

# APPLICATION GUIDE



## **ECOLEAN** **EAC - EAR**

**AIR COOLED CHILLER & HEAT PUMP**

**40 - 200 kW**

**eCOMFORT-AGU-1806-E**



[www.lennoxemea.com](http://www.lennoxemea.com)



LENNOX participates in the ECP programme for LCP-HP.  
Check ongoing validity of certificate :  
[www.eurovent-certification.com](http://www.eurovent-certification.com)



# ECOLEAN

## APPLICATION GUIDE

Ref : ECOLEAN-AGU-1806-E

### 1. GENERAL

Model number description	2
Range introduction	3
Technical description	4
Options and accessories	6

### 2. GENERAL DATA

General data	8
Water pressure drops	16
Hydraulic equipment	17
Acoustic data	26
Operating limits	28

### 3. ELECTRICAL DATA

Electrical tables	31
-------------------	----

### 4. PERFORMANCES

Cooling mode	32
Heating mode	36
Units with air ducts	39

### 5. DIMENSIONAL DATA

Dimensional data	41
Weight data	43
Service areas	44



Our company's products comply with European standards.

[www.eurovent-certification.com](http://www.eurovent-certification.com)  
[www.certiflash.com](http://www.certiflash.com)



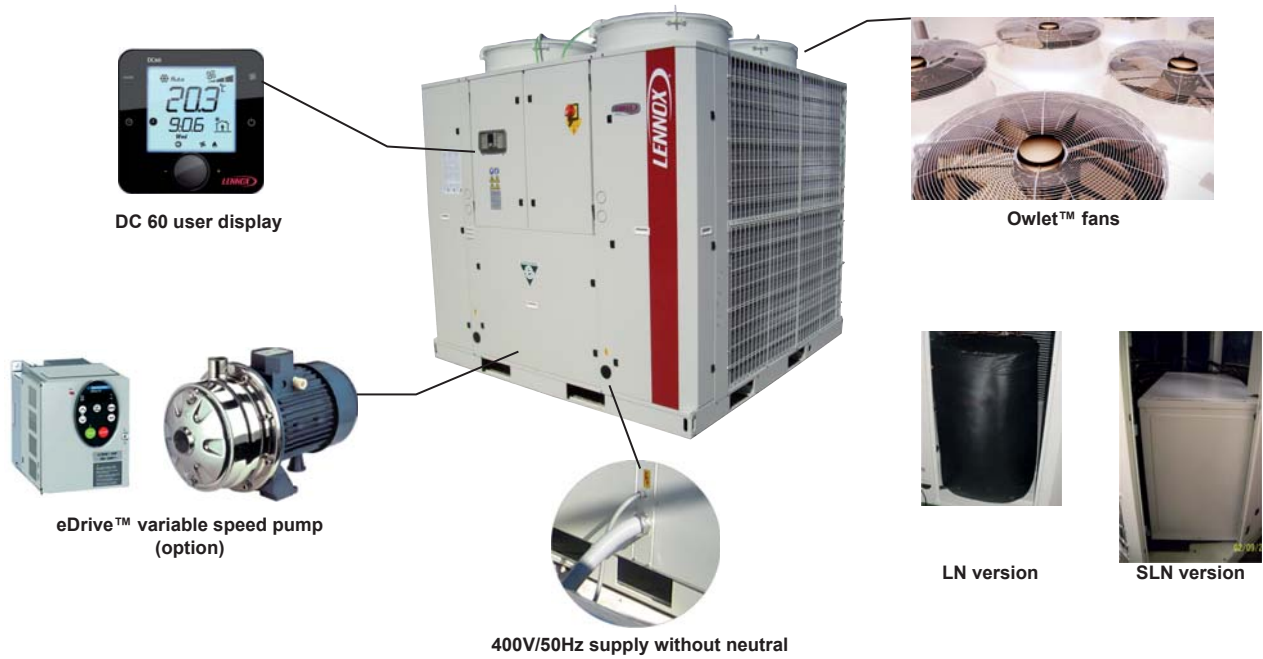
The manufacturing of ECOLEAN range answers to ISO 9001 and ISO 14001 control quality systems.

All the technical and technological information contained in this manual, including any drawing and technical descriptions provided by us, remain the property of Lennox and must not be utilised (except in the operation of this product), reproduced, issued to or made available to third parties without the prior written agreement of Lennox.

The specifications and technical characteristics in this booklet are given for information purposes. The manufacturer reserves the right to modify them without prior notice or obligation to modify in a similar manner, the equipments previously supplied.

**EXAMPLE : EAC 100 3 SM4 HN LN**

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

- 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, automatic).
- 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
<b>Coil treatment options</b>		
Epoxy coated aluminium fins coils treated	Special protection of the aluminium condenser coil fins against aggressive external environmental conditions.	All
<b>Electric options</b>		
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
<b>Refrigerant circuit option</b>		
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
<b>Hydraulic options</b>		
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
<b>Control options</b>		
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
<b>Other Options</b>		
Compressor acoustic jacket	Each compressor is fitted with a high performance acoustic jacket	For STD version only Included in LN version.
Anti-vibration 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. Easier maintenance. Warning: High cube container needed on D & E box.	All



**eDrive™ variable speed pump (option)**





**STANDARD VERSION**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>0472SM</b>	<b>0552SM</b>	<b>0672SM</b>	<b>0812SM</b>
<b>Cooling only</b>						
Cooling capacity <sup>(1)</sup>		kW	44,1	50,7	63,4	75,4
Total absorbed power <sup>(1)</sup>		kW	15,2	18,2	22,4	26,7
EER <sup>(1)</sup>			2,9	2,8	2,8	2,8
ESEER <sup>(2)</sup>			3,91	3,87	3,86	3,96
<b>Comfort applications</b>	Seasonal Energy Efficiency Ratio <sup>(3)</sup> <b>SEER</b>	<b>EAC</b>	3,88	3,84	3,85	3,83
		<b>EAR</b>	3,86	3,83	3,84	3,83
	Seasonal energy efficiency <sup>(4)</sup> <b>η<sub>s,c</sub></b>	<b>EAC</b>	152%	151%	151%	150%
		<b>EAR</b>	151%	150%	151%	150%
<b>Process applications</b>	Seasonal Energy Performance Ratio <sup>(5)</sup> <b>SEPR - High temperature (7°C)</b>	<b>EAC</b>	5,25	5,18	4,97	4,97
		<b>EAR</b>	5,40	5,32	5,03	4,95
	Seasonal Energy Performance Ratio <sup>(6)</sup> <b>SEPR - Medium temperature (-8°C)</b>	<b>EAC</b>	3,32	3,44	3,36	3,37
		<b>EAR</b>	3,70	3,93	3,71	3,65
<b>Heating mode (EAR only)</b>						
Heating capacity <sup>(1)</sup>		kW	47,8	54,7	68,0	75,7
Absorbed power <sup>(1)</sup>		kW	15,9	18,6	22,7	25,9
COP <sup>(1)</sup>			3,0	2,9	3,0	2,9
<b>Comfort applications</b>	Seasonal energy efficiency <sup>(7)</sup> <b>SCOP</b>		3,23			
	Seasonal energy efficiency <sup>(8)</sup> <b>η<sub>s,h</sub></b>		126%			
	Seasonal energy efficiency class <sup>(9)</sup>		<b>A+</b>			
<b>Refrigeration circuit</b>						
Number of circuits			1			
Total refrigerant load <b>EAC/EAR</b>		kg	11/12,5	12,2/13,5	15,5/16,0	19,5/19,3
<b>Compressors</b>						
Number of compressors			1			
Type			Scroll			
Capacity steps		%	0-55-100			
Crankcase heater per compressor		W	2 x 90			
Oil load per compressor		l	2 x 3,25			

(1) EUROVENT certified data, in accordance with standard EN 14511 :

**Cooling mode :**

Evaporator water temperature = 12/7°C  
Outdoor air temperature = 35°C

**Heating mode :**

Condenser water temperature = 40/45°C  
Outdoor air temperature = 7°C

(2) ESEER following Eurovent calculation method, in accordance with standard EN 14511

(3) SEER in accordance with standard EN 14825.

(4) Following ecodesign regulation EU **2016/2281** on space cooling, normalized leaving water temperature at 7°C, in accordance with standard EN 14825.

(5) Following ecodesign regulation EU **2016/2281** on process cooling units, normalized leaving water temperature at 7°C, in accordance with standard EN 14825.

(6) Following ecodesign regulation EU **2015/1095** on process cooling chillers, normalized leaving water temperature at -8°C, in accordance with standard EN 14825

(7) SCOP in accordance with standard EN 14825. Heating mode performance is defined for average climate conditions.

(8) Following ecodesign regulation EU **813/2013** on space heaters, normalized leaving water temperature at 7°C, in accordance with standard EN 14825, average climate conditions.

(9) Following energy labelling regulation EU **811/2013** on space heaters.

**STANDARD VERSION**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>0472SM</b>	<b>0552SM</b>	<b>0672SM</b>	<b>0812SM</b>
<b>Condenser fan (helicoïdal)</b>						
Number		2				
Nominal airflow rate <sup>(1)</sup>	m <sup>3</sup> /h	STD	9950 + 9950	12900 + 12900	12500 + 12500	12250 + 12250
		LN <sup>(4)</sup>	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 <sup>(4)</sup>	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 <sup>(4)</sup>	786/786	773/773	768/768	762/762
<b>Evaporator</b>						
Type of evaporator		AISI 316 stainless steel plate brazed with copper heat exchanger				
Number of evaporators		1				
Nominal water flow rate	m <sup>3</sup> /h	7,6	8,7	10,9	13,0	
Pressure drop without water filter	kPa	30	34	45	47	
Pressure drop with water filter		49	56	75	87	
<b>Hydraulic connection</b>						
Type		Threaded-Female				
Diameter		2" G				
<b>Electrical data</b>						
Power supply		400V/3/50Hz				
Starting current	A	117,9	125,8	163,4	182,4	
Maximum current		43,4	46,2	53,4	64,2	

**Acoustic data**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>0472SM</b>	<b>0552SM</b>	<b>0672SM</b>	<b>0812SM</b>
<b>Acoustic</b>						
Global sound power level <sup>(3)</sup>	dB(A)	LN <sup>(4)</sup>	74	73	74	75
		STD	79	79	80	81

**Dimensions**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>0472SM</b>	<b>0552SM</b>	<b>0672SM</b>	<b>0812SM</b>
<b>Dimensions</b>						
Length	mm	1960	1960	1960	1960	
Width		1195	1195	1195	1195	
Height		1616	1635	1635	1635	
Operating weight <b>EAC / EAR</b>	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

(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 17.

