,1	9,9	54,3	65,2	25,5	11,2	67,4	72,8	25,8	12,5	81,3
48 °C	0251 SM	n/a	n/a	n/a	n/a	17,6	8,5	3,0	34,2	20,0	8,5	3,4	41,8	22,4	8,4	3,9	49,9
	0291 SM	n/a	n/a	n/a	n/a	20,7	10,0	3,6	34,1	23,4	9,9	4,0	41,6	26,2	9,9	4,5	49,6
	0351 SM	n/a	n/a	n/a	n/a	25,2	11,6	4,3	44,2	28,6	11,7	4,9	54,3	31,9	11,9	5,5	65,1
	0431 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	32,3	13,6	5,6	54,6	36,0	13,8	6,2	65,5
	0472 SM	n/a	n/a	n/a	n/a	35,6	17,3	6,1	35,7	40,5	17,2	7,0	43,0	45,3	17,1	7,8	50,5
	0552 SM	n/a	n/a	n/a	n/a	40,9	20,2	7,0	39,9	46,5	20,1	8,0	48,9	51,9	20,0	8,9	58,4
	0672 SM	n/a	n/a	n/a	n/a	51,1	23,3	8,8	55,4	57,9	23,7	10,0	66,2	64,6	24,0	11,1	77,4
	0812 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	64,8	27,1	11,1	66,6	72,2	27,5	12,4	80,1

Nominal conditions	Note : the unit can not work as standard. Please consult us.
Ph Cooling capacity in kW	Wf Water flow in m³ per hour
Pe(h) Total power input in kW (compressor and fan motor)	Dp Water pressure drop in kPa
Available static pressure 0 Pa	Water ΔT 5 °C
Fouling factor 0,44 m²C/kW	

**HEATING MODE
STANDARD VERSION**

**EAR
0251 ► 0812**

Water outlet temperature	MODELS	Air inlet temperature											
		7 °C				11 °C				23 °C			
		Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa
35 °C	0251 SM	24,5	6,3	4,2	57,5	26,6	6,3	4,6	65,3	32,7	6,5	5,6	90,3
	0291 SM	28,6	7,3	4,9	57,0	31,0	7,3	5,3	64,7	38,0	7,5	6,5	89,1
	0351 SM	34,8	9,2	6,0	75,3	37,6	9,3	6,5	85,7	45,8	9,4	7,9	118,9
	0431 SM	38,9	10,6	6,7	74,5	42,0	10,7	7,2	85,0	51,2	10,9	8,8	118,5
	0472 SM	49,7	12,7	8,5	57,7	53,8	12,8	9,3	64,8	66,0	13,1	11,4	87,1
	0552 SM	56,8	14,8	9,8	67,3	61,5	14,8	10,6	76,4	75,4	15,1	13,0	105,7
	0672 SM	70,4	18,6	12,1	87,5	76,1	18,8	13,1	97,9	92,8	19,1	16,0	129,9
	0812 SM	77,9	21,2	13,4	91,4	84,2	21,4	14,5	104,5	102,6	21,8	17,6	146,6
40 °C	0251 SM	24,1	7,0	4,1	55,8	26,0	7,0	4,5	63,3	31,9	7,1	5,5	87,1
	0291 SM	28,1	8,2	4,8	55,4	30,4	8,2	5,2	62,7	37,2	8,3	6,4	86,1
	0351 SM	34,2	10,1	5,9	73,2	36,9	10,2	6,3	83,1	44,8	10,4	7,7	114,8
	0431 SM	38,3	11,7	6,6	72,8	41,4	11,8	7,1	82,8	50,2	12,1	8,6	114,8
	0472 SM	48,7	14,2	8,4	56,1	52,7	14,2	9,1	62,9	64,5	14,5	11,1	84,2
	0552 SM	55,8	16,6	9,6	65,4	60,3	16,6	10,4	74,1	73,8	16,8	12,7	102,0
	0672 SM	69,2	20,5	11,9	85,4	74,7	20,7	12,9	95,3	90,8	21,1	15,6	125,9
	0812 SM	76,8	23,4	13,2	89,3	82,9	23,6	14,3	101,8	100,7	24,1	17,3	141,9
45 °C	0251 SM	23,6	7,9	4,1	54,2	25,5	7,9	4,4	61,3	31,2	7,9	5,4	83,9
	0291 SM	27,6	9,2	4,7	53,8	29,8	9,2	5,1	60,8	36,3	9,2	6,3	83,0
	0351 SM	33,6	11,2	5,8	71,0	36,2	11,3	6,2	80,4	43,8	11,5	7,5	110,6
	0431 SM	37,8	13,0	6,5	71,1	40,7	13,1	7,0	80,6	49,2	13,4	8,5	111,1
	0472 SM	47,8	15,9	8,2	54,6	51,7	15,9	8,9	61,1	63,0	16,1	10,8	81,4
	0552 SM	54,7	18,6	9,4	63,5	59,1	18,6	10,2	71,8	72,1	18,7	12,4	98,4
	0672 SM	68,0	22,7	11,7	83,3	73,3	22,9	12,6	92,7	88,7	23,4	15,3	121,9
	0812 SM	75,7	26,0	13,0	87,1	81,6	26,2	14,0	99,0	98,7	26,8	17,0	137,3
48 °C	0251 SM	23,3	8,4	4,0	53,2	25,2	8,4	4,3	60,1	30,7	8,5	5,3	82,0
	0291 SM	27,3	9,9	4,7	52,9	29,5	9,9	5,1	59,7	35,8	9,9	6,2	81,2
	0351 SM	33,2	11,9	5,7	69,6	35,7	12,0	6,1	78,8	43,2	12,2	7,4	108,0
	0431 SM	37,4	13,8	6,4	70,0	40,3	14,0	6,9	79,3	48,7	14,2	8,4	108,9
	0472 SM	47,2	17,1	8,1	53,6	51,0	17,1	8,8	60,0	62,1	17,2	10,7	79,7
	0552 SM	54,1	20,0	9,3	62,3	58,4	20,0	10,1	70,4	71,1	20,0	12,2	96,2
	0672 SM	67,2	24,1	11,6	81,9	72,4	24,4	12,5	91,1	87,5	24,9	15,1	119,4
	0812 SM	75,1	27,6	12,9	85,8	80,8	27,9	13,9	97,4	97,6	28,5	16,8	134,5

Nominal conditions	Note : the unit can not work as standard. Please consult us.
Ph Cooling capacity in kW	Wf Water flow in m³ per hour
Pe(h) Total power input in kW (compressor and fan motor)	Dp Water pressure drop in kPa
Available static pressure 0 Pa	Water ΔT 5 °C
Fouling factor 0,44 m²C/kW	

