

ROOMPack CASR-X

High efficiency cooling only packaged air-conditioner condenserless ductable for indoor installation

CASR-X 31-222 RANGE

Cooling capacity from 10 to 74 kW

- ▶ Refrigerant circuit with R-410A Scroll compressor
- ▶ EC fans to electronic control
- ▶ Very high seasonal efficiency
- ▶ Extremely compact
- ▶ Low noise version
- ▶ Available complete with remote condensers

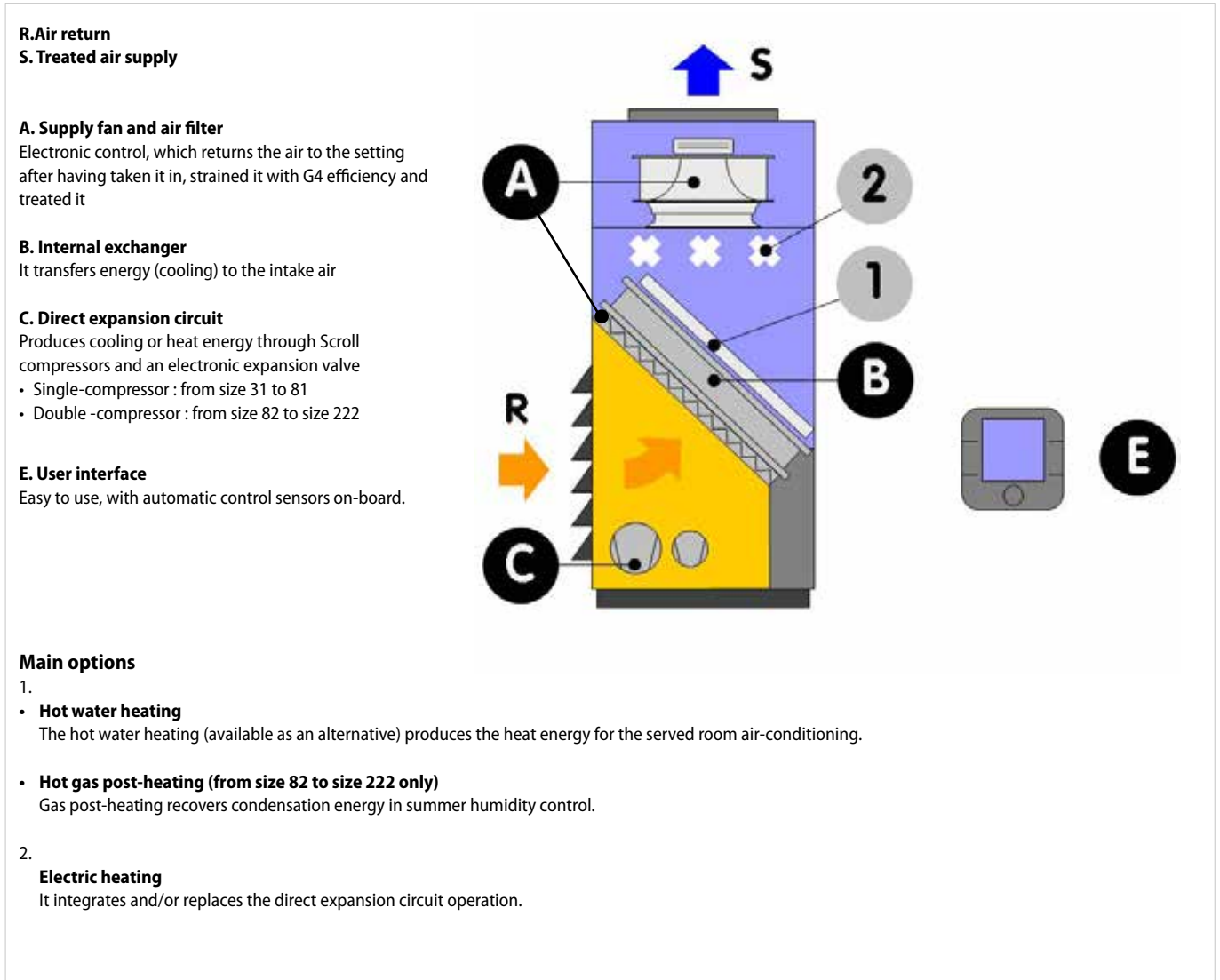


ROOMPack contains all components for the system simplification

Thanks to its packaged construction, ROOMPACK contains the main system components necessary for a correct operation. Thus, it reduces set up time and increases system reliability.

The air is taken from the served rooms, strained and treated by the direct expansion circuit, then returned to the air-conditioned area through the supply opening in an upward direction.

The built-in automatic control is based on the conditions as read by the ambient sensors which are supplied as standard, which activate available capacity in order to maintain the set comfort conditions. If installation of ambient sensors is not suitable, optional temperature and humidity probes are available built-in.



The ordinary maintenance of the main components takes place from the front, thanks to the different dedicated access panels.

Furthermore, the numerous accessories which are available enable the unit **to be personalised**, obtaining functions and performance for the specific system as required.

Easy to position in available settings or technical spaces

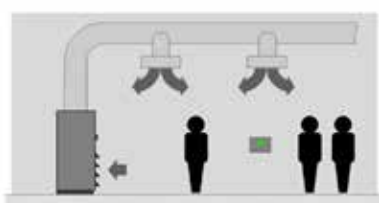
ROOMPACK can be **positioned easily** in one of the following settings:

- directly in the served ambient, in a visible position;
- in technical rooms;
- in service rooms, for instance, warehouses and store rooms.

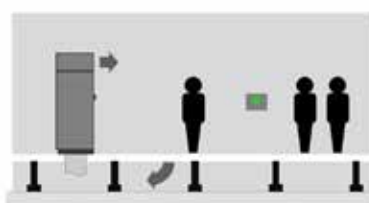
This versatility is made possible by **the different solutions available for the supply and intake of air**, and due to its numerous combinations.

The most frequently used installation modes are, for instance:

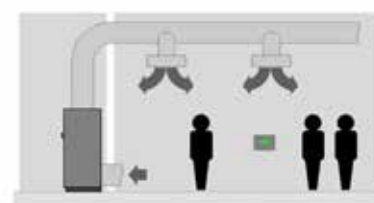
- Installation directly in the served setting or in technical or service rooms, with frontal intake from a free opening via an integrated grille and duct type vertical intake
- Direct installation in the setting, with low intake (from the plenum or raised flooring) and frontal supply using a special optional plenum, complete with a double set of adjustable fins
- Installation in the service room next to the served room, with a rear ducted intake and vertical supply which is also ductable. This is frequently used in commercial applications, where the unit is typically installed in a warehouse (behind the store) with a rear intake which communicates directly with the served setting, and with a ductable supply.



FRONTAL INTAKE AND UPWARD DUCT TYPE SUPPLY



DUCT TYPE LOW INTAKE AND FRONTAL SUPPLY WITH DEDICATED PLENUM
(from size 82 to size 222 only)



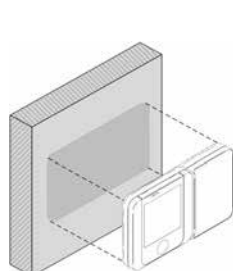
REAR DUCT TYPE INTAKE AND UPWARD DUCT TYPE SUPPLY

This image represents only a few of the numerous positioning possibilities.

Easy to use

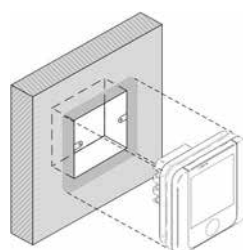
The control display is modern and very **easy to use** even for non-specialist users. It also has different levels of password protected access to the management of unit functions.

It is standard for on wall installation, outside the unit. On request it can be supplied for installation in a built-in cover or on the front panel of the unit.



on wall (std)

REMOTE INSTALLATION



in a built-in cover

BUILT-IN INSTALLATION



on the front panel

The reliable, highly energy efficient solution

All the solutions adapted by ROOMPACK for the production of cool energy and for air-conditioning increase energy efficiency with maximum reliability.

Scroll module technology for maximum efficiency at partial loads

Since the maximum power generated by the system is requested only for short periods of time, it is fundamental to dispose of the **maximum efficiency in the conditions of part-load.**

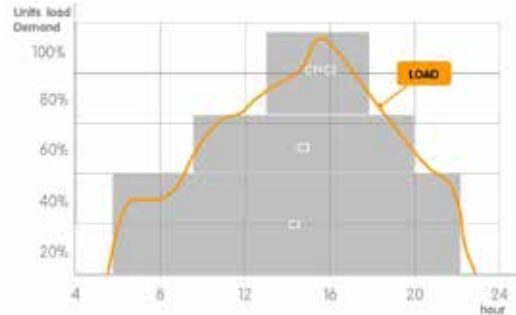
By using only one of the two compressors, efficiency is increased by more than 40%, thanks to the larger heat exchange surfaces.

In addition, the selection of different sized compressors makes it possible to obtain more control steps, providing only the effectively necessary energy for use.

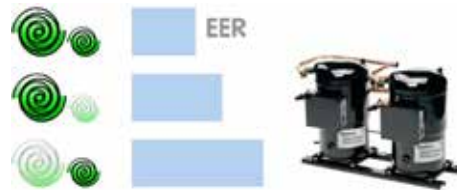
By continuously adapting itself to the inlet air conditions in the environment, this solution also **improves comfortable conditions for the users and operators.**

Single-compressor version: from size 31 to 81

THE USE OF DIFFERENT SIZED COMPRESSORS OPTIMALLY COMPENSATES FOR THE AMBIENT LOAD



THE SEQUENTIAL DEACTIVATION OF THE COMPRESSORS INCREASES EFFICIENCY



Stable and reliable operating

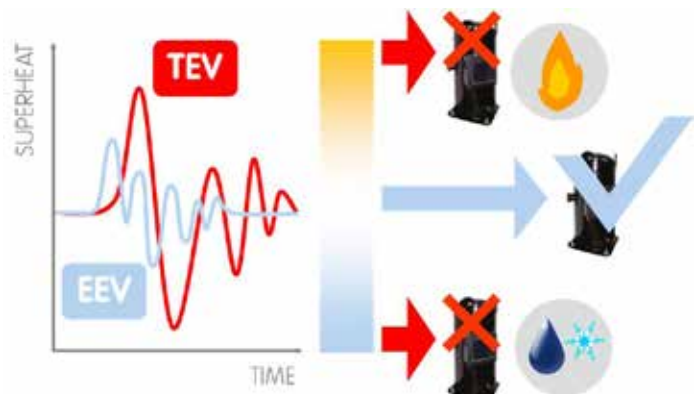
The electronic expansion valve (EEV) adapts rapidly and precisely to the actual load required for usage, allowing **stable and reliable adjustment.**

This results also in a further **increase in efficiency and longer compressor life.**

The overheating control allows preventing phenomena that are hazardous to the compressors, such as overtemperature and return fluids, thereby increasing even more efficiency and durability.

The electronic expansion valve allows to operate with a lower condensation temperature compared to a mechanic thermostatic valve.

The benefits can be greater than 10% energy savings in temperate climates but are also evident in the hot climates.



Even more silent composite structure plug-fans

How to improve ventilation whilst reducing prime (electric) energy consumption

A significant portion of the running costs of the fresh air systems is due to the consumption for ventilation. To this there should be added the charge for the study of the correct operating conditions, and for the required long and precise calibrations at the worksite.

The use of fans with PLUG FAN technology allows both of these operational costs to be achieved.

Versatility of reversed blades rotor

This particular type of rotor offers a **wider field of operation** compared with a traditional forward curved blade fan. When necessary, this can supply high static pressures simply by varying the number of revolutions. The accurate balancing and the self-lubricating bearings ensure its rotating stability over time.



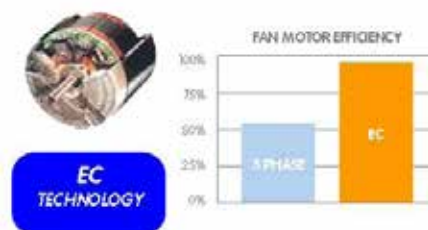
The efficiency of the electronic controlled motor

The external rotor electric motor is driven by the continuous magnetic switching of the stator. The advantages are:

The lack of brushes and the particular power supply increase efficiency by 70%;

Even the life cycle increases, thanks to **the elimination of the brushes' natural abrasive erosion effects**;

The electronic control also includes a "soft start" solution, which drastically **reduces the starting current** of the fan and limits even more the system's electrical commitment.



Advantages of direct coupling (plug fan)

The motor's rotation is transmitted directly to the rotor, without **the use of transmissions** (belts and pulleys):

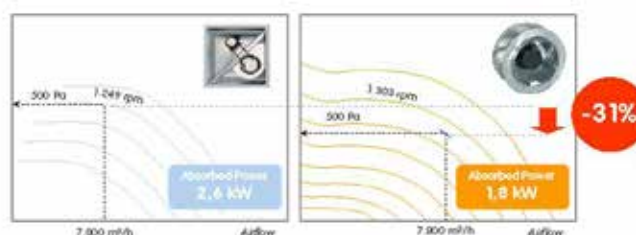
- the transmissions' inefficiencies are eliminated;
- the transmissions' wear and maintenance is eliminated.



Efficiency of the ventilation system increases by 30%

The comprehensive ventilation system, made up of rotor and motor, is therefore very versatile and efficient.

Consumption is 30% lower than a ventilation system of the same capacity used by traditional units available on the market.



Electrical power absorption from the electric motor, manufacturer data - Example referred to the flow of 7,800 m³/h with static pressure equal to 500 Pa

Higher levels of silence with composite

The fan impeller is made of a hybrid structure with aluminium alloy and plastic, with optimised aerodynamic blades. **Thus electric absorption from the motor is reduced, obtaining a high level of silence whilst operating.**

This further technological progress increases the advantages in comparison with traditional centrifugal fans.



Composite construction except for size 122

The right air flow for every type of system

By setting the fan speed on the display, it is possible to modify the air flow, adapting the head yield to the pressure drop carried out by the system and thus, simplifying the start up of the unit. It is no longer necessary to calibrate or modify the transmissions in as much as it is **the fan system which adapts to the system.**

The possibility to modify the fan start-up ramp makes this **unit suitable for most applications with textile air distribution ducting.**



A perfect matching with remote condensers of CE-X SERIES

The performance of the direct expansion internal unit is strictly connected to the remote condenser choice and quality.