**STANDARD VERSION**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>1003SM</b>	<b>1103SM</b>	<b>1203SM</b>	<b>1303SM</b>
<b>Cooling only</b>						
Cooling capacity <sup>(1)</sup>		kW	88,2	102	112	126
Total absorbed power <sup>(1)</sup>		kW	31,2	35,3	40,1	43,9
EER <sup>(1)</sup>			2,83	2,9	2,79	2,86
ESEER <sup>(2)</sup>			4,19	3,97	3,83	3,87
<b>Comfort applications</b>	Seasonal Energy Efficiency Ratio <sup>(3)</sup> <b>SEER</b>	<b>EAC</b>	3,92	3,85	3,82	3,80
		<b>EAR</b>	3,91	3,84	3,82	3,80
	Seasonal energy efficiency <sup>(4)</sup> <b>η<sub>s,c</sub></b>	<b>EAC</b>	154%	151%	150%	149%
		<b>EAR</b>	154%	151%	150%	149%
<b>Process applications</b>	Seasonal Energy Performance Ratio <sup>(5)</sup> <b>SEPR - High temperature (7°C)</b>	<b>EAC</b>	5,33	5,03	4,83	4,82
		<b>EAR</b>	5,29	5,05	4,83	4,82
	Seasonal Energy Performance Ratio <sup>(6)</sup> <b>SEPR - Medium temperature (-8°C)</b>	<b>EAC</b>	3,63	3,45	3,33	3,58
		<b>EAR</b>	3,66	3,46	3,33	3,58
<b>Heating mode (EAR only)</b>						
Heating capacity <sup>(1)</sup>		kW	95,0	108	118	130,4
Absorbed power <sup>(1)</sup>		kW	31,2	36	39,3	44,5
COP <sup>(1)</sup>			3,05	3,00	3,00	2,92
<b>Comfort applications</b>	Seasonal energy efficiency <sup>(7)</sup> <b>SCOP</b>		3,23			
	Seasonal energy efficiency <sup>(8)</sup> <b>η<sub>s,h</sub></b>		126%			
	Seasonal energy efficiency class <sup>(9)</sup>		<b>A+</b>			
<b>Refrigeration circuit</b>						
Number of circuits			1			
Total refrigerant load <b>EAC/EAR</b>		kg	23,5/23,3	26/28	27/29,5	30/32,2
<b>Compressors</b>						
Number of compressors			2			
Type		A	Scroll			
Capacity steps		%	0 - 30 - 75 - 100			
Crankcase heater per compressor		W	3 x 90	3 x 90	2 x 90 + 120	2 x 90 + 150
Oil load 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

(1) EUROVENT certified data, in accordance with standard EN 14511 :

**Cooling mode :**

Evaporator water temperature = 12/7°C  
Outdoor air temperature = 35°C

**Heating mode :**

Condenser water temperature = 40/45°C  
Outdoor air temperature = 7°C

(2) ESEER following Eurovent calculation method, in accordance with standard EN 14511

(3) SEER in accordance with standard EN 14825.

(4) Following ecodesign regulation EU **2016/2281** on space cooling, normalized leaving water temperature at 7°C, in accordance with standard EN 14825.

(5) Following ecodesign regulation EU **2016/2281** on process cooling units, normalized leaving water temperature at 7°C, in accordance with standard EN 14825.

(6) Following ecodesign regulation EU **2015/1095** on process cooling chillers, normalized leaving water temperature at -8°C, in accordance with standard EN 14825

(7) SCOP in accordance with standard EN 14825. Heating mode performance is defined for average climate conditions.

(8) Following ecodesign regulation EU **813/2013** on space heaters, normalized leaving water temperature at 35°C, in accordance with standard EN 14825, average climate conditions.

(9) Following energy labelling regulation EU **811/2013** on space heaters.

**STANDARD VERSION**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>1003SM</b>	<b>1103SM</b>	<b>1203SM</b>	<b>1303SM</b>
<b>Condenser fan (helicoïdal)</b>						
Number		2				
Nominal airflow rate <sup>(1)</sup>	m <sup>3</sup> /h	STD	17000+17000	22500+17000	22500+17000	22500+22500
		LN <sup>(4)</sup>	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 <sup>(4)</sup>	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 <sup>(4)</sup>	545/545	730/545	730/545	730/730
<b>Evaporator</b>						
Type of evaporator		AISI 316 stainless steel plate brazed with copper heat exchanger				
Number of evaporators		1				
Nominal water flow rate	m <sup>3</sup> /h	15,2	17,6	19,2	21,6	
Pressure drop without water filter	kPa	32	31	36	43	
Pressure drop with water filter		40	44	51	64	
<b>Hydraulic connection</b>						
Type		Threaded-Female				
Diameter		2" G				
<b>Electrical data</b>						
Power supply		400V/3/50Hz				
Starting current	A	196,7	205,5	248,9	290,4	
Maximum current		79,8	88,6	97,6	107,7	

**Acoustic data**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>1003SM</b>	<b>1103SM</b>	<b>1203SM</b>	<b>1303SM</b>
<b>Acoustic</b>						
Sound power level <sup>(3)</sup>	dB(A)	SLN <sup>(4)</sup>	72/40	75/43	76/44	78/46
		LN <sup>(4)</sup>	75/43	76/44	79/47	81/49
		STD	80/48	82/50	85/53	87/55

**Dimensions**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>1003SM</b>	<b>1103SM</b>	<b>1203SM</b>	<b>1303SM</b>
<b>Dimensions</b>						
Width	mm	2250	2250	2250	2250	
Depth		1420	1420	1420	1420	
Height		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

(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 17.

**STANDARD VERSION**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>1403SM</b>	<b>1604SM</b>	<b>1804SM</b>	<b>2104SM</b>
<b>Cooling only</b>						
Cooling capacity <sup>(1)</sup>		kW	139	149	174	199
Total absorbed power <sup>(1)</sup>		kW	48,3	54,1	60	71
EER <sup>(1)</sup>			2,87	2,76	2,9	2,8
ESEER <sup>(2)</sup>			3,98	4,02	4,06	3,76
<b>Comfort applications</b>	Seasonal Energy Efficiency Ratio <sup>(3)</sup> <b>SEER</b>	<b>EAC</b>	3,89	3,92	3,89	3,81
		<b>EAR</b>	3,86	3,89	3,92	3,80
	Seasonal energy efficiency <sup>(4)</sup> <b>η<sub>s,c</sub></b>	<b>EAC</b>	153%	154%	153%	149%
		<b>EAR</b>	151%	153%	154%	149%
<b>Process applications</b>	Seasonal Energy Performance Ratio <sup>(5)</sup> <b>SEPR - High temperature (7°C)</b>	<b>EAC</b>	4,95	4,90	5,23	4,80
		<b>EAR</b>	4,92	4,81	4,89	4,70
	Seasonal Energy Performance Ratio <sup>(6)</sup> <b>SEPR - Medium temperature (-8°C)</b>	<b>EAC</b>	3,65	3,63	3,69	3,66
		<b>EAR</b>	3,41	3,37	3,43	3,17
<b>Heating mode (EAR only)</b>						
Heating capacity <sup>(1)</sup>		kW	143	159	180	205
Absorbed power <sup>(1)</sup>		kW	48,2	53	61	71,9
COP <sup>(1)</sup>			2,97	3,00	2,95	2,85
<b>Comfort applications</b>	Seasonal energy efficiency <sup>(7)</sup> <b>SCOP</b>		3,23			
	Seasonal energy efficiency <sup>(8)</sup> <b>η<sub>s,h</sub></b>		126%			
	Seasonal energy efficiency class <sup>(9)</sup>		<b>A+</b>			
<b>Refrigeration circuit</b>						
Number of circuits			2			
Total refrigerant load <b>EAC/EAR</b>		kg	33,7/35,5	36,2/40	45/52	47/54
<b>Compressors</b>						
Number of compressors			2			
Type		A	Scroll			
Capacity steps		%	0 - 30 - 75 - 100	0 - 30 - 60 - 80 - 100		
Crankcase heater per compressor		W	2x90 + 150	4 x 90	2x90 + 2x120	2x90 + 2x150
Oil load per compressor		l	2x3,3 + 6,8	2x3,25 + 2x3,25	2x7,95 + 2x7,95	2x10,5 + 2x10,5

(1) EUROVENT certified data, in accordance with standard EN 14511 :

**Cooling mode :**

Evaporator water temperature = 12/7°C  
Outdoor air temperature = 35°C

**Heating mode :**

Condenser water temperature = 40/45°C  
Outdoor air temperature = 7°C

(2) ESEER following Eurovent calculation method, in accordance with standard EN 14511

(3) SEER in accordance with standard EN 14825.

(4) Following ecodesign regulation EU **2016/2281** on space cooling, normalized leaving water temperature at 7°C, in accordance with standard EN 14825.

(5) Following ecodesign regulation EU **2016/2281** on process cooling units, normalized leaving water temperature at 7°C, in accordance with standard EN 14825.

(6) Following ecodesign regulation EU **2015/1095** on process cooling chillers, normalized leaving water temperature at -8°C, in accordance with standard EN 14825

(7) SCOP in accordance with standard EN 14825. Heating mode performance is defined for average climate conditions.

(8) Following ecodesign regulation EU **813/2013** on space heaters, normalized leaving water temperature at 35°C, in accordance with standard EN 14825, average climate conditions.

(9) Following energy labelling regulation EU **811/2013** on space heaters.

**STANDARD VERSION**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>1403SM</b>	<b>1604SM</b>	<b>1804SM</b>	<b>2104SM</b>
<b>Condenser fan (helicoïdal)</b>						
Number		2				
Nominal airflow rate <sup>(1)</sup>	m <sup>3</sup> /h	STD	22500+22000	23000+23000	26000+26000	36000+36000
		LN & SLN <sup>(4)</sup>	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 <sup>(4)</sup>	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 <sup>(4)</sup>	730 + 750	740 + 740	518+518+ 518+518	700+700+ 700+700
<b>Evaporator</b>						
Type of evaporator		AISI 316 stainless steel plate brazed with copper heat exchanger				
Number of evaporators		1				
Nominal water flow rate	m <sup>3</sup> /h	23,9	25,7	29,9	34,2	
Pressure drop without water filter	kPa	51	45	45	60	
Pressure drop with water filter		78	61	68	91	
<b>Hydraulic connection</b>						
Type		Threaded-Female				
Diameter		2 1/2" G	3" G			
<b>Electrical data</b>						
Power supply		400V/3/50Hz				
Starting current	A	301,2	248,9	302,9	357,7	
Maximum current		118,5	132	151,6	175	

**Acoustic data**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>1003SM</b>	<b>1103SM</b>	<b>1203SM</b>	<b>1303SM</b>
<b>Acoustic</b>						
Sound power level <sup>(3)</sup>	dB(A)	SLN <sup>(4)</sup>	78/46	76/44	77/45	81/49
		LN <sup>(4)</sup>	81/49	78/46	81/49	83/51
		STD	87/55	85/53	87/55	90/58

**Dimensions**

<b>ECOLEAN</b>		<b>EAC/EAR</b>	<b>1003SM</b>	<b>1103SM</b>	<b>1203SM</b>	<b>1303SM</b>
<b>Dimensions</b>						
Width	mm	2250	2250	2250	2250	
Depth		1420	2300	2300	2300	
Height		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

(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 17.

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

**C BOX**

MODELS		0472SM	0552SM	0672SM	0812SM	
Fan type		<i>Axial - Direct coupling - 400V/3</i>				
Fan number		<b>2</b>				
Nominal airflow rate	m <sup>3</sup> /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

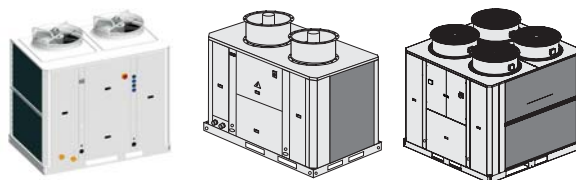
**D BOX**

MODELS		1003SM	1103SM	1203SM	1303SM	1403SM	
Fan type		<i>Axial - Direct coupling - 400V/3</i>					
Fan number		<b>2</b>					
Nominal airflow rate	m <sup>3</sup> /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		<b>2</b>	<b>4</b>		
Nominal airflow rate	m <sup>3</sup> /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				0472 FM	0552 FM	0672 FM	0812 FM
Fan type				Axial - Direct coupling 3~400 V			
Fan number				2			
Available static pressure	76 Pa	Airflow rate	m <sup>3</sup> /h	STD	15608 + 15608	15299 + 15299	14994 + 14994
			LN	10736 + 10736	10662+ 10662	10181 + 10181	
		Power input	kW	STD	2,47 + 2,47	2,50 + 2,50	2,52 + 2,52
			LN	1,57 + 1,57		1,58 + 1,58	
	100 Pa	Airflow rate	m <sup>3</sup> /h	STD	14933 + 14933	14609 + 14609	14293 + 14293
			LN	9455 + 9455	9479 + 9479	9045 + 9045	
		Power input	kW	STD	2,49 + 2,49	2,52 + 2,52	2,53 + 2,53
			LN	1,59+1,59			
	125 Pa	Airflow rate	m <sup>3</sup> /h	STD	14102 + 14102	13813 + 13813	13510 + 13510
			LN	8304 + 8304	8316 + 8316	8001 + 8001	
		Power input	kW	STD	2,51 + 2,51	2,54 + 2,54	2,55 + 2,55
			LN	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 <sup>3</sup> /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 <sup>3</sup> /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 <sup>3</sup> /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 <sup>3</sup> /h	STD	44000	48000	68000
		Power input	kW	STD	10,2	10,2	20,8
	200 Pa	Airflow rate	m <sup>3</sup> /h	STD	40000	44000	60000
		Power input	kW	STD	10,3	10,3	21,1
250 Pa	Airflow rate	m <sup>3</sup> /h	STD	36000	38000	48000	
	Power input	kW	STD	10,4	10,4	21,4	