**HEATING MODE
STANDARD VERSION**

**EAR
1003 ▶ 2104**

Water outlet temperature	MODELS	Air inlet temperature															
		- 10 °C				- 5 °C				0 °C				5 °C			
		Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa
35 °C	1003 SM	63,1	24,3	10,9	24,0	73,7	24,5	12,7	31,0	84,1	24,7	14,5	38,7	94,5	24,9	16,3	46,9
	1103 SM	71,6	27,9	12,3	24,8	83,6	28,4	14,4	32,7	95,4	28,8	16,4	41,6	107,1	29,2	18,4	51,2
	1203 SM	78,1	30,6	13,4	29,9	91,4	31,1	15,7	39,4	104,5	31,6	18,0	49,8	117,4	32,0	20,2	61,1
	1303 SM	86,8	34,8	14,9	36,4	101,3	35,4	17,4	47,3	115,5	35,9	19,9	59,1	129,6	36,4	22,3	71,9
	1403 SM	94,9	37,4	16,3	40,4	110,6	38,1	19,0	51,7	126,1	38,7	21,7	63,8	141,4	39,2	24,3	76,6
	1604 SM	105,5	40,9	18,1	33,2	123,1	41,7	21,2	43,2	140,4	42,3	24,2	54,0	157,4	42,9	27,1	65,7
	1804 SM	120,3	47,9	20,7	32,5	140,4	48,6	24,2	45,2	160,2	49,2	27,6	59,8	179,7	49,9	30,9	76,3
	2104 SM	135,9	56,7	23,4	42,2	159,3	57,6	27,4	59,0	181,8	58,4	31,3	78,2	203,6	59,1	35,0	99,3
40 °C	1003 SM	62,5	27,3	10,7	23,6	72,7	27,4	12,5	30,4	82,8	27,6	14,3	37,7	92,8	27,8	16,0	45,6
	1103 SM	71,0	30,9	12,2	24,4	82,6	31,4	14,2	32,0	94,0	31,9	16,2	40,5	105,3	32,3	18,1	49,7
	1203 SM	77,6	33,9	13,3	29,5	90,4	34,4	15,6	38,6	103,0	34,9	17,7	48,6	115,4	35,4	19,9	59,3
	1303 SM	86,3	38,6	14,9	36,0	100,2	39,1	17,2	46,5	114,0	39,7	19,6	57,8	127,5	40,1	21,9	69,9
	1403 SM	94,5	41,4	16,2	40,1	109,5	42,0	18,8	50,9	124,4	42,6	21,4	62,4	139,2	43,2	23,9	74,7
	1604 SM	104,7	45,4	18,0	32,7	121,8	46,2	21,0	42,4	138,5	46,9	23,8	52,8	155,0	47,5	26,7	64,0
	1804 SM	119,7	53,1	20,6	32,2	138,9	53,7	23,9	44,2	157,8	54,3	27,2	57,9	176,4	54,9	30,4	73,3
	2104 SM	135,2	62,7	23,3	41,7	157,7	63,5	27,1	57,8	179,5	64,3	30,9	76,0	200,4	65,0	34,5	96,1
45 °C	1003 SM	n/a	n/a	n/a	n/a	71,7	30,8	12,3	29,7	81,5	31,0	14,0	36,7	91,1	31,1	15,7	44,2
	1103 SM	n/a	n/a	n/a	n/a	81,5	34,8	14,0	31,3	92,6	35,3	15,9	39,4	103,5	35,7	17,8	48,2
	1203 SM	n/a	n/a	n/a	n/a	89,4	38,2	15,4	37,9	101,5	38,7	17,5	47,4	113,5	39,2	19,5	57,5
	1303 SM	n/a	n/a	n/a	n/a	99,2	43,4	17,1	45,6	112,3	43,9	19,3	56,4	125,3	44,4	21,6	67,9
	1403 SM	n/a	n/a	n/a	n/a	108,4	46,5	18,7	50,1	122,8	47,1	21,1	61,1	136,9	47,7	23,6	72,8
	1604 SM	n/a	n/a	n/a	n/a	120,3	51,3	20,7	41,5	136,6	52,0	23,5	51,5	152,4	52,7	26,2	62,2
	1804 SM	n/a	n/a	n/a	n/a	136,9	59,5	23,6	42,8	154,9	60,1	26,7	55,7	172,6	60,6	29,7	70,0
	2104 SM	n/a	n/a	n/a	n/a	156,1	70,3	26,9	56,6	177,0	71,0	30,5	73,8	197,2	71,7	33,9	92,8
48 °C	1003 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	80,7	33,2	13,9	36,1	90,1	33,3	15,5	43,3
	1103 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	91,7	37,5	15,8	38,7	102,4	38,0	17,6	47,2
	1203 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100,7	41,2	17,3	46,6	112,3	41,7	19,3	56,5
	1303 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	111,3	46,7	19,1	55,5	123,9	47,2	21,3	66,6
	1403 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	121,7	49,9	20,9	60,3	135,5	50,5	23,3	71,6
	1604 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	135,3	55,4	23,3	50,7	150,9	56,0	26,0	61,1
	1804 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	152,9	63,8	26,3	54,2	170,1	64,3	29,3	67,8
	2104 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	175,5	75,5	30,2	72,5	195,2	76,1	33,6	90,8

Nominal conditions	Note : the unit can not work as standard. Please consult us.
Ph Cooling capacity in kW	Wf Water flow in m³ per hour
Pe(h) Total power input in kW (compressor and fan motor)	Dp Water pressure drop in kPa
Available static pressure 0 Pa	Water ΔT 5 °C
Fouling factor 0,44 m²C/kW	

**HEATING MODE
STANDARD VERSION**

**EAR
1003 ► 2104**

Water outlet temperature	MODELS	Air inlet temperature											
		7 °C				11 °C				23 °C			
		Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa
35 °C	1003 SM	98,6	25,0	17,0	50,4	106,7	25,1	18,4	57,4	130,6	25,6	22,5	80,4
	1103 SM	111,7	29,4	19,2	55,3	120,9	29,7	20,8	63,8	147,8	30,3	25,4	91,8
	1203 SM	122,5	32,2	21,1	65,8	132,7	32,5	22,8	75,7	162,3	33,4	27,9	107,7
	1303 SM	135,2	36,6	23,3	77,2	146,2	37,0	25,2	88,3	178,6	37,9	30,7	124,1
	1403 SM	147,5	39,4	25,4	82,0	159,6	39,8	27,5	93,0	195,1	40,8	33,6	128,4
	1604 SM	164,1	43,1	28,2	70,5	177,3	43,5	30,5	80,5	215,7	44,5	37,1	112,6
	1804 SM	187,5	50,1	32,3	83,4	202,8	50,6	34,9	98,5	247,5	52,0	42,6	150,3
	2104 SM	212,1	59,4	36,5	108,3	228,7	59,9	39,3	127,1	277,7	61,3	47,8	191,9
40 °C	1003 SM	96,8	27,9	16,7	48,8	104,7	28,0	18,0	55,6	127,7	28,4	22,0	77,4
	1103 SM	109,8	32,4	18,9	53,6	118,7	32,7	20,4	61,7	144,7	33,5	24,9	88,3
	1203 SM	120,3	35,6	20,7	63,8	130,1	35,9	22,4	73,1	158,6	36,8	27,3	103,4
	1303 SM	132,8	40,3	22,9	75,0	143,4	40,7	24,7	85,4	174,5	41,6	30,0	119,3
	1403 SM	145,0	43,4	24,9	79,8	156,6	43,8	26,9	90,3	190,7	44,9	32,8	123,8
	1604 SM	161,4	47,7	27,8	68,6	174,2	48,1	30,0	78,2	211,4	49,2	36,4	108,7
	1804 SM	183,8	55,1	31,6	80,0	198,4	55,6	34,1	94,0	240,9	56,8	41,4	141,9
	2104 SM	208,6	65,2	35,9	104,6	224,5	65,7	38,6	122,3	271,7	67,1	46,7	183,1
45 °C	1003 SM	95,0	31,2	16,3	47,3	102,5	31,3	17,6	53,7	124,8	31,6	21,5	74,4
	1103 SM	108	35,9	18,5	51,9	116,4	36,2	20,0	59,6	141,5	37,0	24,3	84,8
	1203 SM	118	39,4	20,3	61,8	127,5	39,8	21,9	70,6	154,8	40,7	26,6	99,2
	1303 SM	130	44,6	22,4	72,7	140,6	44,9	24,2	82,6	170,3	45,9	29,3	114,4
	1403 SM	143	47,9	24,6	78,0	153,6	48,3	26,4	87,5	186,3	49,4	32,1	119,3
	1604 SM	159	52,9	27,3	66,6	171,1	53,4	29,4	75,7	206,9	54,4	35,6	104,8
	1804 SM	180	60,8	30,9	76,2	193,4	61,2	33,3	89,1	233,8	62,3	40,2	133,2
	2104 SM	205	71,9	35,3	101	220,3	72,4	37,9	117,4	265,5	73,7	45,7	174,4
48 °C	1003 SM	93,8	33,4	16,1	46,4	101,2	33,5	17,4	52,6	122,9	33,8	21,2	72,7
	1103 SM	106,6	38,2	18,3	50,8	115,0	38,5	19,8	58,3	139,6	39,3	24,0	82,7
	1203 SM	116,9	41,9	20,1	60,6	126,0	42,3	21,7	69,2	152,6	43,2	26,3	96,7
	1303 SM	128,9	47,4	22,2	71,3	138,8	47,8	23,9	80,8	167,8	48,7	28,9	111,5
	1403 SM	141,0	50,7	24,3	76,3	151,8	51,2	26,1	85,9	183,6	52,3	31,6	116,5
	1604 SM	157,0	56,3	27,0	65,4	169,1	56,8	29,1	74,3	204,2	57,9	35,1	102,4
	1804 SM	176,8	64,5	30,4	73,7	190,2	64,9	32,7	86,0	229,3	65,9	39,4	127,8
	2104 SM	202,8	76,3	34,9	98,5	217,7	76,8	37,5	114,5	261,7	78,0	45,0	169,2