The CE-X remote condensers, using large coil surface and fans positioned in aerodynamic nozzles, allow to have a perfect air distribution.

This allows to reach a quiet operation and extremely high efficiency for the thermal exchange.



Air quality always under control

Air filtration is a compulsory function in order to correctly maintain conditions of wellness and hygiene in the served environments. For this reason, it is subjected to precise regulations based on the specific applications.

The units are provided standard with large surface area and low pressure drop filters with a G4 efficiency level.



Easy to use in the small and large plants

Standard automatic functions

ROOMPACK is complete with automatic room temperature and humidity control:

- it detects the room conditions and compares them with the user set point
- it can automatically choose the operating mode (heating or cooling)
- decides which and how many resources to activate basing on the distance from the determined set-point;

Simple and intuitive user interface

The unit is supplied with an innovative graphic interface as standard pre-set for wall installation (wiring and installation at 230V encharged to the Client).

During maintenance operations, it may be removed from its support and directly connected to the unit electric panel.

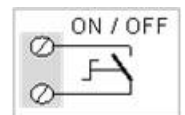
Its main functions include:

- Reading the temperature and humidity using built-in sensors
- Programming working time schedules on a daily/weekly
- Displaying and managing the alarms and operating parameters
- Enabling manual management of the function modes (heating or cooling)



Voltage-free contact user interface

The standard version has a series of free contacts, or rather contacts without tension, for remotely managing the following functions: Switching on and switching off, changing function mode (heating or cooling), cumulative alarm.



Serial connection user interface

Thanks to the different communication protocols available, the unit is able to exchange information with the main supervisory systems using serial connections.



Standard unit technical specifications

Compressor

Hermetic orbiting scroll compressor complete with motor winding and delivery gas over-temperature and over-current devices. Fitted on rubber antivibration mounts and complete with oil charge.

- From size 31 to 81 single compressor
- From size 82 to 222 two compressors are connected in TANDEM on a single refrigeration circuit, with a biphasic oil equalisation.

An oil heater, which starts automatically, keeps the oil from being diluted by the refrigerant when the compressor stops.

Structure

The support base is assembled with a painted galvanized steel frame. The internal structure is made of "ALUZINK" bent galvanized steel. The alloy that protects the Aluzink allow an excellent corrosion proofing thanks to the galvanic protection typical of the combination aluminium-zinc.

Panelling

External panelling with pre-painted panels covered with thermo-insulating and soundproofing material (class 1 flame resistant - DIN 53438).

All panelling can easily be removed to allow complete accessibility to internal components.

Internal exchanger

direct expansion finned exchanger, made from copper pipes in staggered rows and mechanically expanded to the fin collars. The fins are made from aluminium with a corrugated surface and adequately distanced to ensure the maximum heat exchange efficiency.

Fan

Plug fans without scroll with reverse blades driven by electronically-controlled "brushless" dc motors with direct coupling. No transmission sizing is needed.

Refrigeration circuit

Refrigeration circuit with:

- nitrogen charge
- sight glass with moisture and liquid indicator
- high pressure safety pressure switch
- low pressure safety switch
- filter dryer
- electronic expansion valve
- liquid receiver
- high pressure safety valve
- low pressure safety valve

Filtration

Pleated filter for greater filtering surface, made of a galvanized sheet frame with a galvanized and electric-welded protective mesh, and regenerable filtering media made from polyester fibre sized with synthetic resins. G4 efficiency according to CEN-EN 779 standard (Eurovent classification EU4/5 - separation average 90.1% ASHRAE 52-76 Atm). Self-extinguishing type (flame resistant class 1 - DIN 53438).

Drain pan

Condensation collection basin in aluminium alloy 1050 H24 with anti-condensation insulation, welded and equipped with siphoned drain tube

Electrical panel

The electrical panel is located inside the unit and is easily accessible thanks to removable panels.

The capacity section includes:

- main line isolator switch
- compressor power supply remote control switch
- isolating transformer for auxiliary circuit power supply
- auxiliary circuit fuse
- fan motor power supply remote control switch
- fan overload circuit breakers

The control section includes:

- microprocessor control
- treated air temperature control
- compressor overload protection and timer
- self-diagnosis system with immediate display of the error code
- voltage-free contacts for remote ON-OFF, cumulative alarm, fire alarm input, fan state, compressor state, summer/winter mode, 0-10V signal external humidifier management

Wall room electronic control including:

- intuitive graphical interface retro lighted
- temperature and humidity measurement through its internal probes
- modification of the temperature and humidity set point
- unit On/Off and overload reset
- switch on and off daily and weekly programmer and set point
- setting of ventilation only operation
- language management for the navigation menu
- display of operating status
- display of alarms and failure code
- management of the operating parameters.
- machine parameter protection with password

Accessories

- clogged filter differential pressure switch air side
- two-rows hot water coil
- modulating 3-way valve - Optional component - Available from size 82 to size 222.
- hot gas re-heating coil - Available from size 82 to size 222.
- external humidifier control with 0-10V command
- electronic room control with display, for wall installation in built-in box
- constant supply airflow
- temperature control with on-board probe
- ambient humidity and temperature control with built-in probes
- modbus RS485 serial port, inbuilt
- electric heaters.
- high and low pressure gauges
- phase monitor
- power factor correction capacitors (cosfi > 0.9)

Accessories separately supplied

- Front air supply plenum H=500mm
- Air supply plenum on three sides - Available from size 31 to size 81
- Modulating 3-way valve - Available from size 31 to size 81
- LonWorks serial communication module
- BACnet serial communication module
- Rubber antivibration mounts

Test

unit manufactured according to the ISO 9001 quality standards and subject to functional testing at the end of the production line

Matching to remote condenser (SERIE CE-X)

- Standard: DT = 15°C
- Maximum compactness: DT = 20°C
- High efficiency: DT = 12,5°C

DT = Outdoor air temperature - Condensation temperature

According to the different design requirements it is possible to select the remote condenser of series CE-X following the "standard acoustic configuration" or the "low noise configuration" criteria.

General technical data

Size			31	41	51	61	71	81	82	102	122	162	182	222
Cooling with rated condensation temperature														
Cooling capacity	1		9.9	11.5	14.9	16.4	18.5	23.3	32.8	37.8	46.6	53.4	63.4	73.7
Sensible capacity	1		7.0	8.2	10.6	11.4	12.6	15.7	26.9	30.4	38.3	43.7	51	58.9
Compressor power input	1		2.3	2.7	3.4	4.1	4.5	5.6	7.4	8.5	10.1	11.7	13.7	16.3
EER	1		4.3	4.3	4.4	4.0	4.1	4.2	4.43	4.4	4.6	4.6	4.6	4.5
Cooling - Matching to standard remote condenser														
Cooling capacity	2	kW	9.8	11.3	14.6	16.0	18.3	22.9	30.5	34.1	43.5	49.6	58.9	68.7
Sensible capacity	2	kW	7.9	9.2	11.8	13.1	13.9	17.6	26.1	29.3	36.9	42.3	48.7	55.6
Compressor power input	2	kW	2.5	2.9	3.7	4.5	4.8	6.1	8.5	10.1	11.6	13.3	15.5	18.7
EER			3.9	3.9	3.9	3.6	3.8	3.8	3.6	3.9	3.8	3.7	3.8	3.7
Compressor														
Type of compressors	3		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
No. of compressors		No	1	1	1	1	1	1	2	2	2	2	2	2
Std Capacity control steps		No	1	1	1	1	1	1	3	3	2	3	3	3
Refrigeration circuits		No	1	1	1	1	1	1	1	1	1	1	1	1
Air Handling Section Fans (Supply)														
Type of supply fan	4		RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
Number of supply fans		No	1	1	1	1	1	1	1	2	2	2	2	2
Fan diameter		mm	310	310	310	355	355	355	500	500	450	500	500	500
Type of motor	5		EC	EC	EC	EC	EC	EC	EC	EC	EC	EC	EC	EC
Supply airflow		l/s	569	778	889	1056	1167	1250	1944	2222	2778	3194	3611	15000
Supply airflow		m ³ /h	2050	2800	3200	3800	4200	4500	7000	8000	10000	11500	13000	15000
Installed unit power		kW	0.80	0.80	0.80	0.90	0.90	0.90	2.70	2.70	1.00	2.70	2.70	2.70
Max. static pressure supply fan	6	Pa	700	460	275	365	240	120	450	340	240	540	510	400
Power supply														
Standard power supply		V	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50

Performance refers to operation at full re-circulation

DB = dry bulb
WB = wet bulb

- Ambient air at 27°C/19°C W.B.
condensing temperature = 45°C
Performance not including fan motor capacity
EER referred only to compressors
- Ambient air at 27°C/19°C W.B.
entering air temperature to the external exchanger 35°C

- Performance not including fan motor capacity
EER referred only to compressors
Data referred to Acoustic Configuration: Standard and to matching to remote condenser: Standard.
- SCROLL = scroll compressor
 - RAD = radial fan
 - EC Electronic switching motor
 - Net outside static pressure to win the outlet and intake onboard pressure drops

Electrical data

Size			31	41	51	61	71	81	82	102	122	162	182	222
F.L.A. - Full load current at max admissible conditions														
F.L.A. - Compressor 1		A	5.50	5.70	7.30	9.20	9.90	12.5	9.80	9.80	14.3	15.2	15.2	15.2
F.L.A. - Compressor 2		A	-	-	-	-	-	-	10.2	14.3	14.3	17.3	22.8	30.9
F.L.A. - Single supply fan		A	1.60	1.60	1.60	1.70	1.70	1.70	4.30	4.30	2.20	4.30	4.30	4.30
F.L.A. - Total	1	A	7.60	7.80	9.40	11.40	12.1	14.7	24.8	28.9	33.5	41.6	47.1	55.2
L.R.A. - Locked rotor amperes														
L.R.A. - Compressor 1		A	46.0	43.0	54.5	64.0	75.0	101	64.0	64.0	101	95.0	95.0	95.0
L.R.A. - Compressor 2		A	-	-	-	-	-	-	64.0	101	101	111	118	174
F.L.I. - Full load power input at max admissible conditions														
F.L.I. - Compressor 1		kW	3.00	3.40	4.30	5.30	5.70	6.90	5.90	5.90	8.30	8.90	8.90	8.90
F.L.I. - Compressor 2		kW	-	-	-	-	-	-	6.00	8.30	8.30	9.90	13.4	17.2
F.L.I. - Single supply fan		kW	0.80	0.80	0.80	0.90	0.90	0.90	2.70	2.70	1.00	2.70	2.70	2.70
F.L.I. - Total	2	kW	4.10	4.50	5.50	6.50	6.90	8.10	14.9	17.2	18.9	24.5	28.0	31.8
M.I.C. Maximum inrush current														
M.I.C. - Value		A	55.1	52.3	62.4	76.4	88.8	117	78.6	116	120	135	142	198

Data refer to standard units.

- power supply: 400/3/50 Hz +/-10%
- voltage unbalance between phases: max 2%

1. Values not including accessories: to obtain the value of F.L.A. including accessories, add to the total F.L.A. value that of any accessories (see electrical data of accessories)

2. Values not including the accessories. To obtain the value of F.L.I. including accessories, add to the total F.L.I. value that of any accessories (see electrical data of accessories)

Electrical input of optional components

To obtain the electrical input of the unit including accessories, add the standard data in Electrical Data table to those for the selected accessories.

SIZES			31	41	51	61	71	81	82	102	122	162	182	222
F.L.A. ABSORBED CURRENT														
F.L.A. EH09 - 4,5 kW electric elements		A	6.5	6.5	6.5	6.5	6.5	6.5	-	-	-	-	-	-
F.L.A. EH06 - 6 kW electric elements		A	8.7	8.7	8.7	8.7	8.7	8.7	-	-	-	-	-	-
F.L.A. EH12 - 9 kW electric elements		A	13.0	13.0	13.0	13.0	13.0	13.0	-	-	-	-	-	-
F.L.A. EH14 - 12 kW electric elements		A	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	-	-
F.L.A. EH17 - 18 kW electric elements		A	-	-	-	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
F.L.A. EH22 - 27 kW electric elements		A	-	-	-	-	-	-	39.0	39.0	39.0	39.0	39.0	39.0
F.L.A. EH24 - 36 kW Heating elements		A	-	-	-	-	-	-	-	-	-	-	52.0	52.0
F.L.I. POWER INPUT														
F.L.I. EH09 - Electric elements of 4,5 kW		kW	4.5	4.5	4.5	4.5	4.5	4.5	-	-	-	-	-	-
F.L.I. EH06 - 6 kW electric elements		kW	6.0	6.0	6.0	6.0	6.0	6.0	-	-	-	-	-	-
F.L.I. EH12 - Electric elements of 9 kW		kW	9.0	9.0	9.0	9.0	9.0	9.0	-	-	-	-	-	-
F.L.I. EH14 - Electric elements of 12 kW		kW	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	-	-
F.L.I. EH17 - Electric elements of 18 kW		kW	-	-	-	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
F.L.I. EH22 - 27 kW electric elements		kW	-	-	-	-	-	-	27.0	27.0	27.0	27.0	27.0	27.0
F.L.I. EH24 - 36 kW heating elements		kW	-	-	-	-	-	-	-	-	-	-	36.0	36.0

Sound levels

The sound levels are referred to unit operating at full load in nominal conditions.

The sound pressure level is referred at a distance of 1 m. from the ducted unit surface operating in free field conditions.

External static pressure 50 Pa.

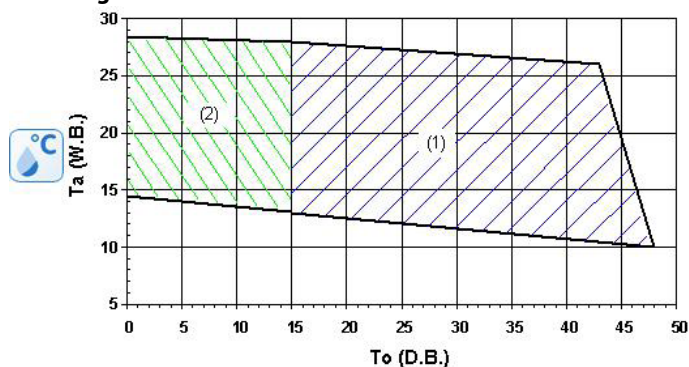
Measurements are made in accordance to the UNI EN ISO 9614-2.