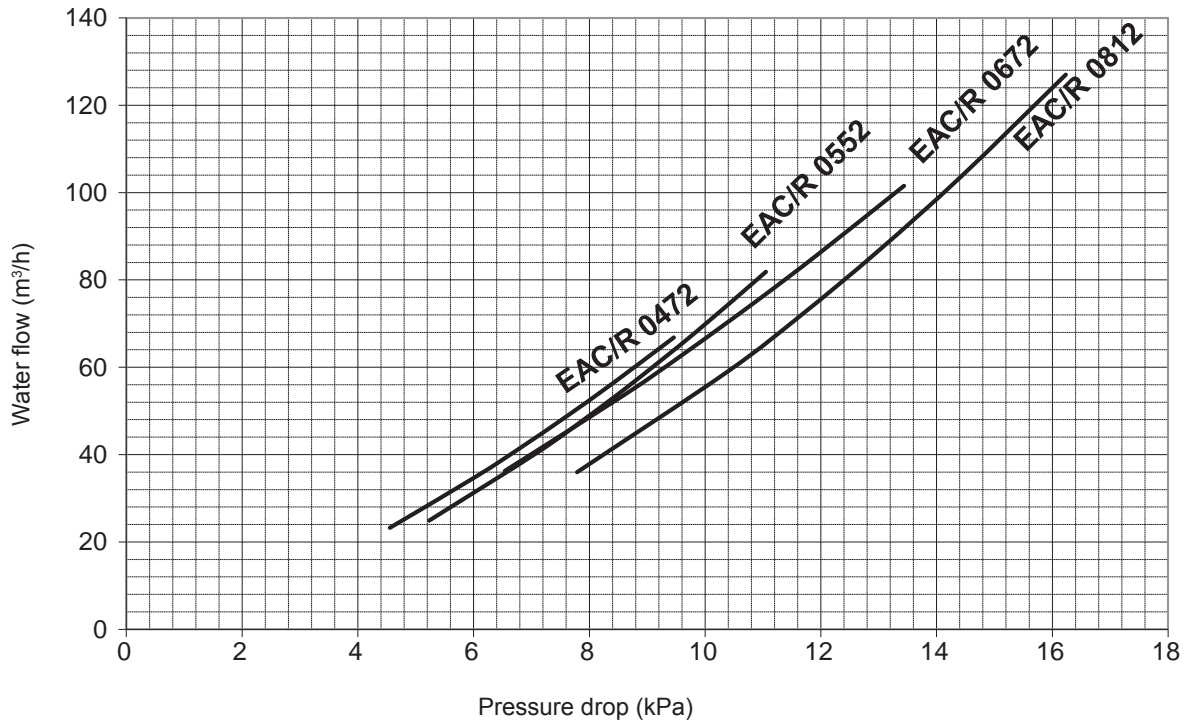


### INSTALLATION ADVISE

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.)

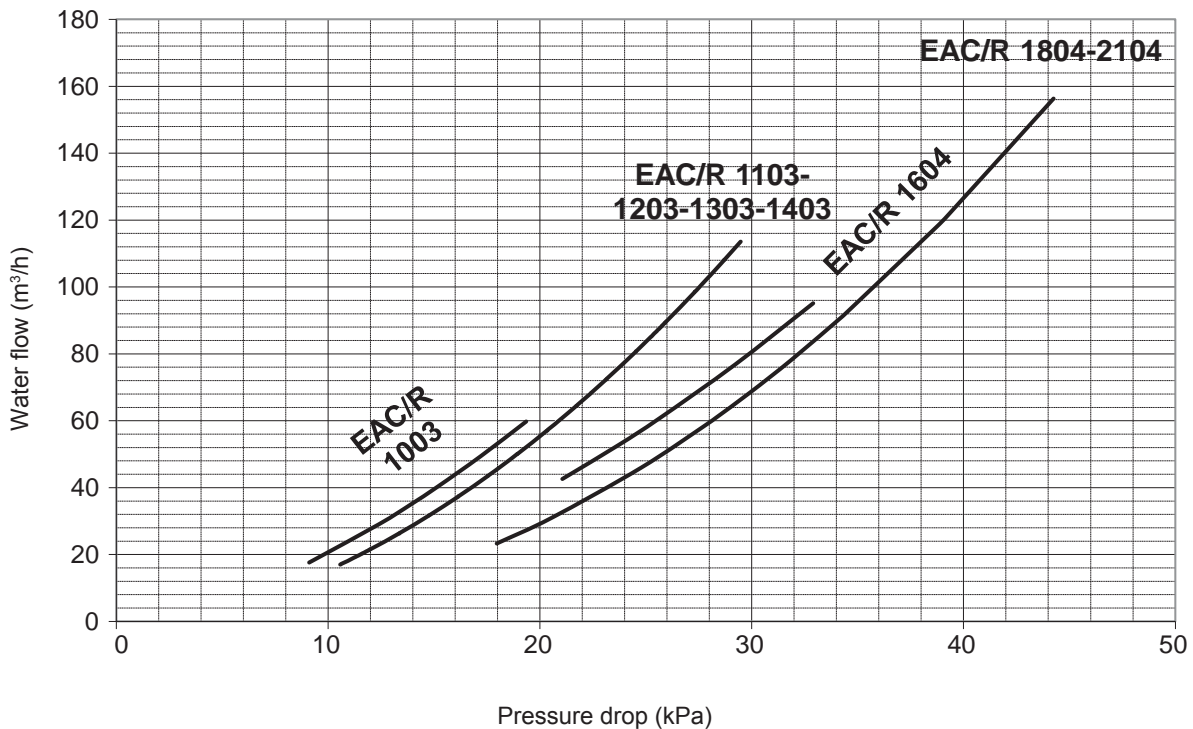
## MODELS EAC / EAR 0472SM TO 0812SM

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

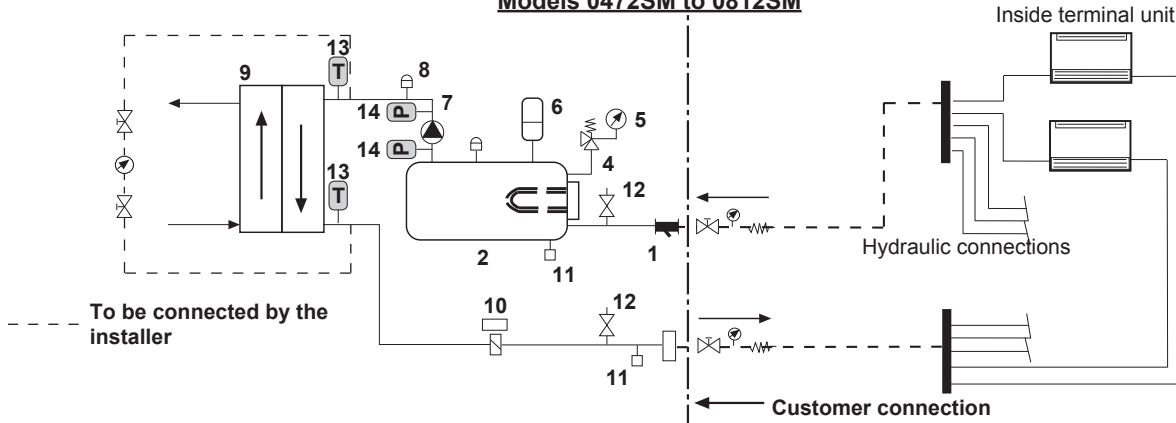
MODELS EAC / EAR HY - HN			0472	0552	0672	0812
Single pump - Type			Horizontal multistage centrifugal pump			
Voltage	V		400V/3			
Absorbed power	kW		1,2	1,2	1,2	1,2
Maximum current	A		3.1	3.1	3.1	3.1
Expansion vessel	Capacity	l	18			
	Maximum pressure	Bar	4			
Available static pressure (nominal water flow)		kPa	234	213	161	110
Nominal water flow		l/s	2,11	2,42	3,03	3,60
Weight (to be added to the unit weight)	Hydraulic version	kg	32	32	31	31
	Hydronic version	kg	64	64	64	64
Hydraulic connections			2" G			
Water tank <sup>(1)</sup>	l		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	kg	35					50			
	Maximum pressure	kg	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 <sup>(1)</sup>	l		240	240	240	240	240	350	350	350	

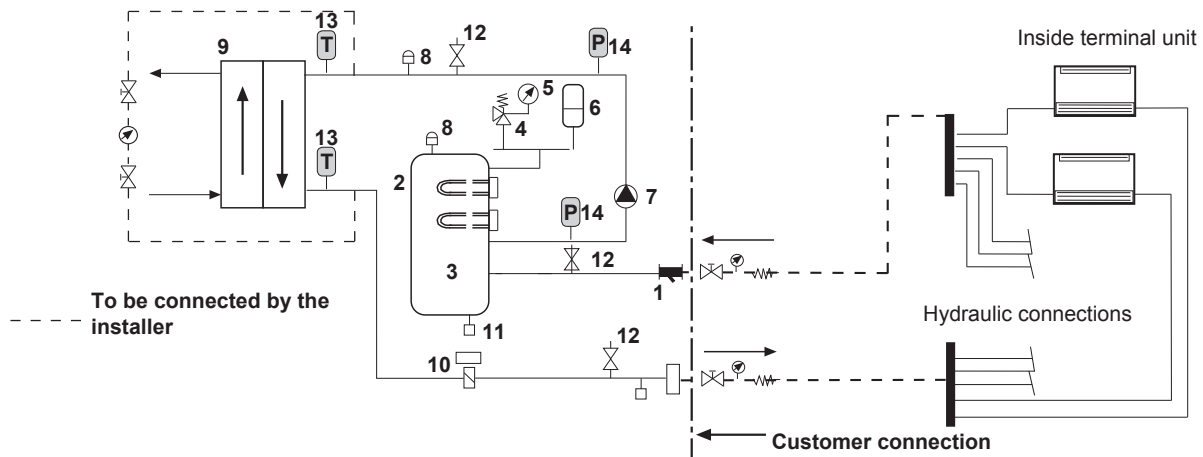
(1) Only for HN version

## HYDRONIC VERSION (HN)

### Models 0472SM to 0812SM



### Models 1003 to 2104



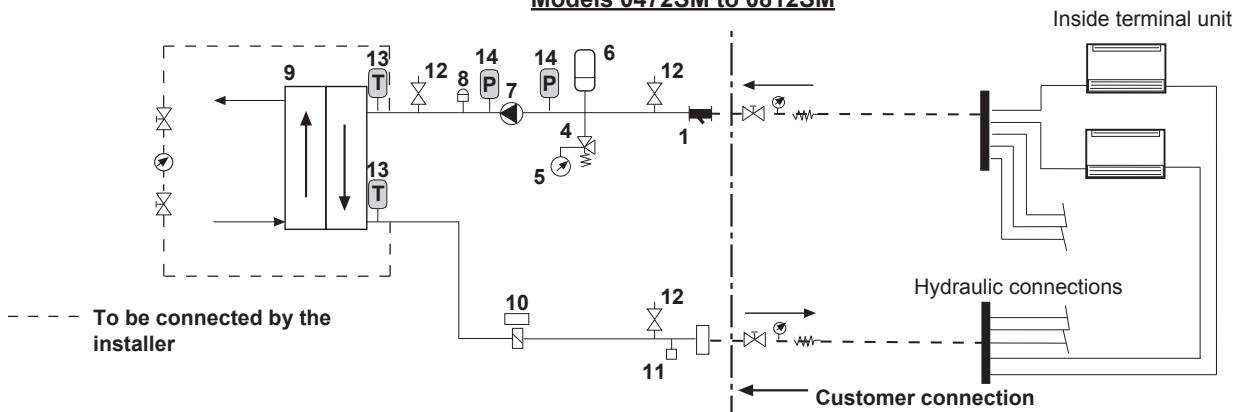
#### COMPONENTS:

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

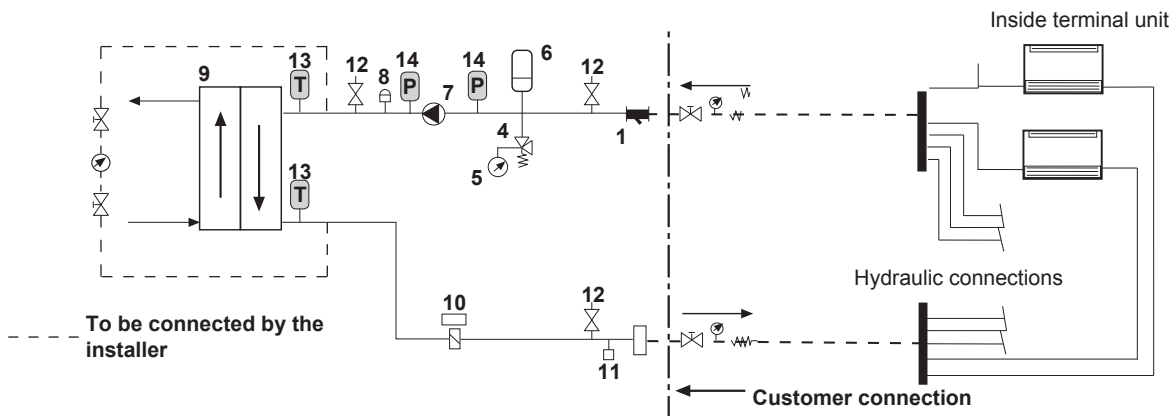
1 Detachable water filter	6 Expansion vessel	11 Drain valve
2 Water tank	7 Water pump	12 Pressure check points
3 Water tank heater (in option)	8 Air purge valve	13 Water temperature sensor
4 Safety valve	9 Plate exchanger	14 Water pressure transducer (when variable water flow option is selected)
5 Manometer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

HYDRAULIC VERSION (HY) AND STANDARD

**Models 0472SM 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 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 <sup>3</sup> /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 <sup>3</sup> /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 <sup>3</sup> /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 <sup>3</sup> /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 <sup>3</sup> /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 <sup>3</sup> /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):

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

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	0472 ▶ 0812	1003 ▶ 1403	1604 - 2104
SOLUTION	Maximum water volume in liters		
WATER	850	1600	2250
WATER + 10% glycol	650	1225	1725
WATER + 20% glycol	475	1075	1500
WATER + 30% glycol	450	925	1300
WATER + 35% glycol	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	Capacity (kW)	Water flow rate (m³/h)			
		Minimum (with eDrive™ variable speed pump)	Minimum (with fixed speed pump)	Nominal	Maximum
<b>0472</b>	44,1	4,6	6,05	7,6	9,46
<b>0552</b>	50,7	5,2	7,07	8,7	11,05
<b>0672</b>	63,4	6,5	8,6	10,9	13,44
<b>0812</b>	75,4	7,8	10,39	13,0	14,43
<b>1003</b>	88,2	9,1	12,38	15,17	19,35
<b>1103</b>	102	10,5	13,9	17,61	21,72
<b>1203</b>	112	11,6	15,76	19,23	24,62
<b>1303</b>	126	13	17,48	21,62	27,31
<b>1403</b>	139	14,3	18,86	23,87	29,48
<b>1604</b>	149	15,4	21,06	25,66	32,9
<b>1804</b>	174	18,0	24,7	29,9	38,7
<b>2104</b>	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		<b>0472SM ▶ 0812SM</b>	<b>1003SM ▶ 1403SM</b>	<b>1604SM - 2104SM</b>
<b>Voltage</b>	V	400V/3		
<b>Tank anti-freeze heater</b>	kW	2,25	6,0	9,0
<b>Water tank electrical heater*</b>	kW	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:

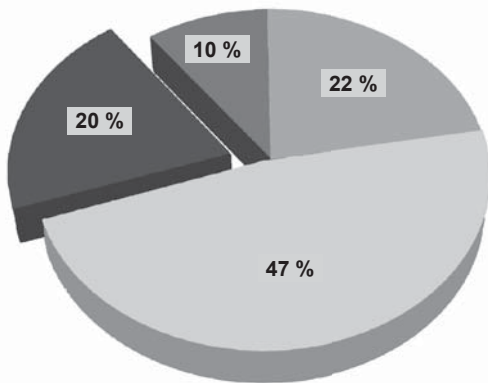
- Cost savings on the energy consumption especially at part-load conditions and during off period. 75% of this energy could be saved !
- Cost savings on the initial system cost. Fewer pumps and piping connections than primary–secondary systems, terminal units equipped with two-way control valves instead 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.

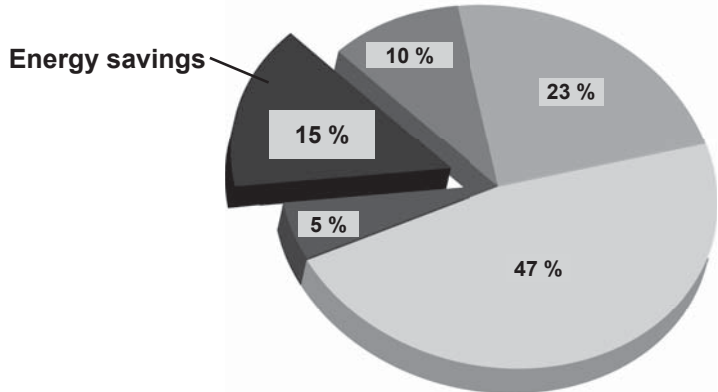
LENNOX eDrive™ Technology modulates the Water Flow especially in Part-Load Conditions through a Specific Algorithm and a Variable Frequency Driver.

**Typical cost split in a chiller through 15-year lifespan**

**Chiller with fixed speed pump**



**Chiller with variable speed pump**



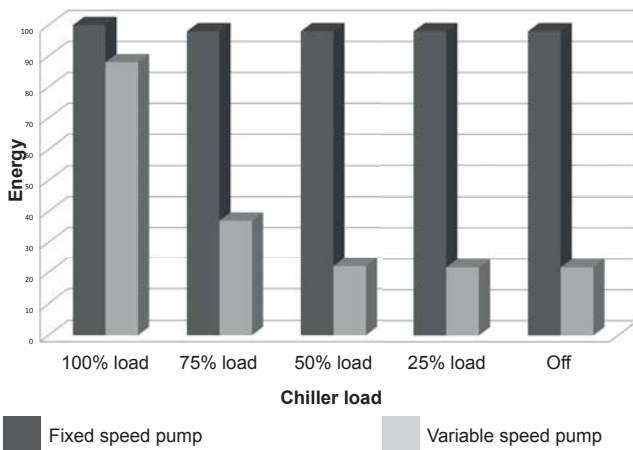
Cooling energy cost	Maintenance cost
Equipment cost	Pump energy cost



## 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 energy consumption**  
Fan coil with 3 way valves and constant  $\Delta T$

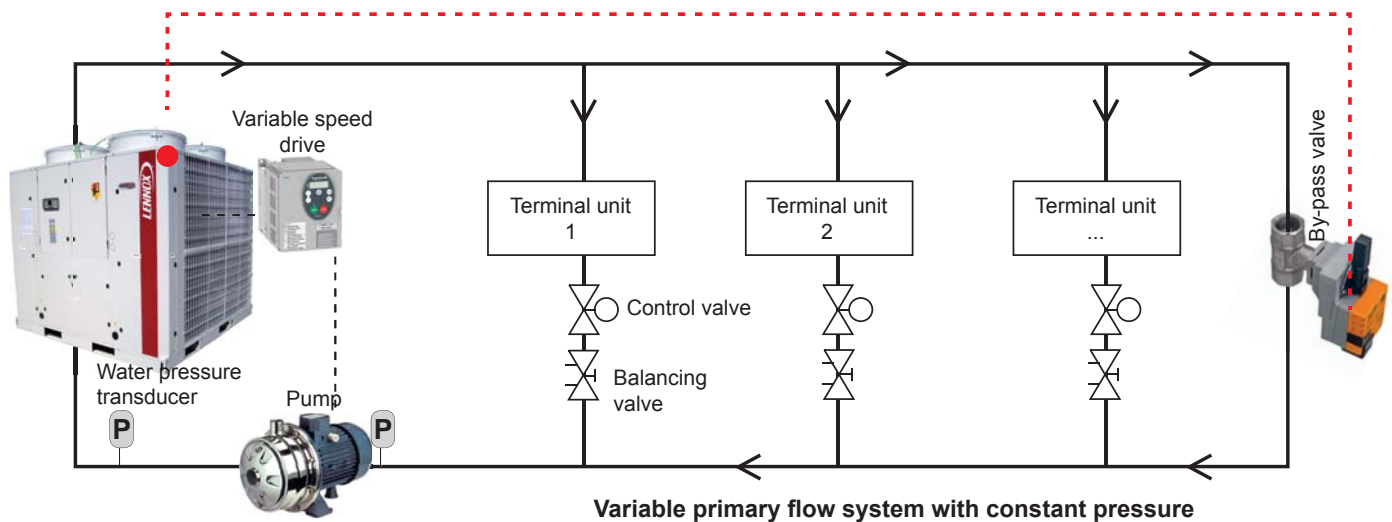


### PUMP AFFINITY LAWS

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

**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)								Global sound power Lw dB(A)
	Hz	125	250	500	1000	200	400	800	
<b>0472 F</b>	LN	83,3	79,4	79,6	80,6	78,1	73,1	65,1	<b>85</b>
	STD	91,1	85,2	84,5	86,6	84,3	81,0	72,9	<b>91</b>
<b>0552 F</b>	LN	83,3	79,1	79,4	80,7	78,1	73,1	65,0	<b>85</b>
	STD	91,1	85,2	84,5	86,7	84,3	80,9	72,8	<b>91</b>
<b>0672 F</b>	LN	83,4	79,1	79,6	80,6	78,2	73,3	65,8	<b>85</b>
	STD	91,1	85,2	84,6	86,7	84,4	81,0	73,2	<b>91</b>
<b>0812 F</b>	LN	83,4	79,4	79,5	80,7	78,4	73,6	66,3	<b>85</b>
	STD	91,1	85,2	84,5	86,8	84,7	81,1	73,3	<b>91</b>
<b>1003 F</b>	SLN	84,3	80,8	80,3	83,9	79,5	72,1	66,8	<b>87</b>
	LN	84,3	81,1	80,6	83,9	79,6	72,4	67,3	<b>87</b>
	STD	96,4	93,6	91,6	93,0	89,3	86,3	81,9	<b>97</b>
<b>1103 F</b>	SLN	84,4	80,9	80,4	83,9	79,6	72,4	67,2	<b>87</b>
	LN	84,5	81,1	80,8	83,9	79,7	72,7	67,8	<b>87</b>
	STD	96,4	93,6	91,6	93,1	89,4	86,3	81,9	<b>97</b>
<b>1203 F</b>	SLN	84,3	81,5	80,8	83,9	79,7	72,3	67,0	<b>87</b>
	LN	84,4	82,8	81,8	84,0	80,0	72,7	67,3	<b>87</b>
	STD	96,4	93,6	91,7	93,1	89,7	86,4	81,9	<b>97</b>
<b>1303 F</b>	SLN	84,3	81,9	81,1	84,0	79,9	72,6	67,2	<b>87</b>
	LN	84,4	83,2	82,1	84,1	80,4	73,3	67,7	<b>87</b>
	STD	96,4	93,6	91,7	93,2	89,9	86,5	82,1	<b>97</b>
<b>1403 F</b>	SLN	84,3	82,0	81,0	84,0	79,9	72,7	67,2	<b>87</b>
	LN	84,4	83,3	82,1	84,1	80,5	73,6	68,0	<b>87</b>
	STD	96,4	93,6	91,7	93,2	89,9	86,5	82,1	<b>97</b>
<b>1604 F</b>	SLN	84,5	81,1	80,5	83,9	79,7	72,6	67,6	<b>87</b>
	LN	84,5	81,5	80,9	84,0	80,0	73,3	68,6	<b>87</b>
	STD	96,4	93,6	91,6	93,1	89,5	86,4	82,0	<b>97</b>
<b>1804 F</b>	SLN	87,3	84,5	93,6	86,9	82,7	75,2	69,7	<b>90</b>
	LN	87,3	85,8	84,6	87,0	83,1	75,6	70,1	<b>90</b>
	STD	99,4	96,6	94,6	96,1	92,7	89,3	84,9	<b>100</b>
<b>2104 F</b>	SLN	87,3	84,9	83,9	86,9	82,9	75,5	69,9	<b>90</b>
	LN	87,3	86,2	84,9	87,1	83,4	76,3	70,5	<b>90</b>
	STD	99,4	96,6	94,6	96,2	92,9	89,5	85,0	<b>100</b>