Nominal conditions	Note : the unit can not work as standard. Please consult us.
Ph Cooling capacity in kW	Wf Water flow in m³ per hour
Pe(h) Total power input in kW (compressor and fan motor)	Dp Water pressure drop in kPa
Available static pressure 0 Pa	Water ΔT 5 °C
Fouling factor 0,44 m²C/kW	

**HEATING MODE
LN VERSIONS**

**EAR
0251 ▶ 0812**

Water outlet temperature	MODELS	Air inlet temperature															
		- 10 °C				- 5 °C				0 °C				5 °C			
		Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa
35 °C	0251 SM	15,2	6,1	2,6	27,1	17,9	6,1	3,1	35,2	20,6	6,1	3,5	43,6	23,1	6,2	4,0	52,3
	0291 SM	17,8	7,0	3,1	27,1	21,0	7,1	3,6	35,1	24,1	7,1	4,1	43,5	27,0	7,1	4,7	52,1
	0351 SM	21,6	8,5	3,7	34,1	25,5	8,6	4,4	45,0	29,2	8,7	5,0	56,4	32,8	8,8	5,6	68,2
	0431 SM	24,0	9,8	4,1	33,2	28,4	10,0	4,9	44,0	32,6	10,2	5,6	55,3	36,5	10,3	6,3	67,0
	0472 SM	30,8	12,2	5,3	29,0	36,4	12,3	6,3	36,8	41,7	12,4	7,2	44,7	46,7	12,4	8,0	52,9
	0552 SM	35,3	14,2	6,1	31,6	41,7	14,3	7,2	41,1	47,7	14,3	8,2	51,1	53,6	14,4	9,2	61,3
	0672 SM	43,5	17,1	7,5	44,0	51,5	17,4	8,9	56,0	59,1	17,6	10,2	68,2	66,3	17,9	11,4	80,3
	0812 SM	48,2	19,6	8,3	40,1	56,9	19,9	9,8	53,4	65,2	20,3	11,2	67,3	73,0	20,6	12,6	81,7
40 °C	0251 SM	15,1	6,9	2,6	26,8	17,7	6,9	3,0	34,6	20,3	6,9	3,5	42,7	22,7	6,9	3,9	51,0
	0291 SM	17,7	7,9	3,0	26,6	20,8	8,0	3,6	34,4	23,7	8,0	4,1	42,4	26,6	8,0	4,6	50,7
	0351 SM	21,4	9,5	3,7	33,5	25,2	9,6	4,3	44,0	28,8	9,7	5,0	55,1	32,2	9,8	5,5	66,4
	0431 SM	24,0	11,0	4,1	33,0	28,2	11,2	4,9	43,5	32,2	11,3	5,5	54,4	36,0	11,5	6,2	65,6
	0472 SM	30,6	13,8	5,3	28,7	35,9	13,8	6,2	36,2	41,1	13,9	7,1	43,8	46,0	13,9	7,9	51,6
	0552 SM	35,0	16,0	6,0	31,1	41,1	16,1	7,1	40,3	47,0	16,1	8,1	49,8	52,7	16,2	9,1	59,7
	0672 SM	43,1	19,2	7,4	43,4	50,9	19,4	8,8	55,1	58,3	19,7	10,0	66,8	65,2	19,9	11,2	78,5
	0812 SM	48,1	21,9	8,3	39,9	56,6	22,2	9,7	52,8	64,6	22,5	11,1	66,2	72,1	22,8	12,4	80,1
45 °C	0251 SM	15,0	7,7	2,6	26,5	17,5	7,7	3,0	34,0	20,0	7,7	3,4	41,8	22,3	7,7	3,8	49,7
	0291 SM	17,5	8,9	3,0	26,3	20,5	9,0	3,5	33,7	23,4	9,0	4,0	41,4	26,1	9,0	4,5	49,3
	0351 SM	n/a	n/a	n/a	n/a	24,8	10,7	4,3	43,0	28,4	10,9	4,9	53,7	31,7	11,0	5,5	64,6
	0431 SM	n/a	n/a	n/a	n/a	28,0	12,5	4,8	43,0	31,9	12,6	5,5	53,6	35,6	12,7	6,1	64,3
	0472 SM	30,4	15,6	5,2	28,4	35,5	15,6	6,1	35,6	40,5	15,6	7,0	42,9	45,2	15,6	7,8	50,4
	0552 SM	34,7	18,1	6,0	30,7	40,6	18,1	7,0	39,5	46,3	18,2	8,0	48,6	51,8	18,2	8,9	58,1
	0672 SM	n/a	n/a	n/a	n/a	50,2	21,7	8,6	54,0	57,4	22,0	9,9	65,3	64,1	22,2	11,0	76,6
	0812 SM	n/a	n/a	n/a	n/a	56,2	24,8	9,7	52,2	64,0	25,1	11,0	65,2	71,3	25,4	12,3	78,5
48 °C	0251 SM	n/a	n/a	n/a	n/a	17,4	8,3	3,0	33,6	19,8	8,3	3,4	41,2	22,1	8,3	3,8	49,0
	0291 SM	n/a	n/a	n/a	n/a	20,3	9,6	3,5	33,3	23,1	9,7	4,0	40,8	25,8	9,7	4,4	48,5
	0351 SM	n/a	n/a	n/a	n/a	24,6	11,5	4,2	42,4	28,1	11,6	4,8	52,8	31,4	11,7	5,4	63,4
	0431 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	31,8	13,5	5,5	53,1	35,4	13,6	6,1	63,6
	0472 SM	n/a	n/a	n/a	n/a	35,3	16,8	6,1	35,2	40,1	16,8	6,9	42,4	44,8	16,8	7,7	49,7
	0552 SM	n/a	n/a	n/a	n/a	40,3	19,5	6,9	39,0	45,9	19,5	7,9	47,9	51,2	19,6	8,8	57,1
	0672 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	56,8	23,5	9,8	64,4	63,4	23,7	10,9	75,4
	0812 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	63,7	26,8	11,0	64,6	70,8	27,1	12,2	77,6

Nominal conditions	Note : the unit can not work as standard. Please consult us.
Ph Cooling capacity in kW	Wf Water flow in m³ per hour
Pe(h) Total power input in kW (compressor and fan motor)	Dp Water pressure drop in kPa
Available static pressure 0 Pa	Water ΔT 5 °C
Fouling factor 0,44 m²C/kW	