Please note that when the unit is installed in conditions different from nominal test conditions (e.g. near walls or obstacles in general), the sound levels may undergo substantial variations.

SIZES	Sound Power Level (dB)								Sound pressure level	Sound power level
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
31	68	68	70	64	63	62	51	48	53	68
41	71	71	73	66	64	64	53	50	55	70
51	72	72	75	68	66	66	56	51	57	72
61	74	74	77	70	68	68	58	53	59	74
71	76	75	80	72	70	69	60	54	61	76
81	78	77	82	74	72	71	62	55	63	78
82	67	72	79	74	71	67	59	54	60	76
102	70	75	82	77	74	70	62	56	63	79
122	67	74	78	75	71	66	54	54	59	76
162	68	73	80	75	72	69	59	56	61	78
182	70	75	82	77	74	71	62	57	63	80
222	73	77	85	80	77	73	66	60	65	82

Operating range (Cooling)

Matching to standard remote condenser



The limits are indicative and have been calculated considering:

- values general and not specifications,
- standard air flow-rate,
- non-critical positioning and correct use of the unit,
- operation at full load

Ta = entering air temperature to the air handling coil (°C)

WARNING! WET BULB TEMPERATURE (W.B. = WET BULB)

To = External exchanger entering air temperature D.B.(°C) (D.B. = DRY BULB)

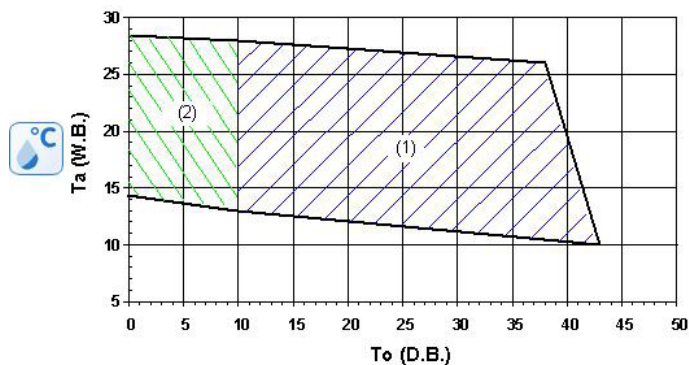
1. operation range of the unit matched to standard remote condenser
2. operating limit of the unit combined to remote condenser with fresh air low temperature device

Example
Wet bulb temperature

19°C W.B. 24°C D.B. / 63% R.H.
26°C D.B. / 52% R.H.
27°C D.B. / 48% R.H.



Matching to max. compactness remote condenser



Matching to high efficiency remote condenser

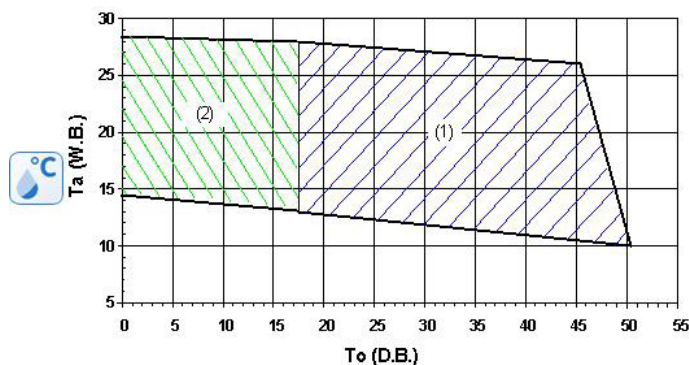


Table of the matching with single circuit remote condensers (CE-X series)

According to the installation requirements, three types of matchings to remote condensers, CE-X series, are provided:

- Maximum compactness (minimum overall dimensions)
- Standard
- High efficiency (wide exchange surface)

Besides, it is possible to choose the remote condenser according to the acoustic configuration: Standard (ST) or Low noise (LN).

SIZES	EXTREME COMPACTNESS				STANDARD				HIGH EFFICIENCY			
	ST	LN	Tmin*	Tmax	ST	LN	Tmin*	Tmax	ST	LN	Tmin*	Tmax
31	CE-X 25-ST	CE-X 41-LN	10°C	35°C	CE-X 31-ST	CE-X 51-LN	10°C	40°C	CE-X 51-ST	CE-X 61-LN	10°C	46°C
41	CE-X 31-ST	CE-X 51-LN	10°C	35°C	CE-X 41-ST	CE-X 61-LN	10°C	40°C	CE-X 51-ST	CE-X 71-LN	10°C	46°C
51	CE-X 41-ST	CE-X 51-LN	10°C	35°C	CE-X 51-ST	CE-X 71-LN	10°C	40°C	CE-X 61-ST	CE-X 91-LN	10°C	46°C
61	CE-X 51-ST	CE-X 61-LN	10°C	35°C	CE-X 61-ST	CE-X 91-LN	10°C	40°C	CE-X 91-ST	CE-X 101-LN	10°C	46°C
71	CE-X 51-ST	CE-X 71-LN	10°C	35°C	CE-X 71-ST	CE-X 101-LN	10°C	40°C	CE-X 101-ST	CE-X 121-LN	10°C	46°C
81	CE-X 61-ST	CE-X 91-LN	10°C	35°C	CE-X 91-ST	CE-X 121-LN	10°C	40°C	CE-X 121-ST	CE-X 141-LN	10°C	46°C
82	CE-X 91-ST	CE-X 121-LN	10°C	35°C	CE-X 121-ST	CE-X 141-LN	10°C	40°C	CE-X 141-ST	CE-X 181-LN	10°C	46°C
102	CE-X 101-ST	CE-X 121-LN	10°C	35°C	CE-X 121-ST	CE-X 161-LN	10°C	40°C	CE-X 161-ST	CE-X 201-LN	10°C	46°C
122	CE-X 121-ST	CE-X 141-LN	10°C	35°C	CE-X 141-ST	CE-X 201-LN	10°C	40°C	CE-X 181-ST	CE-X 201-LN	10°C	46°C
162	CE-X 141-ST	CE-X 161-LN	10°C	35°C	CE-X 161-ST	CE-X 222-LN	10°C	40°C	CE-X 201-ST	CE-X 222-LN	10°C	46°C
182	CE-X 141-ST	CE-X 201-LN	10°C	35°C	CE-X 181-ST	CE-X 222-LN	10°C	40°C	CE-X 262-ST	CE-X 262-LN	10°C	46°C
222	CE-X 161-ST	CE-X 222-LN	10°C	35°C	CE-X 201-ST	CE-X 262-LN	10°C	40°C	CE-X 302-ST	CE-X 302-LN	10°C	46°C

ST = remote condenser acoustic configuration: standard

LN = remote condenser acoustic configuration: low noise

Tmin* = min. Outside temperature operation. When outside air temperature are lower than Tmin it is possible to equip the remote condenser with low temperature device (see accessory CE-X)

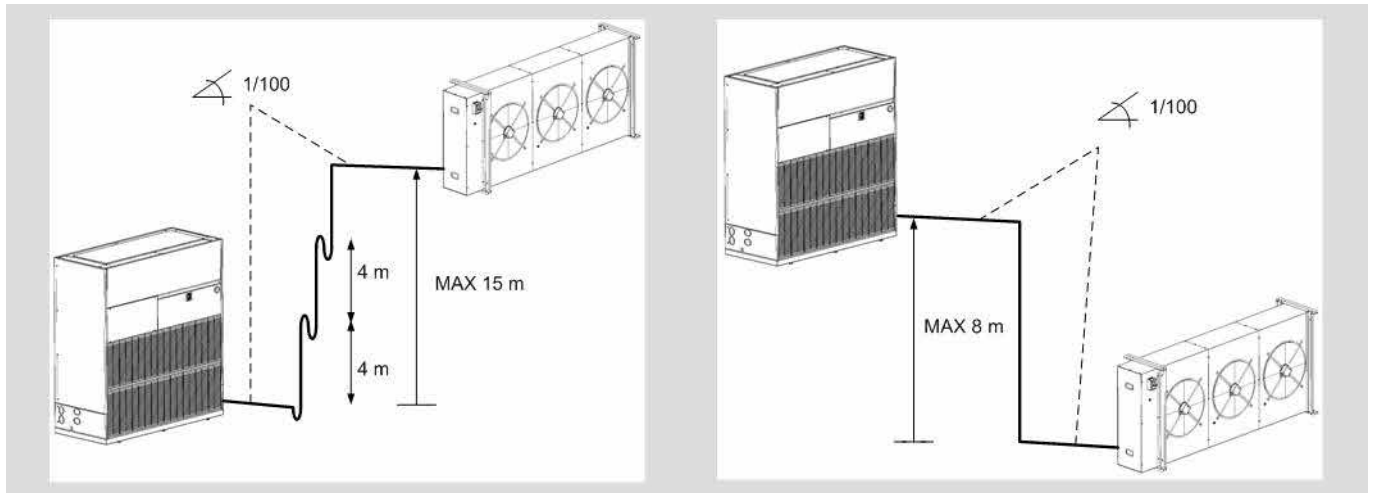
Tmax = utility external air max. temperature

External diameter of the refrigerant lines

SIZES		31	41	51	61	71	81	82	102	122	162	182	222
External diameter of the gas pipeline	mm	12	12	12	16	16	16	18	18	22	22	22	22
External diameter of the liquid pipe	mm	12	12	12	16	16	16	16	18	18	22	22	22

Copper pipe recommended diameters for applications with R-410A refrigerant, max. operation pressure PS = 45 bar

Connection drawing of internal unit with external unit



The plan shows the discharge line (gas line).

Observe the slopes shown. When the external unit is positioned in a higher position than the internal unit, oil traps each 4 m in the vertical lines must be foreseen.

Performance Correction Factors for combination with remote condenser

	Max. difference in height (m)	Total equivalent length (m)		
		10	20	30
Performance corrective coefficient	8	0.99	0.98	0.97
Absorbed capacity corrective coefficient		1.01	1.03	1.05
Performance corrective coefficient	15	0.98	0.97	0.96
Absorbed capacity corrective coefficient		1.03	1.04	1.06

The equivalent length is the maximum one suggested for a correct dimensioning of the installation.

The equivalent length is the addition of the effective piping length and a length corresponding to the distributed and concentrated pressure drops.

To calculate the equivalent length, please refer to the tables or to the data declared by the supplier of the pipes.

Performances referred to matching with standard remote condenser

Size		31	41	51	61	71	81	82	102	122	162	182	222
Airflow	l/s	569	778	889	1056	1167	1250	1944	2222	2778	3194	3611	4167
Airflow	m ³ /h	2050	2800	3200	3800	4200	4500	7000	8000	10000	11500	13000	15000
Max external static pressure	Pa	700	460	275	365	240	120	450	340	240	540	510	400

SIZE	Ta (°C) DB/WB	STEP	OUTDOOR AIR TEMPERATURE °C															
			25				30				35				40			
			kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER
31	22 / 16	1	9,7	2,0	7,4	4,89	9,3	2,2	7,1	4,15	8,8	2,5	6,9	3,55	8,4	2,7	6,6	3,06
	24 / 17	1	10,0	2,0	7,8	5,02	9,6	2,2	7,6	4,28	9,1	2,5	7,3	3,66	8,7	2,8	7,1	3,14
	26 / 18	1	10,4	2,0	8,3	5,14	9,9	2,3	8,1	4,40	9,5	2,5	7,8	3,77	8,9	2,8	7,6	3,23
	27 / 19	1	10,7	2,0	8,3	5,25	10,2	2,3	8,1	4,51	9,8	2,5	7,9	3,87	9,2	2,8	7,7	3,31
	28 / 20	1	11,0	2,1	8,4	5,36	10,5	2,3	8,2	4,61	10,0	2,5	8,1	3,96	9,5	2,8	7,9	3,40
	30 / 22	1	11,6	2,1	8,5	5,54	11,1	2,3	8,5	4,78	10,6	2,6	8,6	4,13	10,1	2,8	8,6	3,56
41	22 / 16	1	11,3	2,3	8,7	4,95	10,8	2,6	8,4	4,20	10,3	2,9	8,2	3,55	9,7	3,2	7,9	3,00
	24 / 17	1	11,7	2,3	9,2	5,06	11,2	2,6	9,0	4,31	10,6	2,9	8,7	3,66	10,1	3,3	8,5	3,10
	26 / 18	1	12,0	2,3	9,7	5,17	11,5	2,6	9,5	4,42	11,0	2,9	9,3	3,77	10,4	3,3	9,0	3,20
	27 / 19	1	12,4	2,3	9,6	5,29	11,9	2,6	9,4	4,53	11,3	2,9	9,2	3,87	10,8	3,3	9,0	3,29
	28 / 20	1	12,7	2,3	9,5	5,42	12,2	2,6	9,3	4,65	11,7	2,9	9,1	3,97	11,1	3,3	8,9	3,38
	30 / 22	1	13,4	2,4	9,0	5,68	12,9	2,7	8,8	4,87	12,4	3,0	8,7	4,16	11,8	3,3	8,5	3,55
51	22 / 16	1	14,6	2,9	11,2	5,07	14,0	3,3	10,9	4,28	13,3	3,7	10,5	3,62	12,6	4,1	10,2	3,06
	24 / 17	1	15,1	2,9	11,9	5,19	14,4	3,3	11,6	4,40	13,7	3,7	11,2	3,73	13,0	4,1	10,9	3,15
	26 / 18	1	15,5	2,9	12,6	5,31	14,9	3,3	12,2	4,52	14,2	3,7	11,9	3,83	13,4	4,1	11,5	3,24
	27 / 19	1	16,0	2,9	12,5	5,44	15,3	3,3	12,2	4,63	14,6	3,7	11,8	3,93	13,8	4,1	11,5	3,33
	28 / 20	1	16,5	3,0	12,5	5,56	15,8	3,3	12,2	4,74	15,0	3,7	11,8	4,03	14,2	4,2	11,5	3,42
	30 / 22	1	17,4	3,0	12,6	5,79	16,7	3,4	12,3	4,95	15,9	3,8	12,0	4,22	15,0	4,2	11,7	3,59
61	22 / 16	1	16,0	3,5	12,0	4,58	15,5	3,9	11,6	3,97	14,8	4,4	11,3	3,38	13,8	4,9	10,9	2,82
	24 / 17	1	16,5	3,5	12,8	4,67	15,9	4,0	12,5	4,02	15,1	4,4	12,1	3,43	14,3	4,9	11,8	2,89
	26 / 18	1	17,1	3,6	13,8	4,76	16,3	4,0	13,4	4,09	15,5	4,5	13,1	3,49	14,7	5,0	12,7	2,97
	27 / 19	1	17,6	3,6	13,8	4,86	16,8	4,0	13,5	4,17	16,0	4,5	13,1	3,57	15,2	5,0	12,8	3,05
	28 / 20	1	18,1	3,6	13,7	4,96	17,3	4,1	13,4	4,26	16,4	4,5	13,0	3,65	15,6	5,0	12,6	3,13
	30 / 22	1	19,1	3,7	12,9	5,17	18,3	4,1	12,4	4,50	17,5	4,5	12,0	3,87	16,6	5,0	11,6	3,31
71	22 / 16	1	18,2	3,8	13,4	4,81	17,4	4,2	13,0	4,11	16,6	4,7	12,6	3,52	15,9	5,2	12,3	3,03
	24 / 17	1	18,7	3,8	14,2	4,90	18,0	4,3	13,8	4,22	17,2	4,7	13,4	3,63	16,4	5,3	13,0	3,12
	26 / 18	1	19,3	3,9	14,9	4,99	18,6	4,3	14,5	4,32	17,8	4,8	14,1	3,72	16,9	5,3	13,7	3,19
	27 / 19	1	19,9	3,9	14,7	5,09	19,1	4,3	14,3	4,41	18,3	4,8	13,9	3,81	17,4	5,3	13,5	3,27
	28 / 20	1	20,5	4,0	14,5	5,18	19,7	4,4	14,0	4,50	18,8	4,8	13,6	3,89	17,9	5,4	13,1	3,34
	30 / 22	1	21,7	4,0	13,7	5,38	20,8	4,5	13,2	4,66	19,9	4,9	12,6	4,03	18,9	5,4	12,1	3,48
81	22 / 16	1	22,8	4,8	16,7	4,74	21,8	5,4	16,2	4,06	20,8	6,0	15,7	3,47	19,7	6,6	15,2	2,97
	24 / 17	1	23,5	4,8	17,7	4,85	22,6	5,4	17,2	4,17	21,5	6,0	16,6	3,57	20,4	6,7	16,1	3,06
	26 / 18	1	24,2	4,9	18,7	4,95	23,3	5,5	18,2	4,27	22,2	6,1	17,7	3,67	21,1	6,7	17,1	3,14
	27 / 19	1	24,9	4,9	18,7	5,06	24,0	5,5	18,2	4,37	22,9	6,1	17,6	3,76	21,7	6,7	17,1	3,22
	28 / 20	1	25,7	5,0	18,6	5,15	24,7	5,5	18,1	4,46	23,6	6,1	17,6	3,85	22,4	6,8	17,0	3,30
	30 / 22	1	27,2	5,1	18,2	5,34	26,2	5,7	17,6	4,62	25,0	6,2	17,1	4,00	23,7	6,9	16,6	3,45