<b>F SLN</b>	Fan pressure and super low noise version	<b>F LN</b>	Fan pressure and low noise version	<b>F STD</b>	Fan pressure version with high fan speed
--------------	--	-------------	------------------------------------	--------------	--

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	0472 SM ▶ 0812 SM		1003 SM ▶ 2104 SM	
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
Outlet chilled water temperature	+5 °C	+14 °C	+5 °C	+14 °C
Inlet chilled water temperature	+9 °C	+22 °C	+8 °C	+22 °C
Air inlet temperature <sup>(1)</sup>	+6 °C	+ 48 °C	+6 °C	+ 48 °C

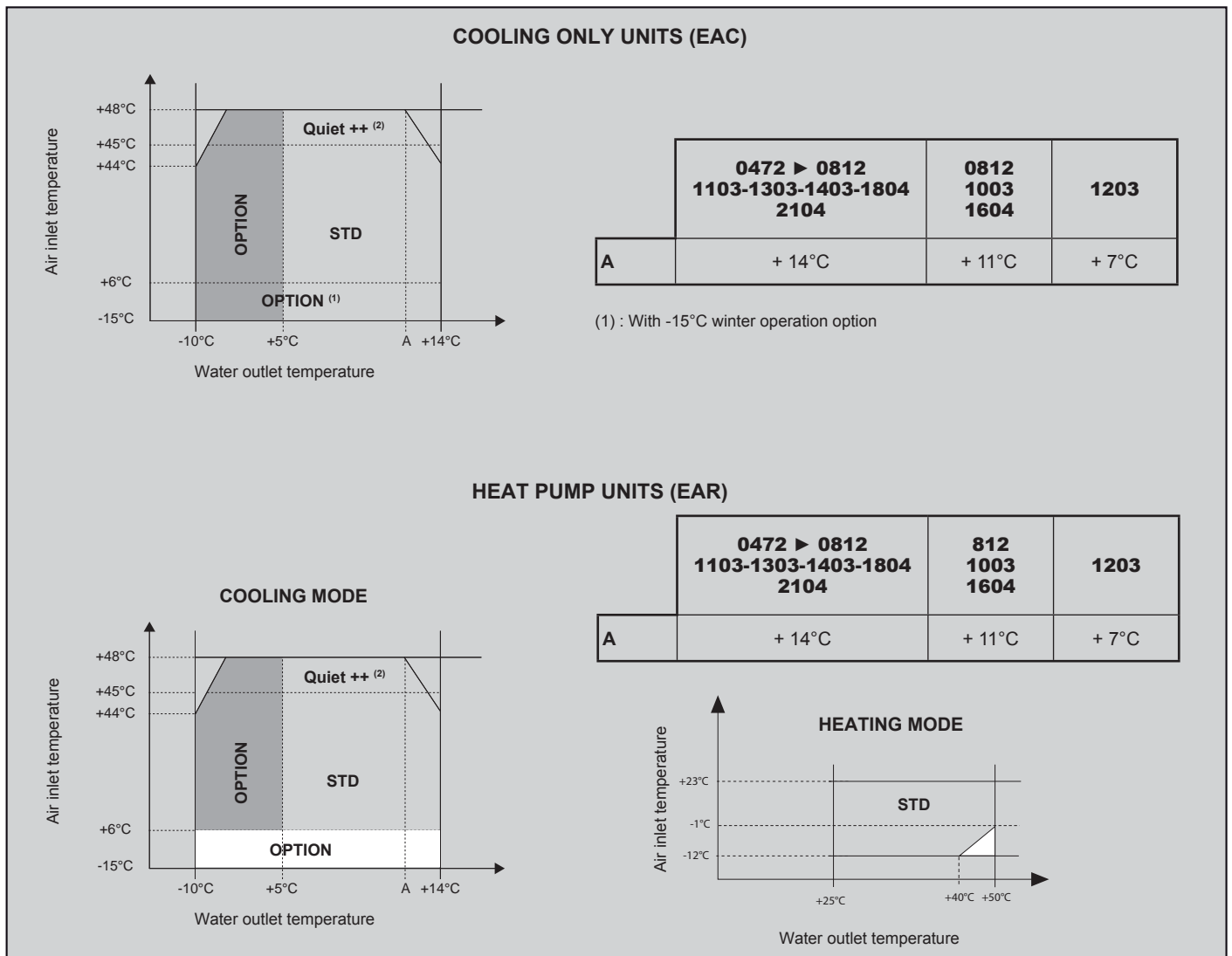
NOTE: With outdoor temperatures below +5°C, add glycol

(1) : Minimum air inlet temperature is -15°C with “winter operation” option (EAC).

### HEATING MODE

MODELS EAR	0472SM ▶ 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



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.

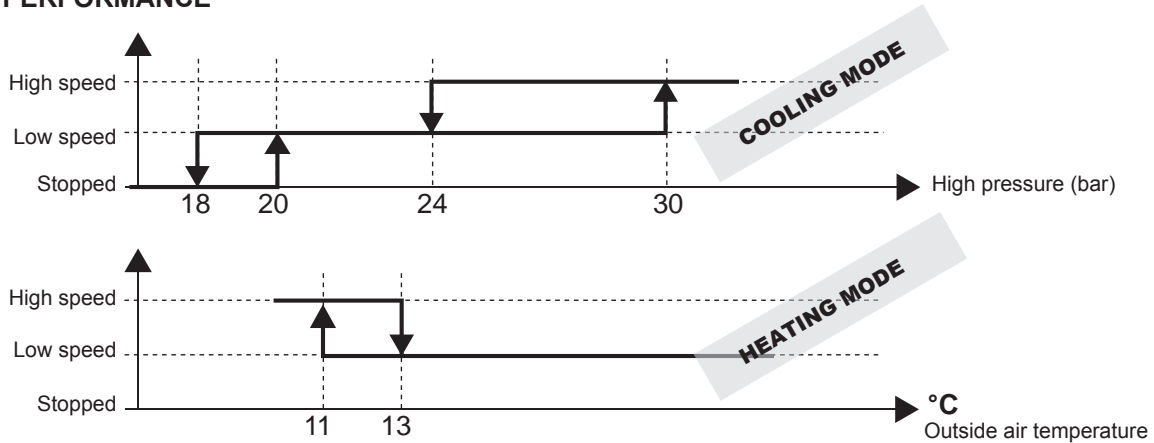
SLN version non available for B & C boxes

(2) : See drawings on next pages.

**CONDENSER FAN MANAGEMENT**

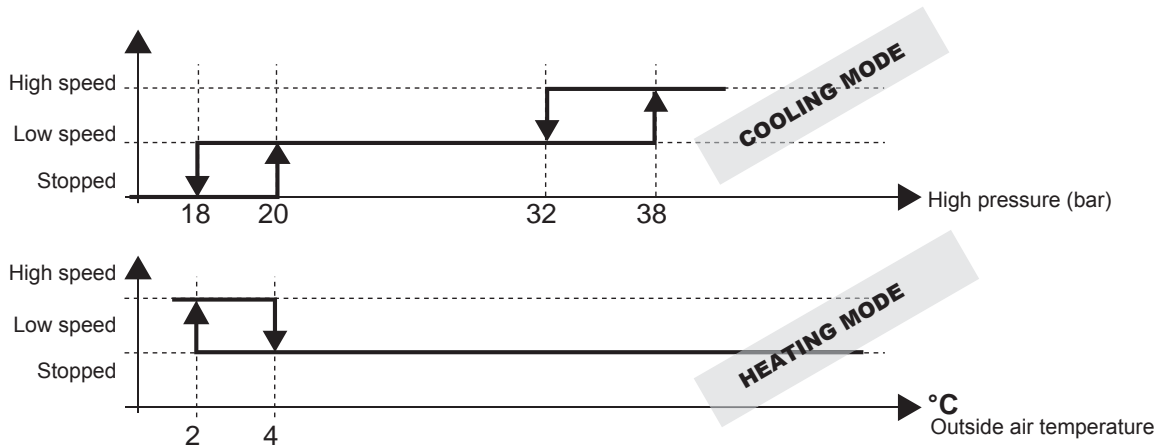
The maximum sound level and fan strategies can be adjusted with CLIMATIC™ 60 control according to the schedule mode. Three different modes can be selected. See below operation mode for all of them.

**HIGH PERFORMANCE**



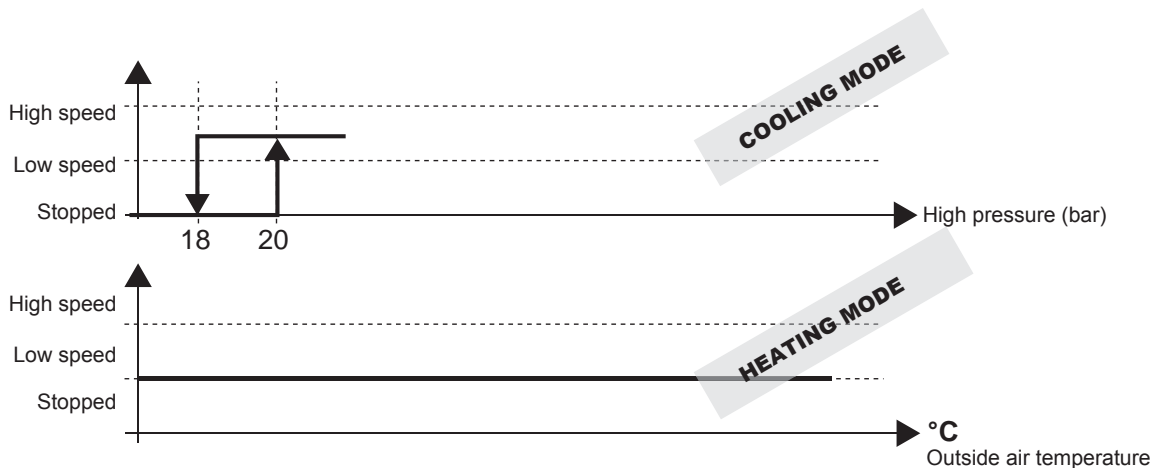
**QUIET**

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.