**HEATING MODE
LN VERSIONS**

**EAR
0251 ► 0812**

Water outlet temperature	MODELS	Air inlet temperature											
		7 °C				11 °C				23 °C			
		Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa
35 °C	0251 SM	24,1	6,2	4,1	55,9	26,0	6,2	4,5	63,0	31,6	6,3	5,4	85,8
	0291 SM	28,2	7,2	4,8	55,6	30,4	7,2	5,2	62,6	36,9	7,2	6,4	85,1
	0351 SM	34,1	8,9	5,9	72,9	36,7	9,0	6,3	82,5	44,4	9,3	7,6	113,1
	0431 SM	38,0	10,4	6,5	71,6	40,8	10,5	7,0	81,0	49,2	10,8	8,5	110,9
	0472 SM	48,7	12,5	8,4	56,1	52,6	12,5	9,0	62,6	63,9	12,6	11,0	83,1
	0552 SM	55,9	14,5	9,6	65,5	60,3	14,5	10,4	74,0	73,3	14,7	12,6	100,9
	0672 SM	69,0	18,0	11,9	85,1	74,3	18,2	12,8	94,6	89,9	18,8	15,5	124,2
	0812 SM	76,0	20,7	13,1	87,5	81,7	20,9	14,1	99,2	98,4	21,5	16,9	136,5
40 °C	0251 SM	23,7	6,9	4,1	54,4	25,5	6,9	4,4	61,2	31,0	7,0	5,3	82,9
	0291 SM	27,7	8,0	4,8	54,0	29,8	8,0	5,1	60,8	36,1	8,1	6,2	82,2
	0351 SM	33,6	9,9	5,8	71,0	36,1	10,0	6,2	80,1	43,6	10,2	7,5	109,4
	0431 SM	37,5	11,5	6,4	70,1	40,2	11,6	6,9	79,1	48,3	11,9	8,3	107,7
	0472 SM	47,9	13,9	8,2	54,7	51,6	14,0	8,9	61,0	62,5	14,1	10,8	80,5
	0552 SM	54,9	16,2	9,4	63,7	59,1	16,3	10,2	71,7	71,6	16,4	12,3	97,4
	0672 SM	67,9	20,0	11,7	83,2	73,1	20,2	12,6	92,3	88,1	20,8	15,2	120,7
	0812 SM	75,0	22,9	12,9	85,6	80,5	23,1	13,9	96,7	96,6	23,7	16,6	132,3
45 °C	0251 SM	23,3	7,7	4,0	53,0	25,0	7,7	4,3	59,5	30,3	7,8	5,2	80,1
	0291 SM	27,2	9,0	4,7	52,5	29,2	9,0	5,0	58,9	35,3	9,1	6,1	79,3
	0351 SM	33,0	11,0	5,7	68,9	35,4	11,1	6,1	77,7	42,7	11,3	7,3	105,7
	0431 SM	37,0	12,8	6,4	68,6	39,7	12,9	6,8	77,2	47,5	13,2	8,2	104,5
	0472 SM	47,1	15,6	8,1	53,4	50,6	15,7	8,7	59,3	61,1	15,7	10,5	77,9
	0552 SM	53,9	18,2	9,3	61,9	58,0	18,3	10,0	69,5	70,0	18,3	12,1	93,9
	0672 SM	66,7	22,3	11,5	81,1	71,7	22,5	12,3	89,9	86,3	23,0	14,8	117,1
	0812 SM	74,1	25,5	12,7	83,8	79,4	25,7	13,7	94,4	94,9	26,2	16,3	128,3
48 °C	0251 SM	23,0	8,3	4,0	52,1	24,8	8,3	4,3	58,4	29,9	8,3	5,1	78,4
	0291 SM	26,9	9,7	4,6	51,6	28,9	9,7	5,0	57,8	34,8	9,7	6,0	77,6
	0351 SM	32,6	11,7	5,6	67,7	35,0	11,8	6,0	76,2	42,1	12,0	7,2	103,4
	0431 SM	36,7	13,6	6,3	67,8	39,3	13,7	6,8	76,1	47,0	14,0	8,1	102,7
	0472 SM	46,6	16,8	8,0	52,6	50,1	16,8	8,6	58,3	60,3	16,8	10,4	76,4
	0552 SM	53,3	19,6	9,2	60,8	57,3	19,6	9,9	68,3	69,1	19,6	11,9	91,9
	0672 SM	66,0	23,8	11,4	79,8	70,9	24,0	12,2	88,4	85,1	24,5	14,6	114,9
	0812 SM	73,5	27,2	12,6	82,8	78,7	27,4	13,5	93,1	93,9	27,9	16,2	126,0

Nominal conditions	Note : the unit can not work as standard. Please consult us.
Ph Cooling capacity in kW	Wf Water flow in m³ per hour
Pe(h) Total power input in kW (compressor and fan motor)	Dp Water pressure drop in kPa
Available static pressure 0 Pa	Water ΔT 5 °C
Fouling factor 0,44 m²C/kW	

**HEATING MODE
LN & SLN VERSIONS**

**EAR
1003 ▶ 2104**

Water outlet temperature	MODELS	Air inlet temperature															
		- 10 °C				- 5 °C				0 °C				5 °C			
		Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa
35 °C	1003 SM	61,9	23,1	10,7	23,2	73,0	23,4	12,6	30,6	83,6	23,6	14,4	38,3	93,7	23,9	16,1	46,2
	1103 SM	70,2	26,7	12,1	23,9	83,0	27,1	14,3	32,3	95,1	27,6	16,4	41,4	106,7	28,0	18,3	50,9
	1203 SM	75,9	29,4	13,0	28,4	89,6	29,9	15,4	38,0	102,7	30,4	17,7	48,3	115,2	30,8	19,8	59,1
	1303 SM	84,8	33,2	14,6	35,0	99,9	33,8	17,2	46,2	114,3	34,3	19,7	58,1	128,0	34,8	22,0	70,4
	1403 SM	92,6	35,6	15,9	38,9	109,2	36,3	18,8	50,7	125,0	36,9	21,5	62,9	139,9	37,4	24,1	75,3
	1604 SM	102,1	39,3	17,6	31,4	120,6	40,0	20,8	41,7	138,1	40,7	23,8	52,6	154,6	41,4	26,6	63,7
	1804 SM	113,0	44,5	19,4	28,5	133,3	45,3	22,9	40,5	152,6	46,1	26,3	53,9	170,8	46,7	29,4	68,4
	2104 SM	132,9	53,3	22,9	40,2	156,6	54,2	26,9	56,9	179,0	55,0	30,8	75,6	200,2	55,8	34,4	95,9
40 °C	1003 SM	61,6	26,0	10,6	23,1	72,4	26,3	12,4	30,1	82,6	26,5	14,2	37,5	92,2	26,7	15,9	45,1
	1103 SM	69,8	29,8	12,0	23,6	82,2	30,2	14,1	31,8	94,0	30,7	16,2	40,5	105,1	31,1	18,1	49,5
	1203 SM	75,5	32,9	13,0	28,2	88,9	33,4	15,3	37,5	101,6	33,8	17,5	47,4	113,6	34,2	19,5	57,7
	1303 SM	84,5	37,1	14,5	34,7	99,1	37,6	17,1	45,6	113,1	38,1	19,5	57,0	126,3	38,6	21,7	68,8
	1403 SM	92,3	39,6	15,9	38,7	108,4	40,3	18,7	50,0	123,6	40,8	21,3	61,8	138,0	41,4	23,7	73,7
	1604 SM	101,6	43,8	17,5	31,1	119,7	44,6	20,6	41,1	136,6	45,2	23,5	51,6	152,6	45,9	26,2	62,3
	1804 SM	113,0	49,8	19,4	28,5	132,8	50,6	22,8	40,1	151,5	51,2	26,1	53,1	169,0	51,9	29,1	67,0
	2104 SM	132,8	59,2	22,8	40,1	155,7	60,1	26,8	56,2	177,3	60,9	30,5	74,1	197,8	61,7	34,0	93,4
45 °C	1003 SM	n/a	n/a	n/a	n/a	71,7	29,6	12,3	29,7	81,6	29,8	14,0	36,8	90,9	30,0	15,6	44,0
	1103 SM	n/a	n/a	n/a	n/a	81,4	33,7	14,0	31,2	92,8	34,2	16,0	39,5	103,5	34,6	17,8	48,2
	1203 SM	n/a	n/a	n/a	n/a	88,2	37,3	15,2	37,0	100,5	37,7	17,3	46,5	112,2	38,2	19,3	56,4
	1303 SM	n/a	n/a	n/a	n/a	98,3	42,0	16,9	44,9	111,8	42,4	19,2	55,9	124,6	42,9	21,4	67,2
	1403 SM	n/a	n/a	n/a	n/a	107,7	44,8	18,5	49,5	122,4	45,4	21,1	60,8	136,3	45,9	23,4	72,2
	1604 SM	n/a	n/a	n/a	n/a	118,6	49,7	20,4	40,5	135,1	50,3	23,3	50,6	150,6	50,9	25,9	60,9
	1804 SM	n/a	n/a	n/a	n/a	132,4	56,6	22,8	39,9	150,6	57,2	25,9	52,4	167,6	57,8	28,8	65,8
	2104 SM	n/a	n/a	n/a	n/a	154,8	66,8	26,6	55,6	175,8	67,6	30,2	72,8	195,5	68,3	33,6	91,1
48 °C	1003 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	81,0	32,0	13,9	36,3	90,1	32,2	15,5	43,4
	1103 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	92,1	36,4	15,8	39,0	102,6	36,9	17,6	47,4
	1203 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	99,9	40,3	17,2	46,0	111,3	40,7	19,2	55,6
	1303 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	111,0	45,3	19,1	55,3	123,5	45,8	21,3	66,3
	1403 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	121,7	48,3	20,9	60,2	135,2	48,8	23,3	71,4
	1604 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	134,2	53,7	23,1	50,1	149,4	54,3	25,7	60,1
	1804 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	150,1	61,2	25,8	52,1	166,8	61,8	28,7	65,1
	2104 SM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	174,9	72,0	30,1	72,0	194,1	72,8	33,4	89,8