Performance refers to operation at full re-circulation

The Acoustic Configuration of the remote condenser does not change the performances.

Ta = entering air temperature to the air handling coil (°C)

DB = dry bulb

WB = wet bulb

STEP = Active capacity steps (the maximum number indicates full capacity / the minimum number indicates the smallest staging step)

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

kWs = sensible cooling capacity (kW)

EER referred only to compressors

Performance values do not include the effect of fan motor heat

SIZE	Ta (°C) DB/WB	STEP	OUTDOOR AIR TEMPERATURE °C																
			25				30				35				40				
			kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	
82	22 / 16	3	30,7	6,6	24,2	4,65	29,4	7,4	23,5	3,99	28,0	8,3	22,9	3,39	26,5	9,2	22,2	2,87	
		2	19,1	3,2	17,0	5,88	18,2	3,6	16,6	5,02	17,3	4,0	16,3	4,29	16,4	4,5	15,8	3,64	
		1	17,3	2,7	16,2	6,51	16,6	3,0	15,9	5,49	15,8	3,4	15,5	4,63	15,0	3,8	15,0	3,93	
	24 / 17	3	31,6	6,7	25,8	4,74	30,3	7,5	25,2	4,05	28,8	8,3	24,5	3,46	27,2	9,3	23,9	2,94	
		2	19,7	3,3	18,5	6,03	18,9	3,6	18,0	5,21	17,9	4,1	17,6	4,42	17,0	4,5	17,0	3,78	
		1	17,9	2,7	17,6	6,68	17,2	3,1	17,2	5,63	16,5	3,4	16,4	4,80	15,7	3,8	15,7	4,09	
	26 / 18	3	32,6	6,8	27,5	4,82	31,2	7,6	26,8	4,13	29,6	8,4	26,2	3,53	28,0	9,3	25,5	3,01	
		2	20,4	3,3	19,8	6,23	19,6	3,6	19,3	5,39	18,6	4,1	18,6	4,59	17,8	4,5	17,7	3,94	
		1	18,6	2,7	18,6	6,89	17,9	3,1	17,9	5,83	17,2	3,5	17,1	4,96	16,5	3,9	16,2	4,26	
	27 / 19	3	33,6	6,8	27,4	4,91	32,1	7,6	26,7	4,20	30,5	8,5	26,1	3,60	28,9	9,3	25,4	3,09	
		2	20,9	3,3	19,8	6,36	20,1	3,6	19,4	5,51	19,0	4,1	18,9	4,69	18,1	4,5	18,1	4,02	
		1	19,0	2,7	18,9	6,99	18,3	3,1	18,3	5,92	17,5	3,5	17,5	5,05	16,8	3,9	16,5	4,35	
	28 / 20	3	34,5	6,9	27,3	5,01	33,0	7,7	26,6	4,29	31,4	8,5	25,9	3,69	29,7	9,4	25,3	3,17	
		2	21,5	3,3	19,8	6,52	20,5	3,7	19,4	5,60	19,6	4,1	18,9	4,81	18,5	4,5	18,4	4,11	
		1	19,5	2,7	18,9	7,15	18,7	3,1	18,5	6,04	17,9	3,5	17,9	5,13	17,1	3,9	17,1	4,41	
	30 / 22	3	36,5	7,0	27,1	5,20	34,9	7,8	26,4	4,48	33,3	8,6	25,6	3,88	31,6	9,4	24,9	3,36	
		2	22,8	3,3	19,7	6,84	21,7	3,7	19,4	5,90	20,7	4,1	18,9	5,08	-	-	-	-	
		1	20,6	2,8	18,8	7,44	-	-	-	-	-	-	-	-	-	-	-	-	
	102	22 / 16	3	34,7	8,0	27,2	4,33	33,1	9,0	26,4	3,70	31,6	9,9	25,7	3,19	30,0	10,9	25,0	2,76
			2	23,8	4,4	20,2	5,46	22,8	4,9	19,7	4,71	21,7	5,4	19,2	4,01	20,6	6,0	18,8	3,44
			1	17,6	2,7	17,3	6,57	16,9	3,0	16,8	5,57	16,1	3,4	16,1	4,71	15,4	3,8	15,2	4,03
24 / 17		3	35,5	8,1	29,0	4,40	33,9	9,0	28,3	3,77	32,3	10,0	27,6	3,25	30,9	11,0	26,9	2,82	
		2	24,5	4,4	21,9	5,57	23,6	4,9	21,3	4,81	22,4	5,5	20,9	4,11	21,3	6,0	20,3	3,55	
		1	18,3	2,7	18,3	6,80	17,7	3,1	17,3	5,77	16,9	3,4	16,7	4,91	16,1	3,9	16,0	4,18	
26 / 18		3	36,4	8,1	30,8	4,47	34,7	9,1	30,1	3,84	33,2	10,0	29,4	3,31	31,8	11,0	28,7	2,88	
		2	26,1	4,5	21,7	5,79	25,0	5,0	21,1	5,02	23,8	5,5	20,7	4,30	22,6	6,1	20,2	3,71	
		1	19,2	2,7	18,7	7,06	18,4	3,1	18,3	5,95	17,6	3,5	17,6	5,07	16,9	3,9	16,6	4,35	
27 / 19		3	37,5	8,2	30,7	4,56	35,7	9,1	30,0	3,91	34,1	10,1	29,3	3,38	32,7	11,1	28,6	2,94	
		2	26,5	4,5	22,5	5,85	25,4	5,0	21,9	5,07	24,2	5,5	21,5	4,37	22,8	6,1	21,1	3,72	
		1	19,5	2,7	19,4	7,15	18,8	3,1	18,7	6,05	18,0	3,5	17,8	5,17	17,2	3,9	17,1	4,43	
28 / 20		3	38,6	8,3	30,5	4,64	36,9	9,2	29,8	4,00	35,2	10,2	29,1	3,46	33,6	11,2	28,4	3,01	
		2	27,5	4,6	21,6	5,99	26,5	5,1	21,1	5,22	25,3	5,6	20,6	4,51	23,9	6,2	20,1	3,85	
		1	20,3	2,8	18,7	7,34	19,4	3,1	18,4	6,19	18,5	3,5	17,9	5,26	-	-	-	-	
30 / 22		3	41,3	8,6	30,1	4,82	39,5	9,5	29,2	4,17	37,6	10,4	28,4	3,62	35,6	11,3	27,6	3,14	
		2	28,3	4,7	23,2	6,09	27,2	5,1	22,7	5,32	26,1	5,7	22,2	4,61	24,6	6,2	21,7	3,94	
		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
122		22 / 16	3	43,5	9,1	34,5	4,77	41,5	10,2	33,5	4,09	39,5	11,3	32,6	3,51	37,5	12,4	31,6	3,02
			2	25,8	4,2	23,7	6,18	24,7	4,6	23,2	5,33	23,6	5,2	22,6	4,58	22,4	5,7	22,1	3,92
			1	25,8	4,2	23,7	6,18	24,7	4,6	23,2	5,33	23,6	5,2	22,6	4,58	22,4	5,7	22,1	3,92
	24 / 17	3	44,9	9,2	36,8	4,87	42,9	10,3	35,9	4,18	40,9	11,4	35,0	3,59	38,8	12,5	34,0	3,09	
		2	26,6	4,2	25,7	6,32	25,6	4,7	25,2	5,47	24,5	5,2	24,5	4,72	23,4	5,8	23,3	4,06	
		1	26,6	4,2	25,7	6,32	25,6	4,7	25,2	5,47	24,5	5,2	24,5	4,72	23,4	5,8	23,3	4,06	
	26 / 18	3	46,3	9,3	39,0	4,97	44,3	10,4	38,1	4,27	42,2	11,5	37,2	3,68	40,0	12,7	36,3	3,16	
		2	28,2	4,3	25,7	6,57	27,1	4,7	25,1	5,71	25,9	5,3	24,6	4,91	24,6	5,8	24,0	4,22	
		1	28,2	4,3	25,7	6,57	27,1	4,7	25,1	5,71	25,9	5,3	24,6	4,91	24,6	5,8	24,0	4,22	
	27 / 19	3	47,8	9,4	38,7	5,06	45,7	10,5	37,8	4,36	43,5	11,6	36,9	3,76	41,2	12,8	36,0	3,23	
		2	28,7	4,3	26,6	6,65	27,5	4,8	26,1	5,76	26,3	5,3	25,5	4,98	25,0	5,8	24,8	4,28	
		1	28,7	4,3	26,6	6,65	27,5	4,8	26,1	5,76	26,3	5,3	25,5	4,98	25,0	5,8	24,8	4,28	
	28 / 20	3	49,2	9,6	38,5	5,15	47,0	10,6	37,6	4,45	44,8	11,7	36,7	3,84	42,5	12,9	35,8	3,30	
		2	29,9	4,4	25,5	6,83	28,7	4,8	25,0	5,95	27,3	5,3	24,6	5,13	26,0	5,9	24,0	4,41	
		1	29,9	4,4	25,5	6,83	28,7	4,8	25,0	5,95	27,3	5,3	24,6	5,13	26,0	5,9	24,0	4,41	
	30 / 22	3	52,0	9,8	38,7	5,31	49,8	10,8	37,7	4,60	47,5	11,9	36,8	3,99	45,0	13,1	35,8	3,45	
		2	30,8	4,4	27,5	6,99	29,5	4,9	27,1	6,08	-	-	-	-	-	-	-	-	
		1	30,8	4,4	27,5	6,99	29,5	4,9	27,1	6,08	-	-	-	-	-	-	-	-	