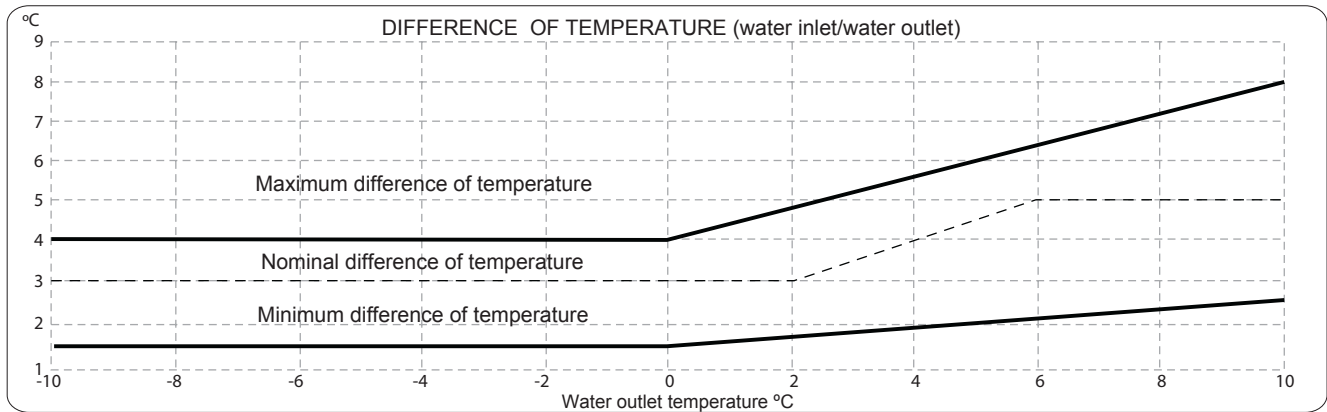


**QUIET ++**

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.

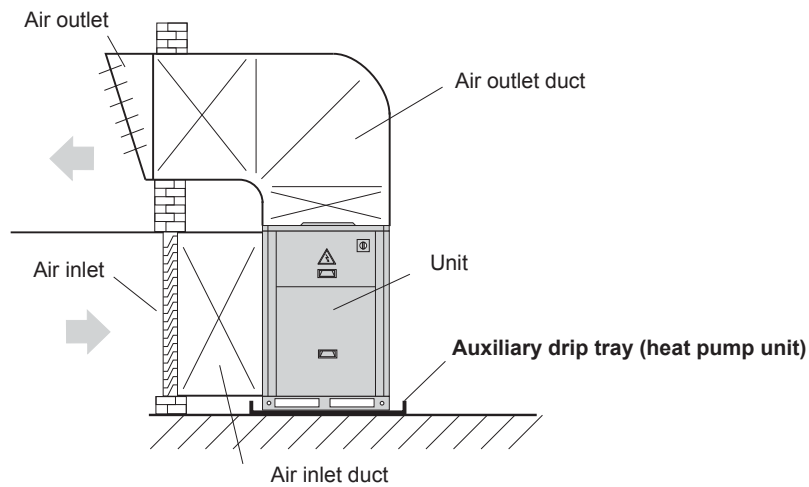


## UNITS WITH LOW WATER TEMPERATURE KIT (OPTION)



## 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			<b>0472SM</b>	<b>0552SM</b>	<b>0672SM</b>	<b>0812SM</b>
Maximum power (kW)		STD	21,2	25,0	32,5	35,2
		LN	21,0	24,6	32,1	34,9
Maximum Current (A)		STD	44,5	47,5	54,7	65,5
		LN	43,5	46,2	53,4	64,2
Locked rotor amps (A)	3~400V	STD	134,5	143,5	187,1	208,5
		LN	133,5	142,2	185,8	207,2
Starting current (A) (*)		STD	117,9	125,8	163,4	182,4
		LN	116,8	124,5	162,1	181,1

MODELS			<b>1003SM</b>	<b>1103SM</b>	<b>1203SM</b>	<b>1303SM</b>	<b>1403SM</b>	<b>1604SM</b>	<b>1804SM</b>	<b>2104SM</b>
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)	3~400V	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 17).  
 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			<b>0472FM</b>	<b>0552FM</b>	<b>0672FM</b>	<b>0812FM</b>
Maximum power (kW)		STD	24,8	28,2	35,7	38,3
		LN	23,3	26,7	34,3	37,0
Maximum Current (A)		STD	47,4	49,4	56,6	67,4
		LN	51,6	53,6	60,8	71,6
Locked rotor amps (A)	3~400V	STD	137,4	145,4	189,0	210,4
		LN	141,6	149,6	193,2	214,6
Starting current (A) (*)		STD	120,8	127,7	165,3	184,3
		LN	125,0	131,9	169,5	188,5

MODELS			<b>1003FM</b>	<b>1103FM</b>	<b>1203FM</b>	<b>1303FM</b>	<b>1403FM</b>	<b>1604FM</b>	<b>1804FM</b>	<b>2104FM</b>
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)	3~400V	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 17).  
 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  
0472 ► 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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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
	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
<b>2104 SM</b>	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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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
	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
<b>2104 SM</b>	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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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
	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
<b>2104 SM</b>	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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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
	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
<b>2104 SM</b>	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	<b>Wf</b> Water flow in m³ per hour
<b>Pc</b> Cooling capacity in kW	<b>Dp</b> Water pressure drop in kPa
<b>Pe(c)</b> 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 VERSION**

**EAC / EAR  
0472 ► 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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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

<b>Nominal conditions</b>	<b>Wf</b> Water flow in m³ per hour
<b>Pc</b> Cooling capacity in kW	<b>Dp</b> Water pressure drop in kPa
<b>Pe(c)</b> 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	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
	<b>2104 SM</b>	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	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
	<b>2104 SM</b>	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	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
	<b>2104 SM</b>	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	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
	<b>2104 SM</b>	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

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

HEATING MODE  
STANDARD VERSION

**EAR**  
**0472 ▶ 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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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
	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
<b>2104 SM</b>	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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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
	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
<b>2104 SM</b>	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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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
	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
<b>2104 SM</b>	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	<b>0472 SM</b>	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
	<b>0552 SM</b>	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
	<b>0672 SM</b>	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
	<b>0812 SM</b>	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
	<b>1003 SM</b>	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
	<b>1103 SM</b>	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
	<b>1203 SM</b>	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
	<b>1303 SM</b>	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
	<b>1403 SM</b>	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
	<b>1604 SM</b>	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
	<b>1804 SM</b>	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
<b>2104 SM</b>	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	

n/a Note : the unit can not work as standard.  
Please consult us.

<b>Ph</b> Cooling capacity in kW	<b>Wf</b> Water flow in m³ per hour
<b>Pe(h)</b> Total power input in kW (compressor and fan motor)	<b>Dp</b> Water pressure drop in kPa
Available static pressure . . . . . 0 Pa	
Fouling factor. . . . . 0,44 m²C/kW	Water ΔT . . . . . 5 °C

**HEATING MODE  
STANDARD VERSION**
**EAR  
0472 ► 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	<b>0472 SM</b>	49,7	12,7	8,5	57,7	53,8	12,8	9,3	64,8	66,0	13,1	11,4	87,1
	<b>0552 SM</b>	56,8	14,8	9,8	67,3	61,5	14,8	10,6	76,4	75,4	15,1	13,0	105,7
	<b>0672 SM</b>	70,4	18,6	12,1	87,5	76,1	18,8	13,1	97,9	92,8	19,1	16,0	129,9
	<b>0812 SM</b>	77,9	21,2	13,4	91,4	84,2	21,4	14,5	104,5	102,6	21,8	17,6	146,6
	<b>1003 SM</b>	98,6	25,0	17,0	50,4	106,7	25,1	18,4	57,4	130,6	25,6	22,5	80,4
	<b>1103 SM</b>	111,7	29,4	19,2	55,3	120,9	29,7	20,8	63,8	147,8	30,3	25,4	91,8
	<b>1203 SM</b>	122,5	32,2	21,1	65,8	132,7	32,5	22,8	75,7	162,3	33,4	27,9	107,7
	<b>1303 SM</b>	135,2	36,6	23,3	77,2	146,2	37,0	25,2	88,3	178,6	37,9	30,7	124,1
	<b>1403 SM</b>	147,5	39,4	25,4	82,0	159,6	39,8	27,5	93,0	195,1	40,8	33,6	128,4
	<b>1604 SM</b>	164,1	43,1	28,2	70,5	177,3	43,5	30,5	80,5	215,7	44,5	37,1	112,6
	<b>1804 SM</b>	187,5	50,1	32,3	83,4	202,8	50,6	34,9	98,5	247,5	52,0	42,6	150,3
<b>2104 SM</b>	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	<b>0472 SM</b>	48,7	14,2	8,4	56,1	52,7	14,2	9,1	62,9	64,5	14,5	11,1	84,2
	<b>0552 SM</b>	55,8	16,6	9,6	65,4	60,3	16,6	10,4	74,1	73,8	16,8	12,7	102,0
	<b>0672 SM</b>	69,2	20,5	11,9	85,4	74,7	20,7	12,9	95,3	90,8	21,1	15,6	125,9
	<b>0812 SM</b>	76,8	23,4	13,2	89,3	82,9	23,6	14,3	101,8	100,7	24,1	17,3	141,9
	<b>1003 SM</b>	96,8	27,9	16,7	48,8	104,7	28,0	18,0	55,6	127,7	28,4	22,0	77,4
	<b>1103 SM</b>	109,8	32,4	18,9	53,6	118,7	32,7	20,4	61,7	144,7	33,5	24,9	88,3
	<b>1203 SM</b>	120,3	35,6	20,7	63,8	130,1	35,9	22,4	73,1	158,6	36,8	27,3	103,4
	<b>1303 SM</b>	132,8	40,3	22,9	75,0	143,4	40,7	24,7	85,4	174,5	41,6	30,0	119,3
	<b>1403 SM</b>	145,0	43,4	24,9	79,8	156,6	43,8	26,9	90,3	190,7	44,9	32,8	123,8
	<b>1604 SM</b>	161,4	47,7	27,8	68,6	174,2	48,1	30,0	78,2	211,4	49,2	36,4	108,7
	<b>1804 SM</b>	183,8	55,1	31,6	80,0	198,4	55,6	34,1	94,0	240,9	56,8	41,4	141,9
<b>2104 SM</b>	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	<b>0472 SM</b>	47,8	15,9	8,2	54,6	51,7	15,9	8,9	61,1	63,0	16,1	10,8	81,4
	<b>0552 SM</b>	54,7	18,6	9,4	63,5	59,1	18,6	10,2	71,8	72,1	18,7	12,4	98,4
	<b>0672 SM</b>	68,0	22,7	11,7	83,3	73,3	22,9	12,6	92,7	88,7	23,4	15,3	121,9
	<b>0812 SM</b>	75,7	26,0	13,0	87,1	81,6	26,2	14,0	99,0	98,7	26,8	17,0	137,3
	<b>1003 SM</b>	95,0	31,2	16,3	47,3	102,5	31,3	17,6	53,7	124,8	31,6	21,5	74,4
	<b>1103 SM</b>	108	35,9	18,5	51,9	116,4	36,2	20,0	59,6	141,5	37,0	24,3	84,8
	<b>1203 SM</b>	118	39,4	20,3	61,8	127,5	39,8	21,9	70,6	154,8	40,7	26,6	99,2
	<b>1303 SM</b>	130	44,6	22,4	72,7	140,6	44,9	24,2	82,6	170,3	45,9	29,3	114,4
	<b>1403 SM</b>	143	47,9	24,6	78,0	153,6	48,3	26,4	87,5	186,3	49,4	32,1	119,3
	<b>1604 SM</b>	159	52,9	27,3	66,6	171,1	53,4	29,4	75,7	206,9	54,4	35,6	104,8
	<b>1804 SM</b>	180	60,8	30,9	76,2	193,4	61,2	33,3	89,1	233,8	62,3	40,2	133,2
<b>2104 SM</b>	205	71,9	35,3	101	220,3	72,4	37,9	117,4	265,5	73,7	45,7	174,4	
48 °C	<b>0472 SM</b>	47,2	17,1	8,1	53,6	51,0	17,1	8,8	60,0	62,1	17,2	10,7	79,7
	<b>0552 SM</b>	54,1	20,0	9,3	62,3	58,4	20,0	10,1	70,4	71,1	20,0	12,2	96,2
	<b>0672 SM</b>	67,2	24,1	11,6	81,9	72,4	24,4	12,5	91,1	87,5	24,9	15,1	119,4
	<b>0812 SM</b>	75,1	27,6	12,9	85,8	80,8	27,9	13,9	97,4	97,6	28,5	16,8	134,5
	<b>1003 SM</b>	93,8	33,4	16,1	46,4	101,2	33,5	17,4	52,6	122,9	33,8	21,2	72,7
	<b>1103 SM</b>	106,6	38,2	18,3	50,8	115,0	38,5	19,8	58,3	139,6	39,3	24,0	82,7
	<b>1203 SM</b>	116,9	41,9	20,1	60,6	126,0	42,3	21,7	69,2	152,6	43,2	26,3	96,7
	<b>1303 SM</b>	128,9	47,4	22,2	71,3	138,8	47,8	23,9	80,8	167,8	48,7	28,9	111,5
	<b>1403 SM</b>	141,0	50,7	24,3	76,3	151,8	51,2	26,1	85,9	183,6	52,3	31,6	116,5
	<b>1604 SM</b>	157,0	56,3	27,0	65,4	169,1	56,8	29,1	74,3	204,2	57,9	35,1	102,4
	<b>1804 SM</b>	176,8	64,5	30,4	73,7	190,2	64,9	32,7	86,0	229,3	65,9	39,4	127,8
<b>2104 SM</b>	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