Nominal conditions	Note : the unit can not work as standard. Please consult us.
Ph Cooling capacity in kW	Wf Water flow in m³ per hour
Pe(h) Total power input in kW (compressor and fan motor)	Dp Water pressure drop in kPa
Available static pressure 0 Pa	Water ΔT 5 °C
Fouling factor 0,44 m²C/kW	

**HEATING MODE
LN & SLN VERSIONS**

**EAR
1003 ▶ 2104**

Water outlet temperature	MODELS	Air inlet temperature											
		7 °C				11 °C				23 °C			
		Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa	Ph kW	Pe(h) kW	Wf m³/h	Dp kPa
35 °C	1003 SM	97,5	24,0	16,8	49,5	105,0	24,1	18,1	55,9	127,0	24,5	21,8	76,6
	1103 SM	111,1	28,2	19,1	54,7	119,6	28,5	20,6	62,6	144,7	29,4	24,9	88,3
	1203 SM	120,0	31,0	20,6	63,5	129,3	31,3	22,2	72,3	156,5	32,3	26,9	101,0
	1303 SM	133,3	35,0	22,9	75,5	143,5	35,4	24,7	85,5	173,5	36,5	29,8	118,1
	1403 SM	145,6	37,6	25,1	80,3	156,7	38,0	27,0	90,4	189,1	39,1	32,5	122,2
	1604 SM	160,8	41,6	27,7	68,2	172,9	42,1	29,7	77,1	207,9	43,4	35,8	105,7
	1804 SM	177,7	46,9	30,6	74,5	191,1	47,4	32,9	86,9	230,1	48,6	39,6	128,8
	2104 SM	208,3	56,1	35,8	104,3	224,0	56,7	38,5	121,7	269,9	58,3	46,4	180,6
40 °C	1003 SM	96,0	26,8	16,5	48,1	103,2	27,0	17,7	54,3	124,2	27,3	21,4	73,9
	1103 SM	109,4	31,3	18,8	53,2	117,6	31,6	20,2	60,7	141,8	32,5	24,4	85,1
	1203 SM	118,3	34,4	20,3	61,9	127,2	34,7	21,9	70,3	153,4	35,7	26,4	97,6
	1303 SM	131,4	38,8	22,6	73,6	141,2	39,1	24,3	83,2	170,1	40,2	29,3	114,2
	1403 SM	143,6	41,6	24,7	78,5	154,2	41,9	26,5	88,1	185,4	43,0	31,9	118,4
	1604 SM	158,6	46,1	27,3	66,6	170,3	46,5	29,3	75,2	204,2	47,8	35,1	102,5
	1804 SM	175,8	52,1	30,2	72,8	188,7	52,5	32,5	84,6	226,3	53,6	38,9	124,4
	2104 SM	205,6	62,0	35,4	101,5	220,7	62,5	38,0	117,9	264,8	64,0	45,6	173,5
45 °C	1003 SM	94,5	30,1	16,3	46,9	101,4	30,2	17,4	52,7	121,5	30,5	20,9	71,3
	1103 SM	108	34,7	18,5	51,7	115,6	35,1	19,9	58,9	138,9	36,0	23,9	82,0
	1203 SM	117	38,3	20,1	60,4	125,2	38,6	21,5	68,4	150,5	39,6	25,9	94,3
	1303 SM	129	43,1	22,3	71,8	139,0	43,4	23,9	81,0	166,7	44,5	28,7	110,3
	1403 SM	143	46,1	24,6	78,0	151,8	46,4	26,1	85,9	181,8	47,5	31,3	114,7
	1604 SM	156	51,2	26,9	65,0	167,7	51,6	28,9	73,2	200,4	52,8	34,5	99,3
	1804 SM	174	58,0	29,9	71,3	186,5	58,4	32,1	82,5	222,8	59,5	38,3	120,3
	2104 SM	203	68,6	34,9	99	217,5	69,1	37,4	114,3	259,8	70,6	44,7	166,5
48 °C	1003 SM	93,6	32,2	16,1	46,2	100,3	32,4	17,3	51,8	119,9	32,6	20,6	69,7
	1103 SM	106,6	37,0	18,3	50,8	114,4	37,3	19,7	57,7	137,1	38,3	23,6	80,1
	1203 SM	115,7	40,9	19,9	59,5	124,1	41,2	21,4	67,3	148,7	42,1	25,6	92,5
	1303 SM	128,3	45,9	22,1	70,7	137,6	46,3	23,7	79,6	164,7	47,3	28,3	108,0
	1403 SM	140,4	49,0	24,2	75,8	150,4	49,4	25,9	84,7	179,6	50,4	30,9	112,5
	1604 SM	155,1	54,5	26,7	64,1	166,1	54,9	28,6	72,1	198,1	56,1	34,1	97,3
	1804 SM	173,2	62,0	29,8	70,5	185,3	62,4	31,9	81,4	220,8	63,4	38,0	118,0
	2104 SM	201,5	73,0	34,7	97,2	215,6	73,5	37,1	112,2	256,8	74,9	44,2	162,5

Nominal conditions	Note : the unit can not work as standard. Please consult us.
Ph Cooling capacity in kW	Wf Water flow in m³ per hour
Pe(h) Total power input in kW (compressor and fan motor)	Dp Water pressure drop in kPa
Available static pressure 0 Pa	
Fouling factor 0,44 m²C/kW	Water ΔT 5 °C

UNITS WITH AIR DUCT

To find out the performances for units installed with air ducts, apply the following coefficients for capacity and consumption, over the performance tables of standard fan units without ducts (see pages 30 to 41):