SIZE	Ta (°C) DB/WB	STEP	OUTDOOR AIR TEMPERATURE °C																
			25				30				35				40				
			kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	
162	22 / 16	3	49,9	10,5	39,3	4,75	47,7	11,7	38,2	4,08	45,5	13,0	37,1	3,50	43,4	14,4	35,9	3,01	
		2	31,4	5,2	27,7	6,07	30,0	5,8	27,2	5,22	28,6	6,4	26,6	4,49	27,2	7,0	25,9	3,87	
		1	28,1	4,5	26,3	6,30	27,1	5,0	25,8	5,46	25,8	5,5	25,2	4,67	24,5	6,2	24,4	3,98	
	24 / 17	3	51,5	10,6	42,0	4,86	49,2	11,8	40,9	4,18	46,8	13,1	39,8	3,58	44,3	14,5	38,7	3,06	
		2	32,3	5,2	30,1	6,17	30,9	5,8	29,4	5,33	29,5	6,4	28,8	4,60	28,2	7,1	28,0	3,98	
		1	29,1	4,5	28,5	6,45	28,0	5,0	27,9	5,60	26,9	5,6	26,8	4,84	25,6	6,2	25,5	4,15	
	26 / 18	3	53,2	10,7	44,7	4,97	50,8	11,9	43,6	4,27	48,2	13,2	42,5	3,66	45,4	14,5	41,4	3,12	
		2	34,3	5,3	29,8	6,46	32,7	5,9	29,3	5,55	31,2	6,5	28,7	4,79	29,8	7,2	28,0	4,14	
		1	30,7	4,6	28,5	6,69	29,6	5,1	27,9	5,84	28,3	5,6	27,3	5,03	26,8	6,2	26,6	4,31	
	27 / 19	3	54,8	10,8	44,4	5,07	52,3	12,0	43,4	4,36	49,6	13,3	42,3	3,74	46,8	14,6	41,2	3,20	
		2	34,8	5,3	31,0	6,53	33,2	5,9	30,4	5,63	31,7	6,5	29,8	4,85	30,3	7,2	29,1	4,19	
		1	31,2	4,6	29,5	6,79	30,1	5,1	29,0	5,91	28,8	5,6	28,4	5,10	27,4	6,2	27,3	4,38	
	28 / 20	3	56,5	10,9	44,1	5,16	53,9	12,1	43,1	4,45	51,2	13,4	42,1	3,83	48,3	14,7	41,1	3,28	
		2	36,3	5,4	29,7	6,73	34,7	6,0	29,0	5,82	32,9	6,6	28,6	4,99	31,5	7,3	27,9	4,32	
		1	32,5	4,7	28,2	6,96	31,3	5,1	27,8	6,09	29,9	5,7	27,3	5,26	28,3	6,3	26,6	4,51	
	30 / 22	3	59,7	11,2	43,0	5,33	57,2	12,4	42,2	4,63	54,6	13,6	41,3	4,01	51,9	15,0	40,5	3,47	
		2	37,3	5,5	32,0	6,82	35,6	6,0	31,4	5,93	33,9	6,7	30,9	5,09	32,5	7,4	30,2	4,41	
		1	33,4	4,7	30,6	7,10	32,3	5,2	30,1	6,22	-	-	-	-	-	-	-	-	
	182	22 / 16	3	59,4	12,4	46,3	4,79	56,8	13,8	44,9	4,12	53,9	15,3	43,5	3,52	50,9	17,0	42,2	3,00
			2	40,5	7,0	34,0	5,76	38,8	7,8	33,3	5,00	37,0	8,6	32,4	4,31	34,9	9,5	31,5	3,68
			1	29,4	4,4	28,8	6,74	28,4	4,8	28,2	5,86	27,2	5,4	27,2	5,04	25,9	6,0	25,8	4,33
		24 / 17	3	61,3	12,5	49,0	4,90	58,6	13,9	47,7	4,23	55,6	15,4	46,4	3,61	52,1	17,0	45,1	3,06
			2	41,7	7,1	36,8	5,89	40,2	7,8	35,8	5,15	38,1	8,6	35,2	4,41	36,0	9,5	34,1	3,80
			1	30,7	4,4	30,2	6,95	29,7	4,9	29,4	6,07	28,5	5,4	28,3	5,25	27,2	6,0	27,1	4,51
26 / 18		3	63,3	12,6	51,6	5,01	60,5	14,0	50,3	4,33	57,2	15,5	49,0	3,70	53,4	17,1	47,7	3,13	
		2	44,3	7,2	36,4	6,17	42,5	7,9	35,7	5,38	40,4	8,7	34,9	4,63	38,1	9,6	33,9	3,97	
		1	32,1	4,5	31,2	7,17	31,0	5,0	30,6	6,26	29,8	5,5	29,7	5,43	28,5	6,1	28,0	4,70	
27 / 19		3	65,2	12,7	51,2	5,12	62,4	14,1	49,9	4,43	58,9	15,5	48,7	3,79	54,9	17,1	47,4	3,21	
		2	45,0	7,2	37,8	6,25	43,2	7,9	37,0	5,44	41,0	8,7	36,2	4,69	38,6	9,6	35,3	4,03	
		1	32,8	4,5	32,1	7,28	31,7	5,0	31,1	6,37	30,5	5,5	30,1	5,54	29,1	6,1	28,8	4,78	
28 / 20		3	67,2	12,9	51,0	5,22	64,2	14,2	49,7	4,52	60,6	15,6	48,4	3,88	56,4	17,2	47,1	3,28	
		2	46,7	7,3	36,3	6,39	45,0	8,0	35,5	5,63	42,9	8,8	34,3	4,87	40,2	9,7	33,7	4,17	
		1	33,8	4,6	31,2	7,43	32,7	5,0	30,7	6,51	-	-	-	-	-	-	-	-	
30 / 22		3	71,2	13,1	51,1	5,41	68,0	14,5	49,8	4,70	64,2	15,8	48,4	4,05	59,8	17,3	47,0	3,46	
		2	48,1	7,4	38,9	6,52	46,4	8,1	38,1	5,75	44,1	8,9	37,1	4,99	41,4	9,7	36,3	4,28	
		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
222		22 / 16	3	69,0	15,0	53,4	4,61	66,2	16,6	51,8	3,99	63,1	18,2	50,1	3,46	59,7	20,0	48,5	2,99
			2	51,2	9,5	40,8	5,38	48,9	10,6	40,0	4,62	46,8	11,7	38,9	4,02	44,4	12,7	37,7	3,49
			1	30,2	4,3	29,9	6,99	29,2	4,8	29,0	6,10	28,0	5,3	27,9	5,26	26,7	5,9	26,7	4,51
		24 / 17	3	71,1	15,1	56,4	4,70	68,1	16,7	54,8	4,07	64,9	18,4	53,3	3,53	61,4	20,1	51,7	3,05
			2	52,7	9,6	43,9	5,51	50,3	10,7	43,3	4,72	48,2	11,7	42,1	4,11	45,7	12,8	40,9	3,56
			1	31,5	4,4	31,6	7,20	30,5	4,8	30,6	6,30	29,3	5,4	29,5	5,46	28,0	6,0	28,1	4,69
	26 / 18	3	73,3	15,3	59,2	4,79	70,1	16,9	57,6	4,15	66,8	18,5	56,1	3,60	63,1	20,2	54,5	3,12	
		2	56,0	9,7	43,5	5,79	53,5	10,8	42,6	4,95	50,9	11,9	41,8	4,26	48,6	13,0	40,4	3,73	
		1	32,9	4,4	32,7	7,43	31,9	4,9	31,7	6,52	30,7	5,4	30,6	5,67	29,3	6,0	29,3	4,89	
	27 / 19	3	75,5	15,4	58,7	4,88	72,2	17,0	57,2	4,24	68,7	18,7	55,6	3,68	65,0	20,4	54,0	3,19	
		2	56,8	9,7	45,0	5,85	54,4	10,9	44,1	5,01	51,6	12,0	43,4	4,30	49,3	13,1	41,8	3,77	
		1	33,6	4,5	33,6	7,54	32,6	4,9	32,6	6,62	31,4	5,4	31,5	5,76	-	-	-	-	
	28 / 20	3	77,7	15,6	58,6	4,98	74,4	17,2	57,0	4,32	70,8	18,9	55,5	3,75	66,9	20,5	53,9	3,26	
		2	59,0	9,8	43,2	5,99	56,8	11,0	42,1	5,18	54,0	12,1	41,3	4,45	51,3	13,2	40,2	3,88	
		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	30 / 22	3	82,3	16,0	59,9	5,16	78,9	17,6	58,4	4,49	75,2	19,2	56,8	3,91	71,0	20,9	55,3	3,40	
		2	60,6	9,9	46,3	6,11	58,4	11,1	45,2	5,28	55,5	12,2	44,3	4,54	52,8	13,3	43,3	3,96	
		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Performance refers to operation at full re-circulation

The Acoustic Configuration of the remote condenser does not change the performances.

Ta = entering air temperature to the air handling coil (°C)

DB = dry bulb

WB = wet bulb

STEP = Active capacity steps (the maximum number indicates full capacity / the minimum number indicates the smallest staging step)

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

kWs = sensible cooling capacity (kW)

EER referred only to compressors

Performance values do not include the effect of fan motor heat

Performances are referred to matching with remote condenser: maximum compactness

SIZE	Ta (°C) DB/WB	OUTDOOR AIR TEMPERATURE °C															
		25				30				35				40			
		kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER
31	22 / 16	9,4	2,2	7,2	4,38	9,0	2,4	7,0	3,73	8,5	2,7	6,7	3,18	-	-	-	-
	24 / 17	9,7	2,2	7,7	4,48	9,3	2,4	7,5	3,83	8,8	2,7	7,3	3,27	-	-	-	-
	26 / 18	10,0	2,2	8,3	4,58	9,6	2,4	8,1	3,92	9,1	2,7	7,9	3,36	-	-	-	-
	27 / 19	10,4	2,2	8,3	4,68	9,9	2,5	8,1	4,01	9,4	2,7	7,9	3,44	-	-	-	-
	28 / 20	10,7	2,2	8,2	4,77	10,2	2,5	8,0	4,10	9,7	2,7	7,8	3,52	-	-	-	-
	30 / 22	11,3	2,3	7,5	4,94	10,8	2,5	7,3	4,26	10,2	2,8	7,2	3,66	-	-	-	-
41	22 / 16	11,1	2,4	8,6	4,60	10,6	2,7	8,3	3,93	10,1	3,0	8,0	3,34	-	-	-	-
	24 / 17	11,4	2,4	9,2	4,71	10,9	2,7	8,9	4,05	10,4	3,0	8,6	3,44	-	-	-	-
	26 / 18	11,8	2,4	9,8	4,83	11,3	2,7	9,5	4,15	10,8	3,0	9,3	3,54	-	-	-	-
	27 / 19	12,1	2,5	9,8	4,95	11,6	2,7	9,5	4,25	11,1	3,1	9,2	3,62	-	-	-	-
	28 / 20	12,5	2,5	9,7	5,06	12,0	2,8	9,5	4,34	11,4	3,1	9,2	3,69	-	-	-	-
	30 / 22	13,2	2,5	9,5	5,29	12,6	2,8	9,3	4,50	12,0	3,2	9,1	3,80	-	-	-	-
51	22 / 16	14,1	3,2	10,9	4,42	13,5	3,6	10,5	3,79	12,8	4,0	10,2	3,23	-	-	-	-
	24 / 17	14,6	3,2	11,6	4,54	13,9	3,6	11,3	3,88	13,2	4,0	11,0	3,30	-	-	-	-
	26 / 18	15,0	3,2	12,4	4,65	14,3	3,6	12,1	3,97	13,6	4,0	11,7	3,37	-	-	-	-
	27 / 19	15,5	3,3	12,3	4,75	14,7	3,6	12,0	4,06	14,0	4,0	11,7	3,45	-	-	-	-
	28 / 20	15,9	3,3	12,2	4,85	15,2	3,7	11,9	4,14	14,4	4,1	11,6	3,52	-	-	-	-
	30 / 22	16,8	3,3	11,8	5,02	16,0	3,7	11,5	4,32	15,2	4,1	11,2	3,68	-	-	-	-
61	22 / 16	15,8	3,6	11,9	4,35	15,2	4,0	11,5	3,75	14,5	4,5	11,1	3,21	-	-	-	-
	24 / 17	16,3	3,7	12,7	4,45	15,7	4,1	12,3	3,82	14,9	4,6	11,9	3,27	-	-	-	-
	26 / 18	16,8	3,7	13,5	4,55	16,1	4,1	13,1	3,89	15,4	4,6	12,8	3,33	-	-	-	-
	27 / 19	17,4	3,7	13,5	4,64	16,6	4,2	13,1	3,97	15,8	4,7	12,8	3,40	-	-	-	-
	28 / 20	17,9	3,8	13,4	4,73	17,1	4,2	13,1	4,05	16,2	4,7	12,7	3,47	-	-	-	-
	30 / 22	18,8	3,8	12,9	4,89	18,0	4,3	12,5	4,21	17,1	4,7	12,2	3,62	-	-	-	-
71	22 / 16	17,6	4,2	13,0	4,24	16,8	4,6	12,6	3,63	16,1	5,1	12,2	3,12	-	-	-	-
	24 / 17	18,1	4,2	13,8	4,31	17,3	4,7	13,4	3,71	16,5	5,2	13,0	3,19	-	-	-	-
	26 / 18	18,7	4,3	14,6	4,38	17,9	4,7	14,2	3,78	17,0	5,2	13,8	3,26	-	-	-	-
	27 / 19	19,2	4,3	14,6	4,45	18,4	4,8	14,2	3,86	17,5	5,3	13,8	3,33	-	-	-	-
	28 / 20	19,7	4,4	14,5	4,53	18,9	4,8	14,1	3,93	18,0	5,3	13,7	3,40	-	-	-	-
	30 / 22	20,9	4,4	14,3	4,70	20,0	4,9	13,9	4,07	19,0	5,4	13,4	3,53	-	-	-	-
81	22 / 16	21,7	5,5	16,1	3,95	20,7	6,1	15,6	3,39	19,6	6,8	15,0	2,90	-	-	-	-
	24 / 17	22,4	5,6	17,1	4,02	21,3	6,2	16,5	3,45	20,2	6,8	16,0	2,96	-	-	-	-
	26 / 18	23,0	5,6	18,0	4,10	22,0	6,2	17,4	3,52	20,8	6,9	16,9	3,02	-	-	-	-
	27 / 19	23,7	5,7	17,9	4,17	22,6	6,3	17,3	3,59	21,4	6,9	16,7	3,09	-	-	-	-
	28 / 20	24,3	5,7	17,8	4,23	23,3	6,4	17,2	3,66	22,0	7,0	16,7	3,16	-	-	-	-
	30 / 22	25,7	5,9	17,9	4,36	24,6	6,5	17,3	3,81	23,3	7,1	16,7	3,30	-	-	-	-
82	22 / 16	29,3	7,6	23,3	3,88	28,0	8,4	22,6	3,33	26,5	9,3	22,0	2,86	-	-	-	-
	24 / 17	30,2	7,6	24,9	3,95	28,7	8,5	24,3	3,39	27,3	9,4	23,6	2,92	-	-	-	-
	26 / 18	31,0	7,7	26,5	4,01	29,5	8,5	25,8	3,45	28,0	9,4	25,2	2,98	-	-	-	-
	27 / 19	31,8	7,8	26,3	4,08	30,3	8,6	25,7	3,52	28,8	9,5	25,0	3,04	-	-	-	-
	28 / 20	32,7	7,9	26,1	4,15	31,2	8,7	25,5	3,58	29,6	9,5	24,8	3,10	-	-	-	-
	30 / 22	34,4	8,0	25,7	4,29	32,8	8,8	25,0	3,72	31,2	9,7	24,3	3,23	-	-	-	-
102	22 / 16	33,9	8,4	26,8	4,03	32,4	9,3	26,0	3,47	30,9	10,3	25,3	2,99	-	-	-	-
	24 / 17	34,9	8,5	28,6	4,10	33,4	9,4	27,8	3,54	31,9	10,4	27,1	3,06	-	-	-	-
	26 / 18	36,0	8,6	30,1	4,17	34,4	9,5	29,4	3,61	32,8	10,5	28,7	3,13	-	-	-	-
	27 / 19	37,0	8,7	29,9	4,24	35,5	9,6	29,2	3,68	33,8	10,6	28,5	3,20	-	-	-	-
	28 / 20	38,1	8,8	29,7	4,32	36,5	9,7	29,0	3,75	34,8	10,7	28,4	3,26	-	-	-	-
	30 / 22	40,3	9,0	30,3	4,46	38,5	9,9	29,5	3,88	36,7	10,8	28,8	3,38	-	-	-	-

Performance refers to operation at full re-circulation

The Acoustic Configuration of the remote condenser does not change the performances.