<b>Ph</b> Cooling capacity in kW	<b>Wf</b> Water flow in m³ per hour
<b>Pe(h)</b> Total power input in kW (compressor and fan motor)	<b>Dp</b> Water pressure drop in kPa
Available static pressure . . . . . 0 Pa	
Fouling factor . . . . . 0,44 m²C/kW	Water ΔT . . . . . 5 °C

HEATING MODE  
LN VERSIONS

**EAR**  
**0472 ► 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	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
	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	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
	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	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
	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	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
	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	

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

**HEATING MODE  
LN VERSIONS**
**EAR  
0472 ▶ 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	<b>0472 SM</b>	48,7	12,5	8,4	56,1	52,6	12,5	9,0	62,6	63,9	12,6	11,0	83,1
	<b>0552 SM</b>	55,9	14,5	9,6	65,5	60,3	14,5	10,4	74,0	73,3	14,7	12,6	100,9
	<b>0672 SM</b>	69,0	18,0	11,9	85,1	74,3	18,2	12,8	94,6	89,9	18,8	15,5	124,2
	<b>0812 SM</b>	76,0	20,7	13,1	87,5	81,7	20,9	14,1	99,2	98,4	21,5	16,9	136,5
	<b>1003 SM</b>	97,5	24,0	16,8	49,5	105,0	24,1	18,1	55,9	127,0	24,5	21,8	76,6
	<b>1103 SM</b>	111,1	28,2	19,1	54,7	119,6	28,5	20,6	62,6	144,7	29,4	24,9	88,3
	<b>1203 SM</b>	120,0	31,0	20,6	63,5	129,3	31,3	22,2	72,3	156,5	32,3	26,9	101,0
	<b>1303 SM</b>	133,3	35,0	22,9	75,5	143,5	35,4	24,7	85,5	173,5	36,5	29,8	118,1
	<b>1403 SM</b>	145,6	37,6	25,1	80,3	156,7	38,0	27,0	90,4	189,1	39,1	32,5	122,2
	<b>1604 SM</b>	160,8	41,6	27,7	68,2	172,9	42,1	29,7	77,1	207,9	43,4	35,8	105,7
	<b>1804 SM</b>	177,7	46,9	30,6	74,5	191,1	47,4	32,9	86,9	230,1	48,6	39,6	128,8
<b>2104 SM</b>	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	<b>0472 SM</b>	47,9	13,9	8,2	54,7	51,6	14,0	8,9	61,0	62,5	14,1	10,8	80,5
	<b>0552 SM</b>	54,9	16,2	9,4	63,7	59,1	16,3	10,2	71,7	71,6	16,4	12,3	97,4
	<b>0672 SM</b>	67,9	20,0	11,7	83,2	73,1	20,2	12,6	92,3	88,1	20,8	15,2	120,7
	<b>0812 SM</b>	75,0	22,9	12,9	85,6	80,5	23,1	13,9	96,7	96,6	23,7	16,6	132,3
	<b>1003 SM</b>	96,0	26,8	16,5	48,1	103,2	27,0	17,7	54,3	124,2	27,3	21,4	73,9
	<b>1103 SM</b>	109,4	31,3	18,8	53,2	117,6	31,6	20,2	60,7	141,8	32,5	24,4	85,1
	<b>1203 SM</b>	118,3	34,4	20,3	61,9	127,2	34,7	21,9	70,3	153,4	35,7	26,4	97,6
	<b>1303 SM</b>	131,4	38,8	22,6	73,6	141,2	39,1	24,3	83,2	170,1	40,2	29,3	114,2
	<b>1403 SM</b>	143,6	41,6	24,7	78,5	154,2	41,9	26,5	88,1	185,4	43,0	31,9	118,4
	<b>1604 SM</b>	158,6	46,1	27,3	66,6	170,3	46,5	29,3	75,2	204,2	47,8	35,1	102,5
	<b>1804 SM</b>	175,8	52,1	30,2	72,8	188,7	52,5	32,5	84,6	226,3	53,6	38,9	124,4
<b>2104 SM</b>	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	<b>0472 SM</b>	47,1	15,6	8,1	53,4	50,6	15,7	8,7	59,3	61,1	15,7	10,5	77,9
	<b>0552 SM</b>	53,9	18,2	9,3	61,9	58,0	18,3	10,0	69,5	70,0	18,3	12,1	93,9
	<b>0672 SM</b>	66,7	22,3	11,5	81,1	71,7	22,5	12,3	89,9	86,3	23,0	14,8	117,1
	<b>0812 SM</b>	74,1	25,5	12,7	83,8	79,4	25,7	13,7	94,4	94,9	26,2	16,3	128,3
	<b>1003 SM</b>	94,5	30,1	16,3	46,9	101,4	30,2	17,4	52,7	121,5	30,5	20,9	71,3
	<b>1103 SM</b>	108	34,7	18,5	51,7	115,6	35,1	19,9	58,9	138,9	36,0	23,9	82,0
	<b>1203 SM</b>	117	38,3	20,1	60,4	125,2	38,6	21,5	68,4	150,5	39,6	25,9	94,3
	<b>1303 SM</b>	129	43,1	22,3	71,8	139,0	43,4	23,9	81,0	166,7	44,5	28,7	110,3
	<b>1403 SM</b>	143	46,1	24,6	78,0	151,8	46,4	26,1	85,9	181,8	47,5	31,3	114,7
	<b>1604 SM</b>	156	51,2	26,9	65,0	167,7	51,6	28,9	73,2	200,4	52,8	34,5	99,3
	<b>1804 SM</b>	174	58,0	29,9	71,3	186,5	58,4	32,1	82,5	222,8	59,5	38,3	120,3
<b>2104 SM</b>	203	68,6	34,9	99	217,5	69,1	37,4	114,3	259,8	70,6	44,7	166,5	
48 °C	<b>0472 SM</b>	46,6	16,8	8,0	52,6	50,1	16,8	8,6	58,3	60,3	16,8	10,4	76,4
	<b>0552 SM</b>	53,3	19,6	9,2	60,8	57,3	19,6	9,9	68,3	69,1	19,6	11,9	91,9
	<b>0672 SM</b>	66,0	23,8	11,4	79,8	70,9	24,0	12,2	88,4	85,1	24,5	14,6	114,9
	<b>0812 SM</b>	73,5	27,2	12,6	82,8	78,7	27,4	13,5	93,1	93,9	27,9	16,2	126,0
	<b>1003 SM</b>	93,6	32,2	16,1	46,2	100,3	32,4	17,3	51,8	119,9	32,6	20,6	69,7
	<b>1103 SM</b>	106,6	37,0	18,3	50,8	114,4	37,3	19,7	57,7	137,1	38,3	23,6	80,1
	<b>1203 SM</b>	115,7	40,9	19,9	59,5	124,1	41,2	21,4	67,3	148,7	42,1	25,6	92,5
	<b>1303 SM</b>	128,3	45,9	22,1	70,7	137,6	46,3	23,7	79,6	164,7	47,3	28,3	108,0
	<b>1403 SM</b>	140,4	49,0	24,2	75,8	150,4	49,4	25,9	84,7	179,6	50,4	30,9	112,5
	<b>1604 SM</b>	155,1	54,5	26,7	64,1	166,1	54,9	28,6	72,1	198,1	56,1	34,1	97,3
	<b>1804 SM</b>	173,2	62,0	29,8	70,5	185,3	62,4	31,9	81,4	220,8	63,4	38,0	118,0
<b>2104 SM</b>	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

<b>Ph</b> Cooling capacity in kW	<b>Wf</b> Water flow in m³ per hour
<b>Pe(h)</b> Total power input in kW (compressor and fan motor)	<b>Dp</b> 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 32 to 38):

**EAC / EAR**  
**0472 ▶ 0812**

**STANDARD VERSION (SM) COEFFICIENTS**

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

**FAN PRESSURE VERSION (FM) COEFFICIENTS**

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

(1) With "QUIET ++" only

<b>HEATING MODE</b>		Capacity	Power absorbed
<b>LN</b> (1)	<b>76 Pa</b>	0,990	1,098
	<b>100 Pa</b>	0,973	1,098
	<b>125 Pa</b>	0,962	1,098
<b>STD</b>	<b>76 Pa</b>	1,019	1,197
	<b>100 Pa</b>	1,013	1,201
	<b>126 Pa</b>	1,009	1,203
	<b>150 Pa</b>	1,007	1,204
	<b>200 Pa</b>	0,993	1,205
	<b>250 Pa</b>	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 32 to 38):

**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

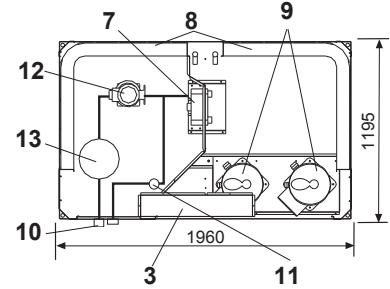
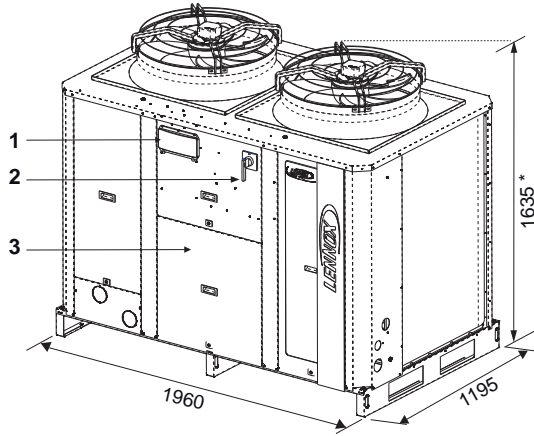
(1) With "QUIET ++" only