EAC / EAR
0251 ▶ 0812

STANDARD VERSION (SM) COEFFICIENTS

		Capacity	Absorbed power
COOLING	25 Pa	0,992	1,017
	50 Pa	0,981	1,037
	75 Pa	0,969	1,063
HEATING	25 Pa	0,995	1,004
	50 Pa	0,988	1,007
	75 Pa	0,979	1,009

FAN PRESSURE VERSION (FM) COEFFICIENTS

COOLING MODE		Capacity	Power absorbed
LN (1)	76 Pa	0,984	1,123
	100 Pa	0,957	1,167
	125 Pa	0,939	1,196
STD	76 Pa	1,027	1,153
	100 Pa	1,018	1,169
	126 Pa	1,013	1,180
	150 Pa	1,010	1,185
	200 Pa	0,990	1,220
	250 Pa	0,980	1,236

(1) With "QUIET ++" only

HEATING MODE		Capacity	Power absorbed
LN (1)	76 Pa	0,990	1,098
	100 Pa	0,973	1,098
	125 Pa	0,962	1,098
STD	76 Pa	1,019	1,197
	100 Pa	1,013	1,201
	126 Pa	1,009	1,203
	150 Pa	1,007	1,204
	200 Pa	0,993	1,205
	250 Pa	0,987	1,205

(1) With "QUIET ++" only

UNITS WITH AIR DUCT

To find out the performances for units installed with air ducts, apply the following coefficients for capacity and consumption, over the performance tables of standard fan units without ducts (see pages 30 to 41):

EAC / EAR
1003 ▶ 2104

STANDARD VERSION (SM) COEFFICIENTS

		Capacity	Absorbed power
COOLING	25 Pa	0,995	1,009
	50 Pa	0,985	1,026
	75 Pa	0,966	1,055
HEATING	25 Pa	0,996	1,002
	50 Pa	0,989	1,003
	75 Pa	0,977	1,004

FAN PRESSURE VERSION (FM) COEFFICIENTS

COOLING MODE		1303-1403-1604-2104 FM	1003-1804 FM	1103-1203 FM	1303-1403-1604-2104 FM	1003-1804 FM	1103-1203 FM
		Capacity			Power absorbed		
LN & SLN (1)	76 Pa	0,978	1,009	0,994	1,075	1,044	1,060
	100 Pa	0,963	0,994	0,979	1,101	1,070	1,085
	125 Pa	0,948	0,979	0,963	1,127	1,096	1,111
STD	76 Pa	1,007	1,027	1,017	1,160	1,150	1,155
	100 Pa	1,004	1,024	1,014	1,165	1,155	1,160
	125 Pa	1,000	1,020	1,010	1,151	1,141	1,146
	76 Pa	0,995	1,015	1,005	1,159	1,149	1,154
	100 Pa	0,979	1,000	0,990	1,184	1,174	1,179
125 Pa	0,953	0,973	0,963	1,225	1,215	1,220	

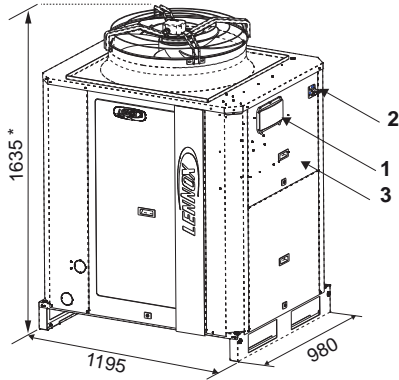
(1) With "QUIET ++" only

HEATING MODE		1303-1403-1604-2104 FM	1003-1804 FM	1103-1203 FM	1303-1403-1604-2104 FM	1003-1804 FM	1103-1203 FM
		Capacity			Power absorbed		
LN & SLN (1)	76 Pa	0,985	1,008	0,997	1,044	1,006	1,025
	100 Pa	0,975	0,998	0,987	1,046	1,008	1,027
	125 Pa	0,965	0,988	0,977	1,048	1,010	1,029
STD	76 Pa	1,005	1,025	1,015	1,173	1,200	1,187
	100 Pa	1,003	1,023	1,013	1,174	1,201	1,188
	125 Pa	1,000	1,020	1,010	1,153	1,179	1,166
	76 Pa	0,996	1,016	1,006	1,154	1,180	1,167
	100 Pa	0,985	1,005	0,995	1,155	1,182	1,168
125 Pa	0,967	0,987	0,977	1,156	1,183	1,169	

(1) With "QUIET ++" only

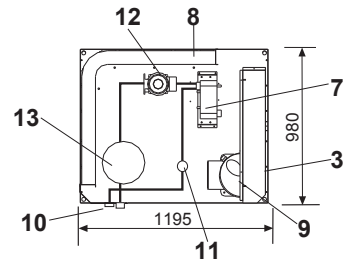
STANDARD AND HIGH STATIC PRESSURE UNITS

1 EAC/EAR 0251-0291-0351-0431

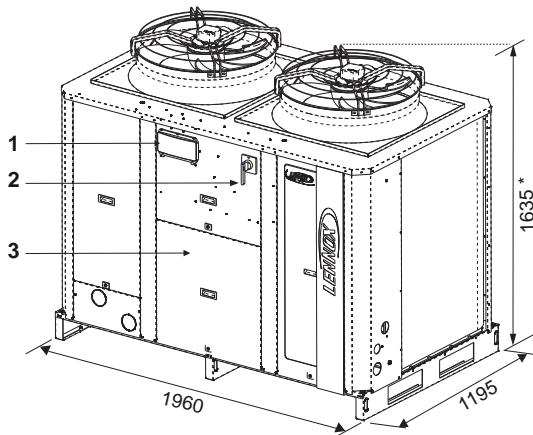


* Size 0251 = Height 1616 mm

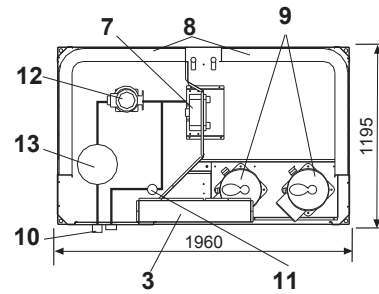
1 COMPONENT POSITION



2 EAC/EAR 0472-0552-0672-0812



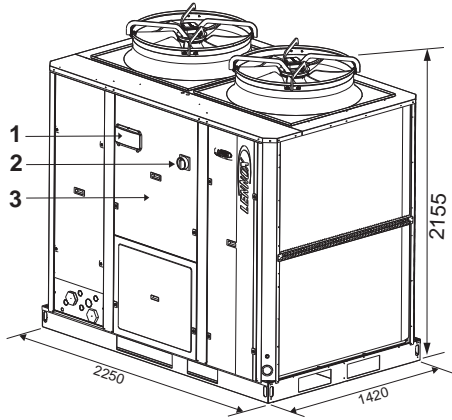
* Size 0472 = Height 1616 mm



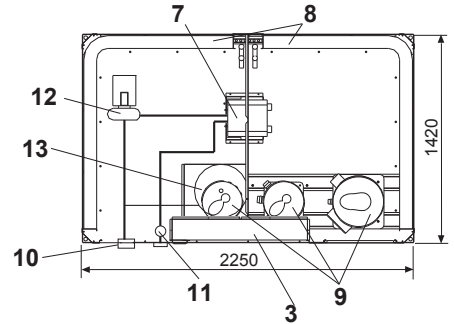
1	Display control	8	Coils
2	Main switch (option)	9	Compressors
3	Electrical box	10	Water filter
4	Water inlet	11	Flow switch
5	Water outlet	12	Water pump
6	Power supply cable entry	13	Expansion vessel
7	Water exchanger		