Ta = entering air temperature to the air handling coil (°C)

DB = dry bulb

WB = wet bulb

STEP = Active capacity steps (the maximum number indicates full capacity / the minimum number indicates the smallest staging step)

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

kWs = sensible cooling capacity (kW)

EER referred only to compressors

Performance values do not include the effect of fan motor heat

SIZE	Ta (°C) DB/WB	OUTDOOR AIR TEMPERATURE °C															
		25				30				35				40			
		kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER
122	22 / 16	41,6	10,3	33,2	4,04	39,6	11,4	32,2	3,49	37,6	12,5	31,2	3,01	-	-	-	-
	24 / 17	42,7	10,4	35,6	4,10	40,8	11,5	34,7	3,55	38,7	12,6	33,7	3,07	-	-	-	-
	26 / 18	44,0	10,6	37,7	4,16	41,9	11,6	36,8	3,61	39,8	12,7	35,8	3,13	-	-	-	-
	27 / 19	45,2	10,7	37,3	4,23	43,1	11,8	36,4	3,67	40,9	12,9	35,5	3,18	-	-	-	-
	28 / 20	46,5	10,8	37,2	4,29	44,3	11,9	36,3	3,73	42,0	13,0	35,3	3,23	-	-	-	-
	30 / 22	49,1	11,1	38,3	4,43	46,8	12,2	37,3	3,85	44,3	13,3	36,3	3,32	-	-	-	-
162	22 / 16	48,9	11,1	38,8	4,39	46,7	12,3	37,6	3,79	44,4	13,6	36,5	3,26	-	-	-	-
	24 / 17	50,5	11,3	41,4	4,48	48,2	12,5	40,3	3,87	45,8	13,7	39,2	3,33	-	-	-	-
	26 / 18	52,0	11,4	43,7	4,57	49,7	12,6	42,7	3,94	47,2	13,9	41,6	3,40	-	-	-	-
	27 / 19	53,6	11,5	43,4	4,65	51,1	12,7	42,3	4,02	48,6	14,0	41,3	3,47	-	-	-	-
	28 / 20	55,0	11,6	43,1	4,73	52,5	12,8	42,1	4,10	49,9	14,1	41,1	3,54	-	-	-	-
	30 / 22	57,8	11,8	43,0	4,88	55,3	13,0	42,0	4,24	52,6	14,3	41,1	3,68	-	-	-	-
182	22 / 16	56,7	14,0	44,3	4,05	53,9	15,5	43,0	3,48	50,7	17,0	41,7	2,98	-	-	-	-
	24 / 17	58,3	14,2	47,4	4,12	55,4	15,6	46,1	3,55	52,2	17,1	44,8	3,05	-	-	-	-
	26 / 18	60,0	14,3	50,5	4,19	56,9	15,7	49,1	3,62	53,6	17,2	47,8	3,11	-	-	-	-
	27 / 19	61,6	14,5	50,1	4,26	58,5	15,9	48,8	3,68	55,0	17,3	47,4	3,17	-	-	-	-
	28 / 20	63,3	14,6	49,7	4,33	60,0	16,0	48,3	3,75	56,4	17,5	46,9	3,23	-	-	-	-
	30 / 22	66,7	14,9	48,4	4,48	63,2	16,3	46,8	3,89	59,3	17,7	45,2	3,35	-	-	-	-
222	22 / 16	66,4	16,5	51,5	4,01	63,1	18,2	49,9	3,46	59,6	19,9	48,3	3,00	-	-	-	-
	24 / 17	68,3	16,8	54,9	4,08	64,9	18,4	53,3	3,53	61,5	20,1	51,8	3,07	-	-	-	-
	26 / 18	70,2	17,0	58,2	4,14	66,8	18,6	56,6	3,60	63,3	20,2	55,1	3,13	-	-	-	-
	27 / 19	72,1	17,2	57,8	4,20	68,7	18,8	56,2	3,66	65,1	20,4	54,7	3,19	-	-	-	-
	28 / 20	74,1	17,4	57,5	4,26	70,7	19,0	55,9	3,73	67,0	20,6	54,3	3,25	-	-	-	-
	30 / 22	78,1	17,9	57,1	4,37	74,6	19,4	55,4	3,85	70,7	21,0	53,7	3,37	-	-	-	-

Performance refers to operation at full re-circulation

The Acoustic Configuration of the remote condenser does not change the performances.

Ta = entering air temperature to the air handling coil (°C)

DB = dry bulb

WB = wet bulb

STEP = Active capacity steps (the maximum number indicates full capacity / the minimum number indicates the smallest staging step)

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

kWs = sensible cooling capacity (kW)

EER referred only to compressors

Performance values do not include the effect of fan motor heat

Performances are referred to matching with remote condenser: high efficiency

SIZE	Ta (°C) DB/WB	OUTDOOR AIR TEMPERATURE °C																			
		25				30				35				40				46			
		kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER
31	22 / 16	9,9	1,8	7,4	5,42	9,5	2,1	7,2	4,62	9,1	2,3	7,0	3,94	8,7	2,6	6,7	3,36	8,2	3,0	6,5	2,78
	24 / 17	10,2	1,8	7,9	5,53	9,8	2,1	7,7	4,74	9,4	2,3	7,4	4,05	9,0	2,6	7,2	3,46	8,5	3,0	6,9	2,86
	26 / 18	10,5	1,9	8,4	5,66	10,1	2,1	8,2	4,87	9,7	2,3	7,9	4,17	9,3	2,6	7,7	3,56	8,8	3,0	7,4	2,94
	27 / 19	10,9	1,9	8,4	5,81	10,5	2,1	8,2	5,00	10,0	2,3	7,9	4,28	9,6	2,6	7,7	3,65	9,0	3,0	7,4	3,01
	28 / 20	11,2	1,9	8,4	5,97	10,8	2,1	8,1	5,13	10,4	2,4	7,9	4,39	9,9	2,6	7,7	3,75	9,2	3,0	7,4	3,08
	30 / 22	12,0	1,9	8,2	6,33	11,5	2,1	8,0	5,42	11,0	2,4	7,8	4,62	10,4	2,7	7,6	3,92	9,7	3,0	7,4	3,19
41	22 / 16	11,5	2,2	8,6	5,25	11,0	2,5	8,3	4,48	10,5	2,8	8,1	3,79	9,9	3,1	7,8	3,19	9,3	3,6	7,5	2,58
	24 / 17	11,9	2,2	9,3	5,42	11,4	2,5	9,0	4,62	10,8	2,8	8,8	3,90	10,3	3,1	8,5	3,28	9,6	3,6	8,2	2,65
	26 / 18	12,3	2,2	10,0	5,58	11,7	2,5	9,7	4,75	11,2	2,8	9,5	4,02	10,6	3,1	9,2	3,38	9,9	3,6	9,0	2,73
	27 / 19	12,6	2,2	10,0	5,74	12,1	2,5	9,7	4,88	11,5	2,8	9,5	4,13	11,0	3,2	9,3	3,47	10,2	3,7	9,0	2,80
	28 / 20	13,0	2,2	9,9	5,88	12,4	2,5	9,7	5,01	11,9	2,8	9,4	4,23	11,3	3,2	9,2	3,56	10,6	3,7	8,9	2,88
	30 / 22	13,7	2,2	9,3	6,15	13,1	2,5	9,0	5,24	12,6	2,8	8,7	4,44	12,0	3,2	8,4	3,75	11,3	3,7	8,1	3,04
51	22 / 16	14,5	2,9	11,1	5,10	14,1	3,2	10,8	4,38	13,4	3,6	10,5	3,72	12,6	4,0	10,1	3,12	11,5	4,6	9,7	2,48
	24 / 17	15,0	2,9	11,8	5,26	14,4	3,2	11,5	4,46	13,8	3,6	11,2	3,78	13,0	4,1	10,8	3,21	12,1	4,6	10,4	2,63
	26 / 18	15,5	2,9	12,5	5,41	14,8	3,3	12,1	4,55	14,1	3,7	11,8	3,86	13,5	4,1	11,5	3,30	12,7	4,6	11,1	2,75
	27 / 19	16,0	2,9	12,4	5,56	15,3	3,3	12,1	4,66	14,6	3,7	11,7	3,95	13,9	4,1	11,4	3,39	13,1	4,6	11,0	2,85
	28 / 20	16,6	2,9	12,3	5,70	15,8	3,3	12,0	4,78	15,0	3,7	11,7	4,06	14,3	4,1	11,3	3,48	13,5	4,6	11,0	2,92
	30 / 22	17,6	2,9	12,4	5,97	16,8	3,3	12,1	5,08	16,0	3,7	11,8	4,31	15,1	4,1	11,5	3,65	14,0	4,7	11,1	2,98
61	22 / 16	16,6	3,2	12,0	5,20	15,9	3,6	11,7	4,41	15,2	4,0	11,4	3,75	14,5	4,5	11,0	3,20	13,7	5,1	10,7	2,66
	24 / 17	16,9	3,3	12,9	5,17	16,3	3,6	12,6	4,48	15,6	4,1	12,3	3,85	14,9	4,5	12,0	3,27	13,8	5,2	11,6	2,66
	26 / 18	17,2	3,3	13,8	5,19	16,8	3,7	13,5	4,57	16,2	4,1	13,2	3,94	15,3	4,6	12,9	3,35	14,0	5,2	12,6	2,68
	27 / 19	17,7	3,4	13,8	5,25	17,3	3,7	13,5	4,67	16,7	4,1	13,2	4,05	15,8	4,6	12,9	3,43	14,4	5,3	12,6	2,72
	28 / 20	18,2	3,4	13,7	5,35	17,8	3,7	13,4	4,78	17,2	4,1	13,1	4,15	16,2	4,6	12,8	3,52	14,7	5,3	12,5	2,79
	30 / 22	19,5	3,4	12,8	5,68	19,0	3,8	12,5	5,05	18,2	4,2	12,2	4,38	17,3	4,6	11,9	3,72	15,8	5,3	11,5	2,98
71	22 / 16	18,6	3,6	13,3	5,21	17,9	4,0	13,0	4,50	17,1	4,4	12,6	3,87	16,4	4,9	12,3	3,32	15,4	5,6	11,9	2,75
	24 / 17	19,1	3,6	14,1	5,32	18,5	4,0	13,7	4,63	17,7	4,4	13,4	3,99	16,9	5,0	13,1	3,41	15,7	5,6	12,7	2,78
	26 / 18	19,6	3,6	14,8	5,43	19,0	4,0	14,5	4,75	18,3	4,5	14,2	4,10	17,4	5,0	13,8	3,50	16,1	5,7	13,4	2,84
	27 / 19	20,2	3,6	14,8	5,55	19,6	4,0	14,4	4,87	18,9	4,5	14,1	4,21	17,9	5,0	13,8	3,59	16,5	5,7	13,4	2,90
	28 / 20	20,8	3,7	14,7	5,67	20,2	4,1	14,4	4,99	19,5	4,5	14,0	4,31	18,5	5,0	13,7	3,68	17,0	5,7	13,3	2,98
	30 / 22	22,1	3,7	14,8	5,94	21,4	4,1	14,4	5,20	20,6	4,6	14,0	4,51	19,6	5,1	13,6	3,87	18,2	5,8	13,1	3,17
81	22 / 16	23,3	4,5	16,8	5,20	22,4	5,0	16,4	4,46	21,4	5,6	15,9	3,81	20,3	6,3	15,5	3,24	18,9	7,1	14,9	2,65
	24 / 17	23,9	4,5	17,5	5,29	23,1	5,1	17,1	4,56	22,1	5,7	16,7	3,91	21,0	6,3	16,3	3,34	19,4	7,1	15,8	2,72
	26 / 18	24,6	4,6	18,2	5,39	23,8	5,1	17,8	4,67	22,9	5,7	17,4	4,02	21,7	6,3	17,0	3,43	20,0	7,2	16,5	2,80
	27 / 19	25,3	4,6	18,1	5,50	24,5	5,1	17,7	4,78	23,6	5,7	17,2	4,12	22,4	6,4	16,8	3,52	20,7	7,2	16,3	2,87
	28 / 20	26,1	4,6	18,1	5,63	25,3	5,2	17,7	4,90	24,3	5,8	17,3	4,23	23,1	6,4	16,8	3,62	21,3	7,2	16,3	2,95
	30 / 22	27,8	4,7	19,2	5,91	26,9	5,2	18,7	5,15	25,8	5,8	18,2	4,44	24,5	6,5	17,6	3,80	22,7	7,3	17,0	3,11
82	22 / 16	31,8	6,0	24,4	5,29	30,4	6,8	23,8	4,51	29,1	7,6	23,1	3,83	27,6	8,5	22,4	3,25	25,8	9,7	21,6	2,65
	24 / 17	32,7	6,1	26,1	5,41	31,4	6,8	25,4	4,61	30,0	7,6	24,8	3,92	28,5	8,6	24,1	3,33	26,6	9,8	23,3	2,73
	26 / 18	33,7	6,1	27,6	5,53	32,3	6,9	27,0	4,72	30,9	7,7	26,3	4,02	29,4	8,6	25,7	3,42	27,4	9,8	24,9	2,81
	27 / 19	34,7	6,1	27,4	5,65	33,3	6,9	26,8	4,83	31,8	7,7	26,2	4,12	30,3	8,6	25,5	3,51	28,3	9,8	24,8	2,89
	28 / 20	35,8	6,2	27,3	5,78	34,3	6,9	26,7	4,95	32,8	7,8	26,1	4,23	31,2	8,6	25,5	3,61	29,1	9,8	24,7	2,97
	30 / 22	38,0	6,3	27,8	6,06	36,5	7,0	27,1	5,22	34,9	7,8	26,5	4,48	33,2	8,7	25,9	3,82	30,9	9,8	25,1	3,15
102	22 / 16	36,6	6,9	27,7	5,34	35,2	7,7	27,0	4,56	33,6	8,7	26,4	3,88	32,0	9,7	25,7	3,30	29,9	11,1	24,8	2,70
	24 / 17	37,8	6,9	29,6	5,47	36,4	7,8	28,9	4,68	34,7	8,7	28,2	3,99	33,0	9,7	27,5	3,39	30,7	11,1	26,7	2,77
	26 / 18	39,0	7,0	31,5	5,60	37,5	7,8	30,8	4,79	35,8	8,8	30,1	4,09	34,0	9,8	29,4	3,48	31,6	11,1	28,5	2,85
	27 / 19	40,1	7,0	31,4	5,71	38,5	7,9	30,7	4,89	36,9	8,8	30,0	4,18	35,1	9,8	29,3	3,57	32,8	11,1	28,4	2,94
	28 / 20	41,2	7,1	31,4	5,82	39,5	7,9	30,6	4,98	37,8	8,9	29,9	4,27	36,1	9,9	29,1	3,66	34,1	11,2	28,2	3,04
	30 / 22	43,1	7,2	31,4	6,01	41,2	8,0	30,5	5,15	39,7	9,0	29,7	4,43	38,4	10,0	28,8	3,84	37,2	11,3	27,8	3,28