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**

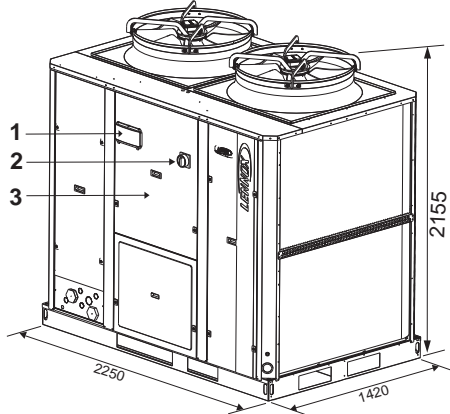
**EAC/EAR 0472-0552-0672-0812**



\* Size 0472 = Height 1616 mm

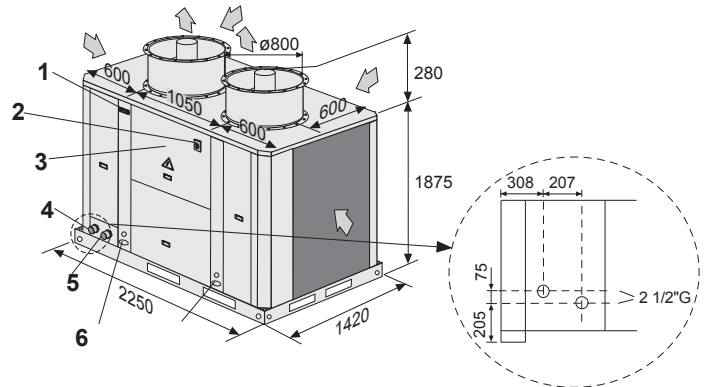
**STANDARD UNITS**

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

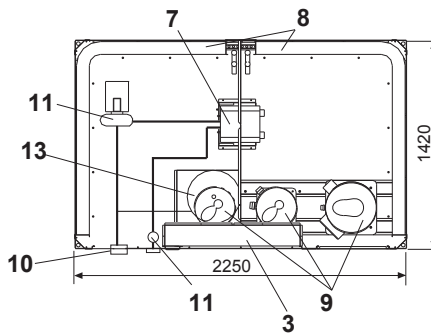


**HIGH STATIC PRESSURE UNITS**

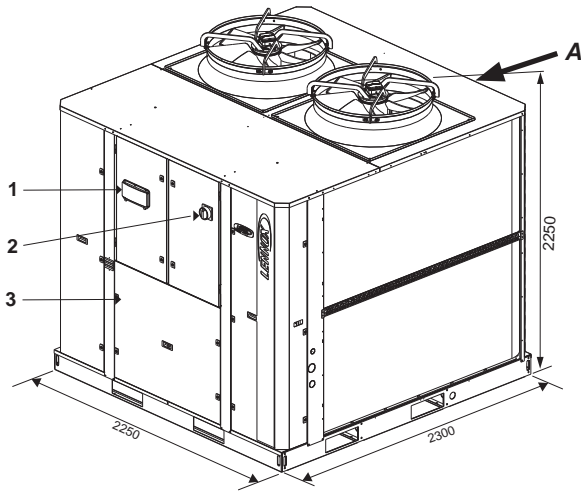
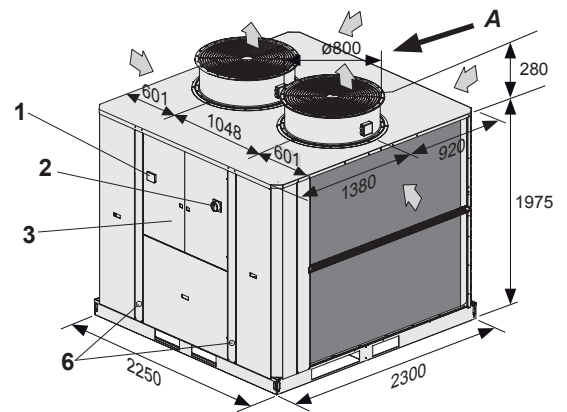
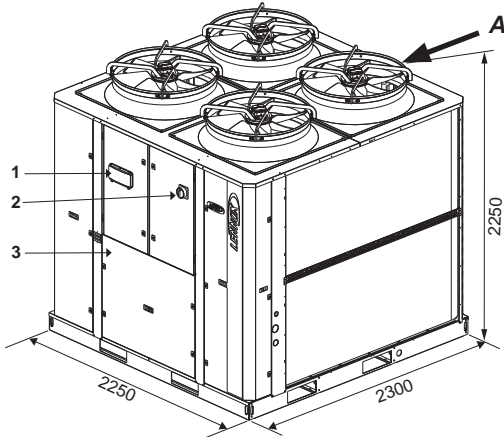
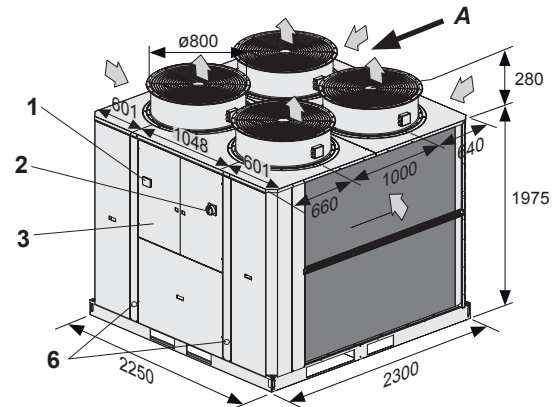
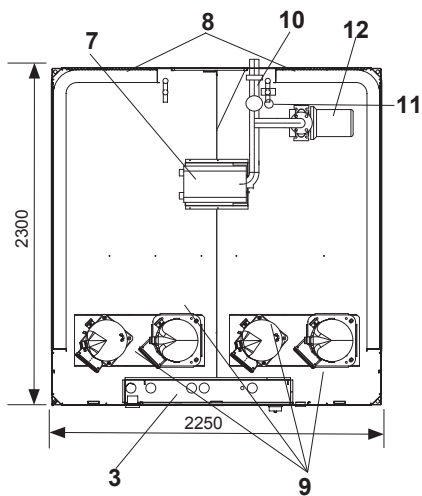
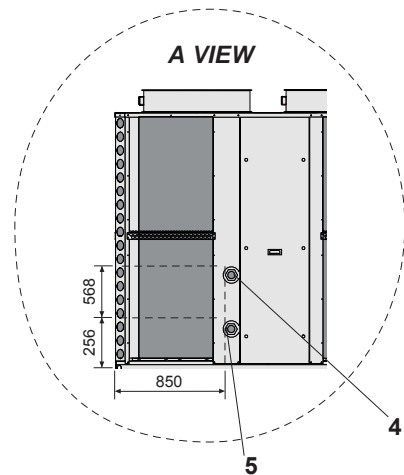
**EAC/EAR  
1003 FM-1103 FM-1203 FM-1303 FM-1403 FM**



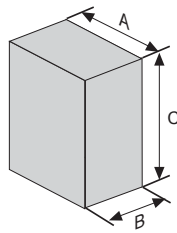
**COMPONENT POSITION**



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**
**EAC/EAR 1604SM**

**EAC/EAR 1604 FM**

**EAC/EAR 1804SM-2104SM**

**EAC/EAR 1804 FM-2104 FM**

**COMPONENT POSITION**

**A VIEW**


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			<b>0472 SM</b>	<b>0552 SM</b>	<b>0672 SM</b>	<b>0812 SM</b>
<b>A</b> Width	mm		1960	1960	1960	1960
<b>B</b> Depth	mm		1195	1195	1195	1195
<b>C</b> Height	mm		1616	1635	1635	1635
Operating weight (*) Kg		<b>EAC</b>	470	482	518	562
		<b>EAR</b>	480	492	534	578

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

(\*) Hydronic or Hydraulic version not included (see page 17).

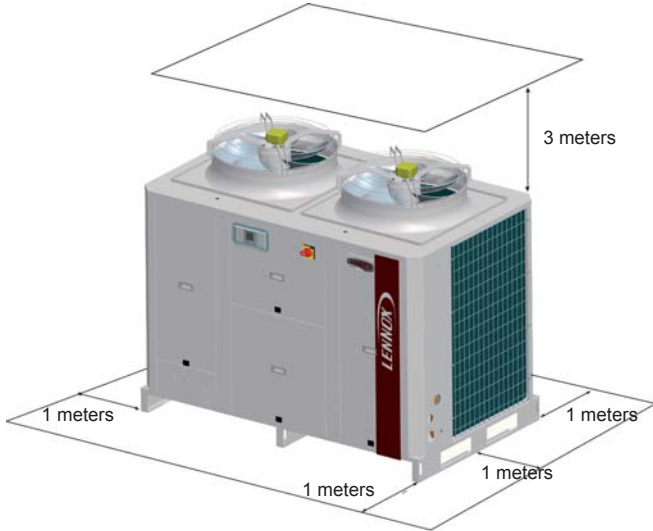
**HIGH STATIC FAN PRESSURE UNITS**

MODELS EAC / EAR			<b>0472 FM</b>	<b>0552 FM</b>	<b>0672 FM</b>	<b>0812 FM</b>
<b>A</b> Width	mm		1960	1960	1960	1960
<b>B</b> Depth	mm		1195	1195	1195	1195
<b>C</b> Height	mm		1616	1635	1635	1635
Operating weight (*) Kg		<b>EAC</b>	500	512	548	592
		<b>EAR</b>	510	522	564	608

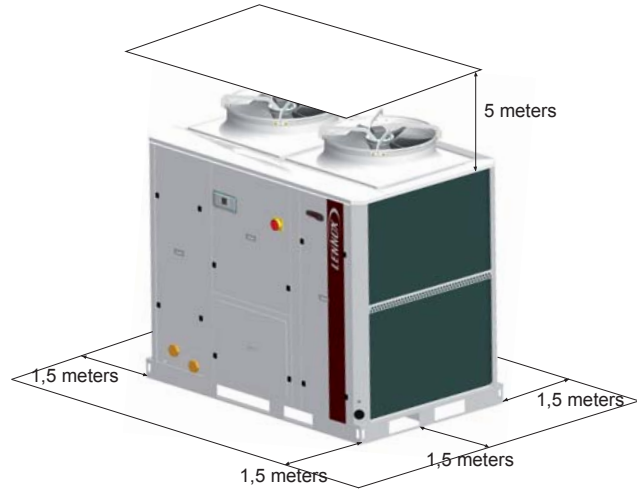
MODELS EAC / EAR			<b>1003 FM</b>	<b>1103 FM</b>	<b>1203 FM</b>	<b>1303 FM</b>	<b>1403 FM</b>	<b>1604 FM</b>	<b>1804 FM</b>	<b>2104 FM</b>
<b>A</b> A - Width	mm		2250	2250	2250	2250	2250	2250	2250	2250
<b>B</b> B - Depth	mm		1420	1420	1420	1420	1420	2300	2300	2300
<b>C</b> C - Height	mm		2155	2155	2155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

(\*) Hydronic or Hydraulic version not included (see page 17).

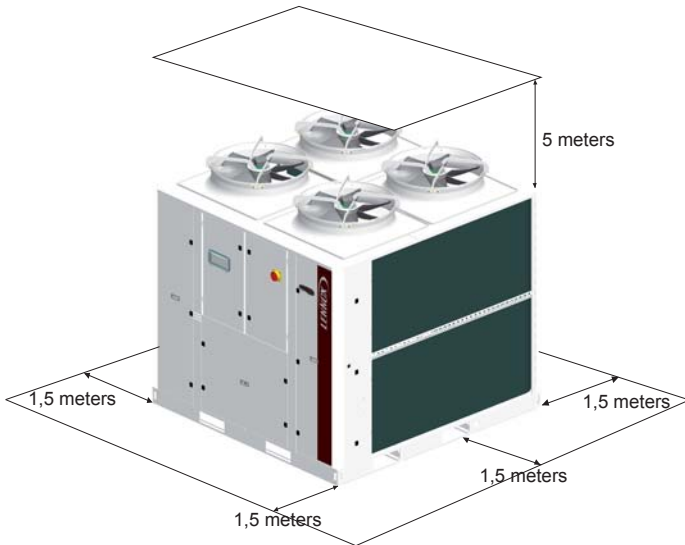
**EAC/EAR**  
**0472-0552-0672-0812**



**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

[lennoxemea.com](http://lennoxemea.com)

Due to LENNOX EMEA ongoing commitment to quality, the specifications, ratings and dimensions are subject to change without notice and without incurring liability.  
Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury.  
Installation and service must be performed by a qualified installer and servicing agency.