STANDARD UNITS

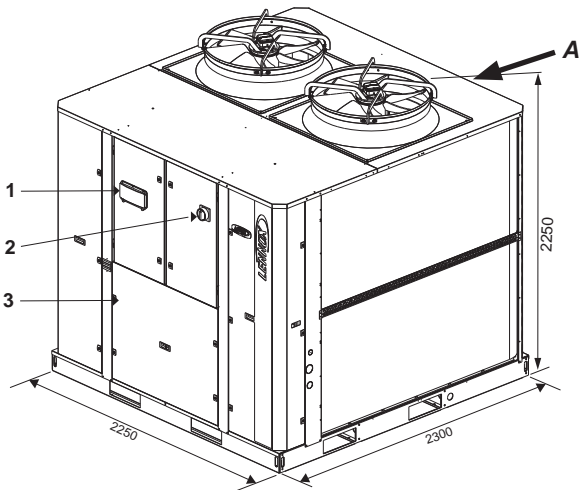
1 EAC/EAR 1003SM-1103SM-1203SM-1303SM-1403SM



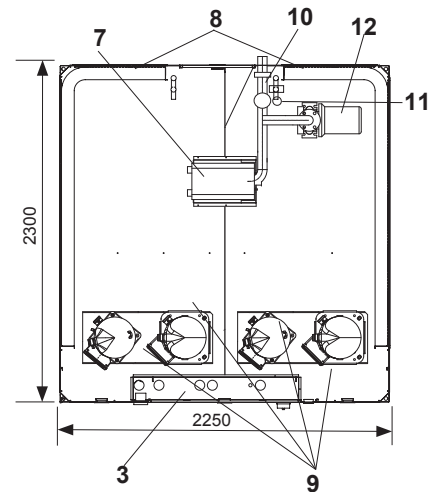
1 COMPONENT POSITION



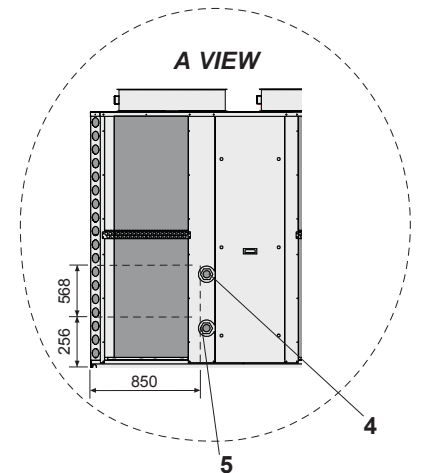
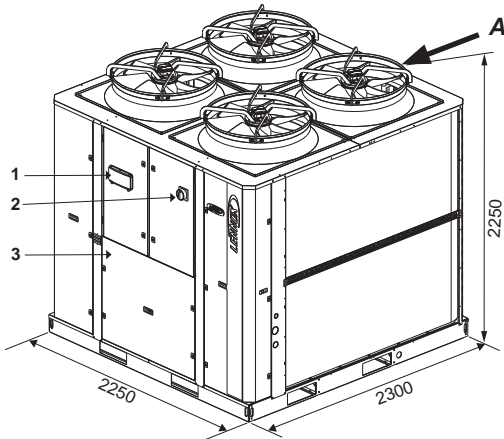
2 EAC/EAR 1604SM



2/3 COMPONENT POSITION



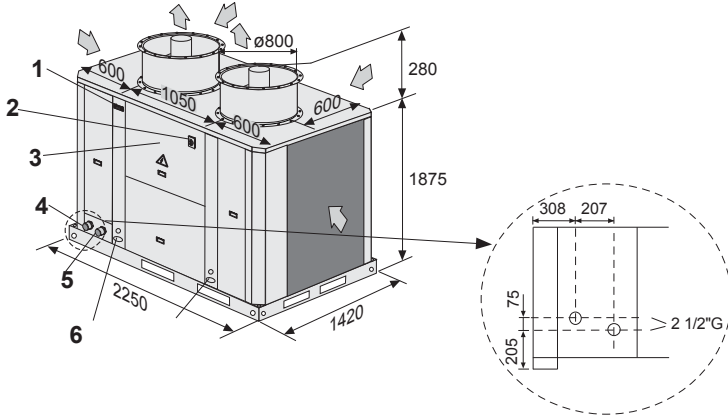
3 EAC/EAR 1804SM-2104SM



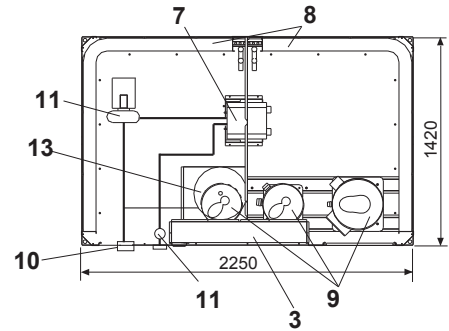
1	Display control	8	Coils
2	Main switch (option)	9	Compressors
3	Electrical box	10	Water filter
4	Water inlet	11	Flow switch
5	Water outlet	12	Water pump
6	Power supply cable entry	13	Expansion vessel
7	Water exchanger		

HIGH STATIC PRESSURE UNITS

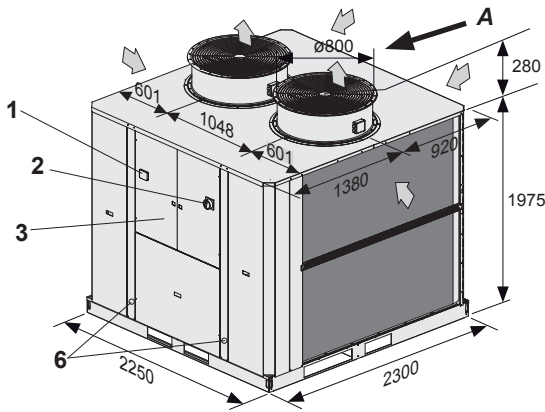
1 EAC/EAR 1003 FM-1103 FM-1203 FM-1303 FM-1403 FM



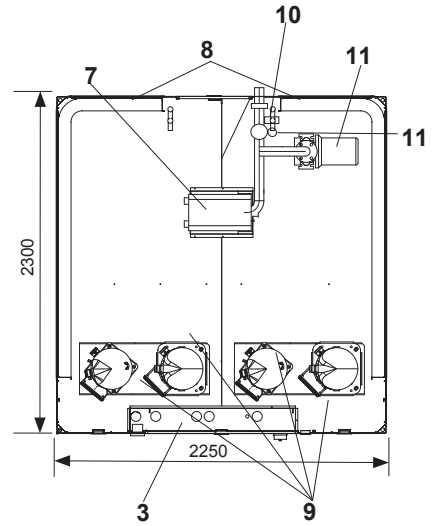
1 COMPONENT POSITION



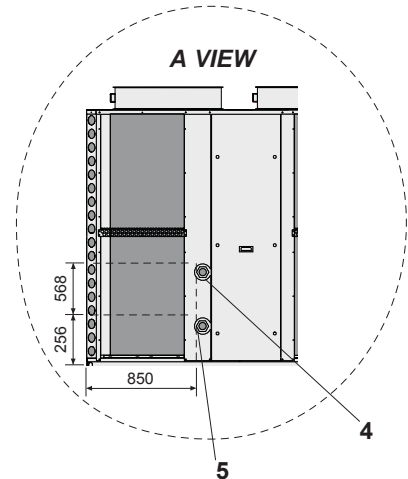
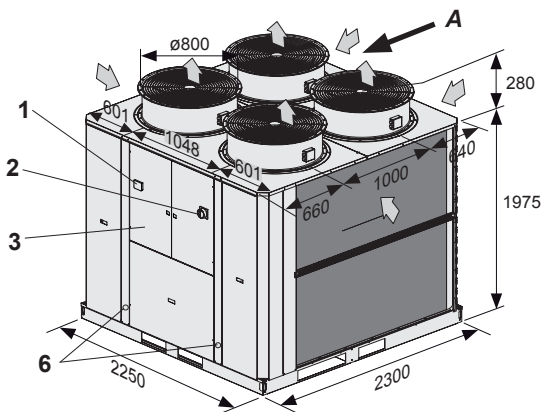
2 EAC/EAR 1604 FM