SIZE	Ta (°C) DB/WB	OUTDOOR AIR TEMPERATURE °C																			
		25				30				35				40				46			
		kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER	kWf	kWe	kWs	EER
122	22 / 16	45,0	8,3	34,8	5,45	43,2	9,2	34,0	4,69	41,4	10,3	33,2	4,02	39,4	11,5	32,4	3,44	36,8	13,0	31,5	2,83
	24 / 17	46,4	8,3	37,3	5,57	44,5	9,3	36,5	4,79	42,6	10,4	35,7	4,12	40,6	11,5	34,9	3,52	38,0	13,0	34,0	2,91
	26 / 18	47,8	8,4	39,8	5,69	45,9	9,4	39,0	4,90	43,9	10,4	38,2	4,21	41,9	11,6	37,3	3,61	39,2	13,1	36,3	2,99
	27 / 19	49,3	8,5	39,8	5,81	47,4	9,4	38,9	5,02	45,3	10,5	38,0	4,32	43,2	11,7	37,1	3,70	40,4	13,2	36,0	3,07
	28 / 20	50,9	8,6	39,7	5,94	48,9	9,5	38,7	5,13	46,8	10,6	37,7	4,42	44,5	11,7	36,7	3,80	41,7	13,2	35,6	3,15
	30 / 22	54,1	8,7	39,2	6,21	52,0	9,7	38,0	5,38	49,8	10,7	36,8	4,64	47,4	11,9	35,6	3,99	44,4	13,4	34,1	3,32
162	22 / 16	51,4	9,7	39,6	5,31	49,4	10,8	38,6	4,58	47,2	12,0	37,6	3,94	45,0	13,3	36,5	3,38	42,1	15,0	35,3	2,80
	24 / 17	53,1	9,7	42,4	5,46	51,1	10,8	41,3	4,72	48,9	12,0	40,2	4,06	46,6	13,4	39,1	3,49	43,5	15,1	37,8	2,89
	26 / 18	54,8	9,8	45,2	5,60	52,8	10,9	44,0	4,84	50,5	12,1	42,8	4,18	48,1	13,4	41,6	3,59	44,9	15,1	40,2	2,97
	27 / 19	56,5	9,9	45,2	5,72	54,4	11,0	43,9	4,96	52,1	12,2	42,6	4,28	49,6	13,5	41,3	3,68	46,3	15,2	39,7	3,05
	28 / 20	58,1	10,0	45,2	5,84	55,9	11,1	43,7	5,05	53,5	12,3	42,3	4,36	51,0	13,6	40,9	3,76	47,8	15,3	39,2	3,13
	30 / 22	61,2	10,1	45,2	6,03	58,7	11,3	43,5	5,20	56,2	12,5	41,8	4,50	53,7	13,8	40,0	3,90	50,7	15,4	37,9	3,28
182	22 / 16	61,1	11,6	46,1	5,27	58,7	12,9	44,8	4,56	55,9	14,3	43,5	3,90	52,6	15,9	42,3	3,31	47,9	18,0	40,7	2,67
	24 / 17	63,0	11,7	49,9	5,39	60,7	13,0	48,7	4,68	57,7	14,4	47,4	4,02	54,2	16,0	46,2	3,40	49,2	18,0	44,8	2,73
	26 / 18	64,9	11,8	53,7	5,51	62,5	13,0	52,5	4,80	59,6	14,5	51,3	4,12	55,9	16,0	50,1	3,49	50,7	18,1	48,7	2,80
	27 / 19	64,9	11,8	57,4	5,51	62,5	13,0	56,2	4,80	59,6	14,5	55,0	4,12	55,9	16,0	53,8	3,49	50,7	18,1	50,7	2,80
	28 / 20	68,7	12,0	53,1	5,73	66,1	13,2	51,9	4,99	63,0	14,6	50,7	4,31	59,4	16,2	49,4	3,68	54,3	18,1	48,0	2,99
	30 / 22	72,4	12,2	50,3	5,92	69,5	13,5	48,9	5,14	66,4	14,9	47,5	4,46	63,1	16,3	46,2	3,87	58,8	18,1	44,5	3,25
222	22 / 16	70,7	13,9	53,6	5,09	67,9	15,4	52,1	4,40	64,8	17,1	50,6	3,78	61,5	19,0	49,0	3,25	57,3	21,3	47,2	2,68
	24 / 17	72,8	14,0	57,0	5,21	69,9	15,5	55,5	4,50	66,8	17,2	54,0	3,88	63,5	19,1	52,5	3,33	59,3	21,5	50,7	2,76
	26 / 18	75,0	14,1	60,5	5,33	72,0	15,6	59,0	4,61	68,9	17,3	57,5	3,97	65,5	19,2	56,0	3,42	61,2	21,6	54,2	2,84
	27 / 19	77,3	14,2	60,4	5,45	74,2	15,8	58,9	4,71	71,0	17,5	57,4	4,06	67,5	19,3	55,9	3,50	63,1	21,7	54,1	2,91
	28 / 20	79,6	14,3	60,2	5,57	76,5	15,9	58,7	4,81	73,1	17,6	57,1	4,16	69,5	19,4	55,6	3,58	64,9	21,7	53,8	2,98
	30 / 22	84,5	14,6	59,1	5,79	81,3	16,2	57,5	5,01	77,6	17,9	55,9	4,34	73,6	19,7	54,3	3,74	68,3	21,9	52,4	3,12

Performance refers to operation at full re-circulation

The Acoustic Configuration of the remote condenser does not change the performances.

Ta = entering air temperature to the air handling coil (°C)

DB = dry bulb

WB = wet bulb

STEP = Active capacity steps (the maximum number indicates full capacity / the minimum number indicates the smallest staging step)

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

kWs = sensible cooling capacity (kW)

EER referred only to compressors

Performance values do not include the effect of fan motor heat

Supply/return electric fan performances: standard airflow

		Static available pressure (Pa)	10	30	60	90	120	150	180	210	240	270	300
31	Standard airflow	m ³ /h	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050
	Standard airflow	l/s	569	569	569	569	569	569	569	569	569	569	569
	Fan RPM	rpm	1537	1575	1628	1679	1735	1787	1839	1894	1944	1993	2046
	Total input	kW	0,14	0,15	0,17	0,19	0,22	0,24	0,26	0,29	0,31	0,33	0,36
41	Standard airflow	m ³ /h	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800
	Standard airflow	l/s	778	778	778	778	778	778	778	778	778	778	778
	Fan RPM	rpm	2032	2061	2108	2150	2189	2227	2267	2305	2346	2384	2426
	Total input	kW	0,29	0,30	0,33	0,35	0,38	0,41	0,44	0,47	0,50	0,53	0,56
51	Standard airflow	m ³ /h	3200	3200	3200	3200	3200	3200	3200	3200	3200	3200	-
	Standard airflow	l/s	889	889	889	889	889	889	889	889	889	889	-
	Fan RPM	rpm	2320	2349	2388	2425	2461	2498	2534	2567	2599	2632	-
	Total input	kW	0,42	0,44	0,46	0,49	0,52	0,55	0,59	0,62	0,66	0,69	-
61	Standard airflow	m ³ /h	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800
	Standard airflow	l/s	1056	1056	1056	1056	1056	1056	1056	1056	1056	1056	1056
	Fan RPM	rpm	1784	1813	1847	1887	1923	1958	1995	2027	2059	2093	2125
	Total input	kW	0,41	0,43	0,46	0,49	0,52	0,55	0,60	0,63	0,67	0,72	0,76
71	Standard airflow	m ³ /h	4200	4200	4200	4200	4200	4200	4200	4200	4200	-	-
	Standard airflow	l/s	1167	1167	1167	1167	1167	1167	1167	1167	1167	-	-
	Fan RPM	rpm	1965	1987	2023	2055	2089	2124	2155	2184	2217	-	-
	Total input	kW	0,52	0,55	0,59	0,62	0,65	0,69	0,72	0,76	0,81	-	-
81	Standard airflow	m ³ /h	4500	4500	4500	4500	4500	-	-	-	-	-	-
	Standard airflow	l/s	1250	1250	1250	1250	1250	-	-	-	-	-	-
	Fan RPM	rpm	2110	2133	2165	2197	2228	-	-	-	-	-	-
	Total input	kW	0,64	0,67	0,71	0,75	0,78	-	-	-	-	-	-
82	Standard airflow	m ³ /h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Standard airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Fan RPM	rpm	1228	1249	1278	1304	1326	1348	1368	1389	1410	1433	1422
	Total input	kW	0,81	0,86	0,94	1,02	1,10	1,18	1,24	1,31	1,39	1,47	1,55
102	Standard airflow	m ³ /h	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
	Standard airflow	l/s	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222
	Fan RPM	rpm	1391	1410	1438	1463	1471	1482	1502	1520	1538	1557	1576
	Total input	kW	1,17	1,22	1,31	1,41	1,49	1,57	1,67	1,76	1,83	1,91	2,00
122	Standard airflow	m ³ /h	10000	10000	10000	10000	10000	10000	10000	10000	10000	-	-
	Standard airflow	l/s	2778	2778	2778	2778	2778	2778	2778	2778	2778	-	-
	Fan RPM	rpm	1260	1281	1312	1341	1370	1399	1429	1461	1495	-	-
	Total input	kW	0,88	0,94	1,02	1,14	1,24	1,34	1,46	1,56	1,68	-	-
162	Standard airflow	m ³ /h	11500	11500	11500	11500	11500	11500	11500	11500	11500	11500	11500
	Standard airflow	l/s	3194	3194	3194	3194	3194	3194	3194	3194	3194	3194	3194
	Fan RPM	rpm	1074	1092	1118	1143	1170	1198	1228	1257	1286	1315	1344
	Total input	kW	1,14	1,24	1,36	1,46	1,60	1,74	1,88	2,04	2,18	2,36	2,54
182	Standard airflow	m ³ /h	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000
	Standard airflow	l/s	3611	3611	3611	3611	3611	3611	3611	3611	3611	3611	3611
	Fan RPM	rpm	1153	1174	1203	1228	1252	1273	1296	1320	1344	1370	1396
	Total input	kW	1,34	1,44	1,58	1,74	1,88	2,00	2,14	2,28	2,44	2,60	2,78
222	Standard airflow	m ³ /h	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
	Standard airflow	l/s	4167	4167	4167	4167	4167	4167	4167	4167	4167	4167	4167
	Fan RPM	rpm	1317	1337	1365	1389	1411	1432	1451	1470	1489	1509	1531
	Total input	kW	2,00	2,12	2,28	2,44	2,62	2,78	2,94	3,24	5,14	5,40	

The performances consider the pressure drops inside the unit (dynamic, pressure drop due to coil and filters); any pressure drop due to the accessoires (exemple: hot water coil, gas heating module and additional section of bag filters) must be subtracted from the working discharge head indicated above.

Pressure drops of optional components

The value of static pressure available on the supply and return duct is obtained by subtracting from the available net maximum pressure (see general table of technical data) the pressure drops of any accessories.

Size		31	41	51	61	71	81	82	102	122	162	182	222
CHW2 - Two-rows hot water coil	Pa	15	18	23	20	27	30	40	50	41	50	39	50
CPHG - Hot gas re-heating coil	Pa	-	-	-	-	-	-	18	25	18	25	18	25

Accessories

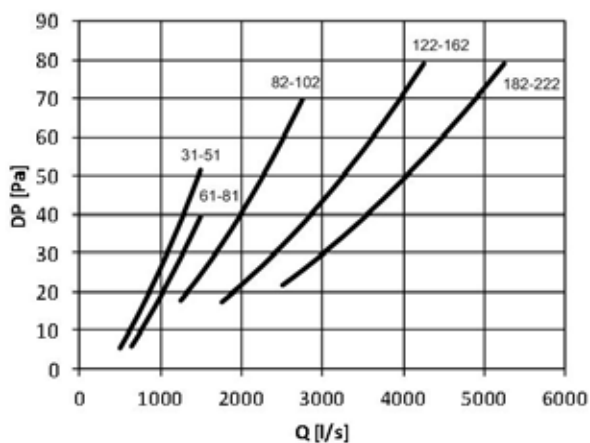
CHW2 - Two-row hot water coil

Option recommended for very cold climates since it allows heating of the served room.

The battery is equipped with a thermostat for the anti-freeze function.

The anti-freeze function is always active, even when the unit is in standby. If necessary, it forces opening of the valve to the maximum allowable value for allow passage of water in the coil and to prevent the formation of ice.

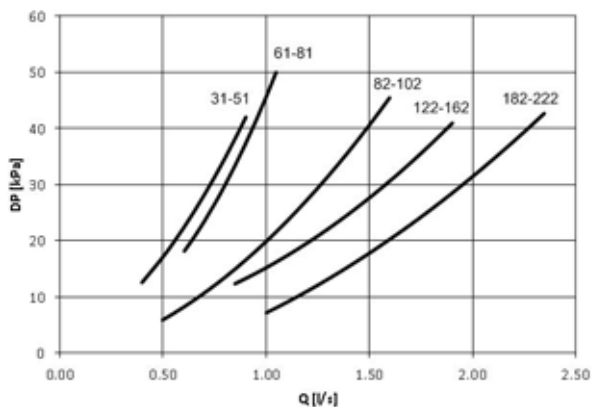
Hot water coil pressure drops: AIR side



The air side pressure drops are relative to the medium air temperature of 20°C and are to be added to the pressure drops due to ducts, terminal devices and any other component that causes a drop in working discharge head.