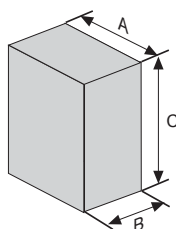
2/3 COMPONENT POSITION



3 EAC/EAR 1804 FM-2104 FM



1	Display control	8	Coils
2	Main switch (option)	9	Compressors
3	Electrical box	10	Water filter
4	Water inlet	11	Flow switch
5	Water outlet	12	Water pump
6	Power supply cable entry	13	Expansion vessel
7	Water exchanger		



STANDARD FAN UNITS

MODELS EAC / EAR		0251 SM	0291 SM	0351 SM	0431 SM	0472 SM	0552 SM	0672 SM	0812 SM
A Width	mm	1195	1195	1195	1195	1960	1960	1960	1960
B Depth	mm	980	980	980	980	1195	1195	1195	1195
C Height	mm	1616	1635	1635	1635	1616	1635	1635	1635
Operating weight (*) Kg	EAC	238	246	263	292	470	482	518	562
	EAR	243	251	271	300	480	492	534	578

MODELS EAC / EAR		1003 SM	1103 SM	1203 SM	1303 SM	1403 SM	1604 SM	1804 SM	2104 SM
A Width	mm	2250	2250	2250	2250	2250	2250	2250	2250
B Depth	mm	1420	1420	1420	1420	1420	2300	2300	2300
C Height	mm	2155	2155	2155	2155	2155	2250	2250	2250
Operating weight (*) Kg	EAC	640	809	938	990	1019	1328	1683	1703
	EAR	663	831	964	1016	1045	1347	1703	1723

(*) Hydronic or Hydraulic version not included (see page 15).

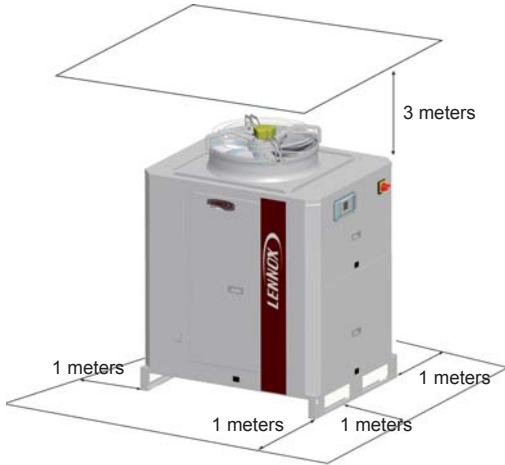
HIGH STATIC FAN PRESSURE UNITS

MODELS EAC / EAR		0251 FM	0291 FM	0351 FM	0431 FM	0472 FM	0552 FM	0672 FM	0812 FM
A Width	mm	1195	1195	1195	1195	1960	1960	1960	1960
B Depth	mm	980	980	980	980	1195	1195	1195	1195
C Height	mm	1616	1635	1635	1635	1616	1635	1635	1635
Operating weight (*) Kg	EAC	253	261	278	298	500	512	548	592
	EAR	258	266	286	305	510	522	564	608

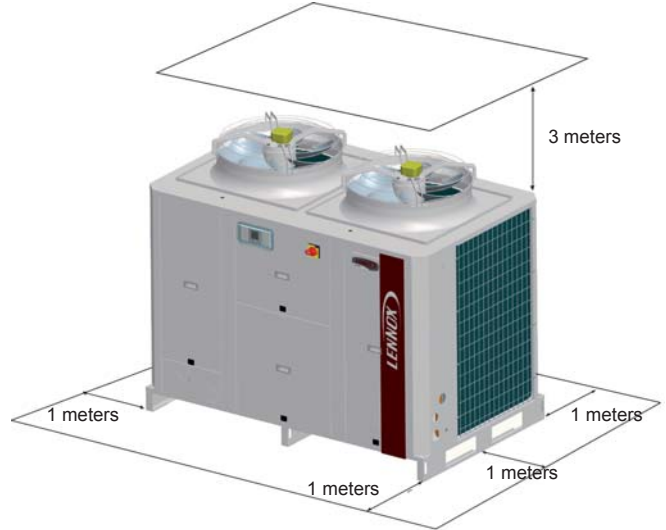
MODELS EAC / EAR		1003 FM	1103 FM	1203 FM	1303 FM	1403 FM	1604 FM	1804 FM	2104 FM
A A - Width	mm	2250	2250	2250	2250	2250	2250	2250	2250
B B - Depth	mm	1420	1420	1420	1420	1420	2300	2300	2300
C C - Height	mm	2155	2155	2155	2155	2155	2255	2255	2255
Operating weight (*) Kg	EAC	680	849	978	1030	1059	1368	1763	1783
	EAR	703	871	1004	1056	1085	1387	1783	1803

(*) Hydronic or Hydraulic version not included (see page 15).

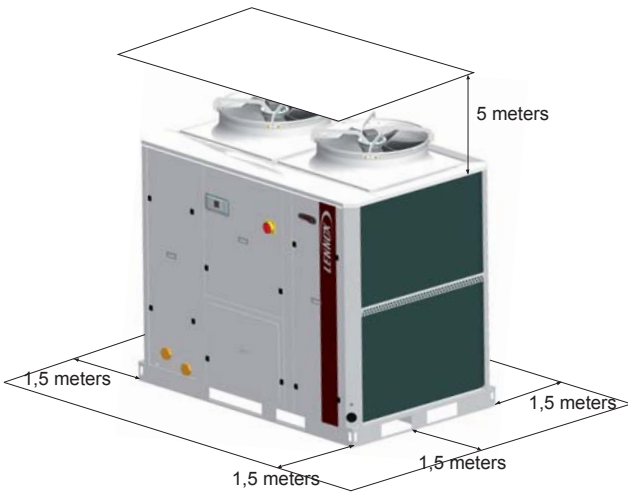
EAC/EAR
0251-0291-0351-0431



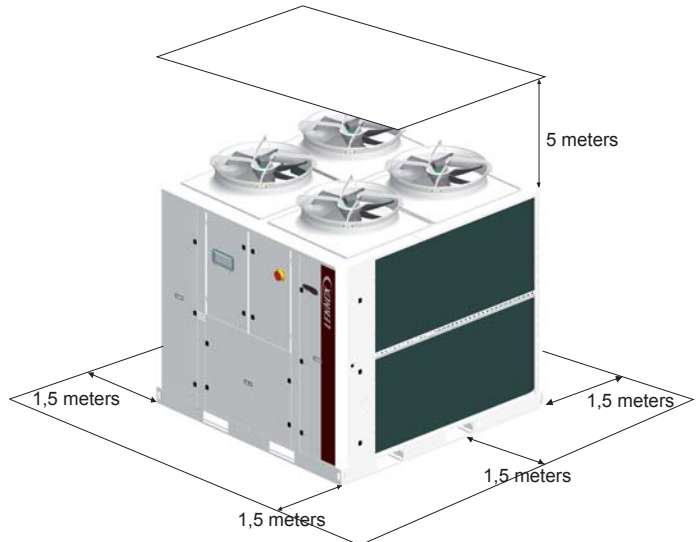
EAC/EAR
0472-0552-0672-0812



EAC/EAR
1003-1103-1203-1303-1403



EAC/EAR
1604-1804-2104



(*) Keep this space free around the unit for installation, for all unit versions



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