Q [l/s] = air flow rate
DP [Pa] = pressure drops

Hot water coil pressure drops: WATER side



Pressure drops on the water side are calculated considering an average water temperature of 65°C

Q [l/s] = air flow rate
DP [kPa] = pressure drops

$$Q[l/s] = \frac{kWt}{(4,186 \times DT)}$$

Q [l/s] = Air flow rate
kWt = Provided heating capacity (kW)
DT = Difference between inlet and outlet water temperature (°c)



This option reduces the available static pressure (supply air side).



The component requires connection to the hot water plumbing system (to be provided for by the client).



hot water coil and electric heaters cannot be mounted at the same time



Hot water coil, electric heater and re-heating coil cannot be fitted at the same time

Performances of hot water coil (two-row)

Size		Ti/To (°C)			
		80/65	70/55	60/40	
		kWt	kWt	kWt	
31	Qo (l/s)	569			
	Ta (°C)	5	24,8	20,8	15,2
		10	22,7	18,7	13,2
		14	21,0	17,1	11,5
		16	20,2	16,2	10,7
		18	19,4	15,4	9,9
		20	18,6	14,6	9,2
41	Qo (l/s)	778			
	Ta (°C)	5	30,5	25,4	18,5
		10	27,8	22,9	16,0
		14	25,8	20,9	14,0
		16	24,8	19,9	13,0
		18	23,8	18,9	12,1
		20	22,8	17,9	11,1
51	Qo (l/s)	889			
	Ta (°C)	5	33,1	27,7	20,1
		10	30,3	24,9	17,4
		14	28,1	22,7	15,2
		16	26,9	21,6	14,2
		18	25,8	20,6	13,1
		20	24,7	19,5	12,0
61	Qo (l/s)	1056			
	Ta (°C)	5	41,2	34,5	25,5
		10	37,7	31,1	22,1
		14	34,9	28,4	19,5
		16	33,6	27,1	18,2
		18	32,2	25,8	16,8
		20	30,9	24,4	15,5
71	Qo (l/s)	1167			
	Ta (°C)	5	43,9	36,8	27,1
		10	40,2	33,2	23,5
		14	37,3	30,3	20,7
		16	35,8	28,9	19,3
		18	34,3	27,4	17,9
		20	32,9	26,0	16,5
81	Qo (l/s)	1250			
	Ta (°C)	5	45,9	38,5	28,3
		10	42,0	34,6	24,5
		14	38,9	31,6	21,6
		16	37,4	30,1	20,1
		18	35,9	28,6	18,7
		20	34,4	27,2	17,2
82	Qo (l/s)	1944			
	Ta (°C)	5	72,8	61,1	44,9
		10	66,6	55,0	39,0
		14	61,8	50,2	34,3
		16	59,3	47,8	32,0
		18	57,0	45,5	29,6
		20	54,6	43,2	27,3
102	Qo (l/s)	2222			
	Ta (°C)	5	79,2	66,4	48,7
		10	72,5	59,7	42,3
		14	67,2	54,6	37,2
		16	64,5	52,0	34,6
		18	61,9	49,5	32,1
		20	59,3	46,9	29,6
122	Qo (l/s)	2778			
	Ta (°C)	5	103,5	86,7	63,6
		10	94,7	78,1	55,1
		14	87,7	71,3	48,5
		16	84,3	67,9	45,1
		18	80,9	64,5	41,8
		20	77,5	61,2	38,5
162	Qo (l/s)	3194			
	Ta (°C)	5	112,9	94,6	69,2
		10	103,3	85,1	60,0
		14	95,8	77,7	52,7
		16	92,0	74,1	49,1
		18	88,3	70,4	45,5
		20	84,6	66,8	41,9
182	Qo (l/s)	3611			
	Ta (°C)	5	137,2	115,4	85,8
		10	125,7	104,1	74,7
		14	116,6	95,1	66,0
		16	112,1	90,7	61,5
		18	107,6	86,3	57,2
		20	103,2	81,9	52,8
222	Qo (l/s)	4167			
	Ta (°C)	5	150,1	126,2	93,6
		10	137,5	113,8	81,5
		14	127,6	104,0	71,9
		16	122,6	99,2	67,1
		18	117,7	94,4	62,3
		20	112,9	89,5	57,5

Ta = entering air temperature to the air handling coil (°C)
 Ti/To = inlet/outlet water temperature(°C)
 Qo = airflow (l/s)
 kWt = Provided heating capacity (kW)

3WVM - 3WPX - Modulating 3-way valve

To be combined with hot water coil (optional). It is managed by the built-in microprocessor via a 0-10V signal and allows the fully automatic control of the water coil.

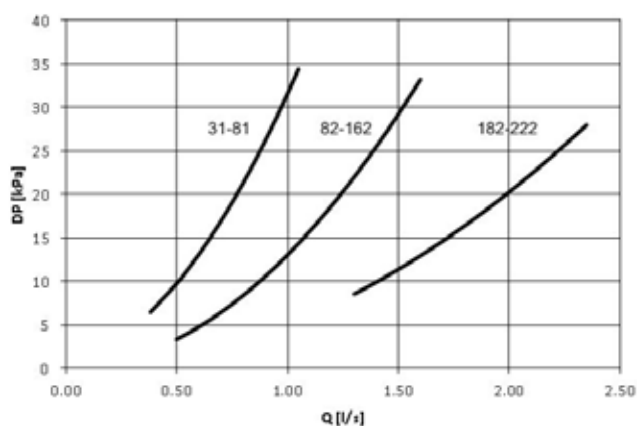
The valve with modulating actuator is provided already assembled and wired built-in the unit.



3WVM - Modulating 3-way valve: available only from size 82 to size 222

3WVPX - Modulating 3-way valve: available only from size 31 to size 81

3-way valve pressure drop



Q [l/s] = air flow rate
DP [kPa] = pressure drops

$$Q [l/s] = \frac{kWt}{4,186 \times DT}$$

Q [l/s] = Air flow rate
kWt = Provided heating capacity (kW)
DT = Difference between inlet and outlet water temperature (°C)

This accessory is for use in conjunction with option: CHW2 - 2row hot water coil

Accessory separately supplied : from size 31 to 81

EH - Electric elements

This option is advisable for cold climates. Available in various powers, it allows heating of the served room. The electrical heating elements are managed by a thermal control device with two power settings.

Ideal for lower outside temperature applications where it is required to active the heaters only for short duration in the year. In these cases, simplification of the system is more economical than electrical conduction cost.

The fins are made of aluminium, with a size suitable to ensure high efficiency and maintain low power density on the surfaces to limit overheating. The low temperature of the heating elements increases their lifespan and limits the effect of air ionization.



Matching of the electric elements

Size	31	41	51	61	71	81	82	102	122	162	182	222
4.5 kW	√	√	√	√	√	√	X	X	X	X	X	X
6kW	√	√	√	√	√	√	X	X	X	X	X	X
9 kW	√	√	√	√	√	√	X	X	X	X	X	X
12 kW	√	√	√	√	√	√	√	√	√	√	X	X
18 kW	X	X	X	√	√	√	√	√	√	√	√	√
27 kW	X	X	X	X	X	X	√	√	√	√	√	√
36 kW	X	X	X	X	X	X	X	X	X	X	√	√

This option involves variation of the main electrical data of the unit.

hot water coil and electric heaters cannot be mounted at the same time

PSAF - Clogged filter differential pressure switch air side

It allows to detect and signal (by an appropriate warning) the reaching of the max. level of air filter clogging.

The unit handler receives an indication when to perform the necessary maintenance of the filters.

The detecting device is installed in the unit and it is already connected to the unit electrical panel and pre-calibrated in the factory.

The calibration can be modified by the qualified assistance centre during the start-up.



PCOSM - Constant supply airflow

This device adjusts the speed of the fans to keep a constant flow rate, adapting to system losses and compensation for the filters as they get dirty. It is composed of a pressure sensor located in the supply section which measures the pressure, and a differential pressure switch that transforms the value into an electrical signal, based on the parameters detected the machine intervenes, adjusting the speed of the motors to re-establish the set flow rate value.



MHP - High and low pressure gauges

Allows the pressure measurement of the refrigerant to the compressor intake and supply, making the inspection of these parameters easier for the technicians involved in the management of the unit.

The two liquid pressure gauges and corresponding pressure sockets are installed on the machine in an easily accessible location.



CPHG - Hot gas re-heating coil

Available from size 82 to size 222.

This option is recommended during the summer when dehumidification is required. The flow of air to enter the room may contain a higher level of humidity than desired.

The dehumidification process is used to reduce it.

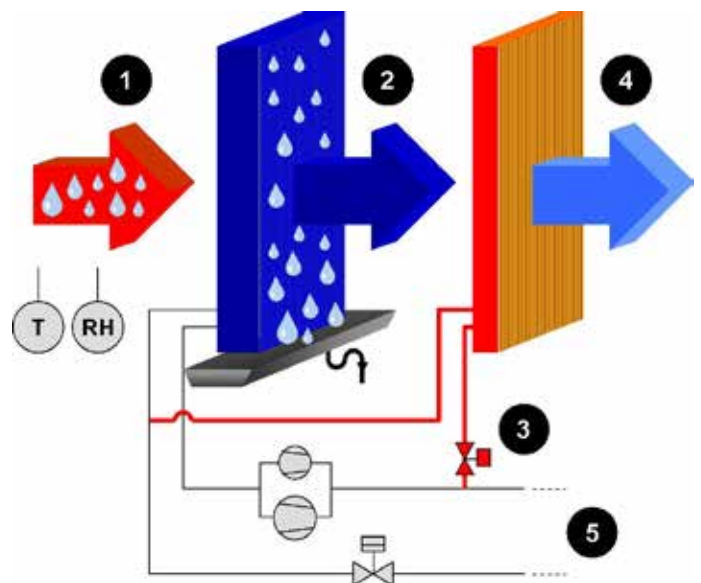
The air flow is first cooled in the treatment coil with separation of condensation. It is then freely re-heated to maintain the desired condition of comfort in the room served.

The re-heat coil is located behind the handling coil and is activated by diverting a flow of hot refrigerant gas downstream from the compressors through the action of a dedicated solenoid valve.

The process starts operating based on the humidity set-point established by the user.

With respect to traditional devices, such as electrical electric elements or hot water coils, use of the re-heat coil does not consume any extra energy.

It also lowers refrigerant condensation temperature, which provides two positive effects: power absorbed by the compressors is considerably reduced, and at the same time, cooling capacity is increased, resulting in greater efficiency (EER).



1. Air to be treated and temperature / humidity probe
2. Chilled and dehumidified air in the internal exchanger (evaporator)
3. Automatic hot gas pump valve
4. Air treated by the post-heating exchanger
5. External exchanger (condenser)

Indicative scheme - not in scale

This option reduces the available static pressure (supply air side).

Hot water coil and re-heating coil cannot be fitted at the same time

This accessory is to be matched with the electronic ambient control supplied as standard with the CWM or, alternatively, with the CIWM option - electronic ambient control with display for uncased wall installation or CSOND - ambient temperature and humidity control with built-in probes.

Performances of hot gas re-heating coil

Available from size 82 to size 222.

SIZES		OUTDOOR TEMPERATURE						
		15	20	25	30	35	40	
		kWt	kWt	kWt	kWt	kWt	kWt	
82	Qo (l/s)	1944						
	Ta (°C)	10	9,0	11,7	14,6	17,5	20,4	23,4
		12	7,8	10,6	13,4	16,3	19,2	22,2
		14	6,7	9,5	12,3	15,1	18,0	21,0
		16	5,6	8,4	11,1	14,0	16,8	19,8
		18	4,6	7,3	10,0	12,8	15,7	18,6
		20	3,5	6,2	8,9	11,7	14,5	17,4
102	Qo (l/s)	2222						
	Ta (°C)	10	9,7	12,7	15,7	18,9	22,0	25,3
		12	8,4	11,4	14,5	17,6	20,8	24,0
		14	7,3	10,2	13,2	16,3	19,5	22,7
		16	6,1	9,0	12,0	15,1	18,2	21,4
		18	4,9	7,8	10,8	13,8	16,9	20,1
		20	3,7	6,6	9,6	12,6	15,7	18,8
122	Qo (l/s)	2778						
	Ta (°C)	10	13,0	17,0	21,1	25,2	29,4	33,7
		12	11,4	15,4	19,4	23,5	27,7	32,0
		14	9,8	13,7	17,8	21,9	26,0	30,3
		16	8,3	12,1	16,1	20,2	24,3	28,6
		18	6,7	10,6	14,5	18,5	22,7	26,9
		20	5,2	9,0	12,9	16,9	21,0	25,2
162	Qo (l/s)	3194						
	Ta (°C)	10	14,1	18,4	22,8	27,3	31,9	36,6
		12	12,3	16,6	21,0	25,5	30,1	34,7
		14	10,6	14,9	19,2	23,7	28,2	32,8
		16	8,9	13,1	17,5	21,9	26,4	31,0
		18	7,2	11,4	15,7	20,1	24,6	29,1
		20	5,6	9,7	14,0	18,3	22,8	27,3
182	Qo (l/s)	3611						
	Ta (°C)	10	17,3	22,5	27,8	33,3	38,8	44,5
		12	15,1	20,4	25,7	31,1	36,6	42,2
		14	13,1	18,2	23,5	28,9	34,4	40,0
		16	11,0	16,1	21,4	26,7	32,2	37,8
		18	9,0	14,1	19,3	24,6	30,0	35,5
		20	7,0	12,0	17,1	22,4	27,8	33,3
222	Qo (l/s)	4167						
	Ta (°C)	10	18,7	24,4	30,2	36,2	42,2	48,4
		12	16,4	22,1	27,9	33,8	39,8	45,9
		14	14,1	19,8	25,5	31,4	37,4	43,5
		16	11,9	17,5	23,2	29,0	35,0	41,0
		18	9,7	15,2	20,9	26,7	32,6	38,6
		20	7,5	13,0	18,6	24,3	30,2	36,2

Ta = outlet air temperature from the treatment coil and entering the post-heating coil

Qo = air flow rate (l/s) kWt = thermal power provided (kW)

The post-heating coil is powered by hot gas pumped between the compressor supply and the condensing coil.

Since the temperature of the hot condensation gas is correlated to the outside air temperature, the indicative potential of the post-heating coil is expressed in relation to the outside air temperature.

CIWM - Electronic room control with display, for wall installation in built-in box

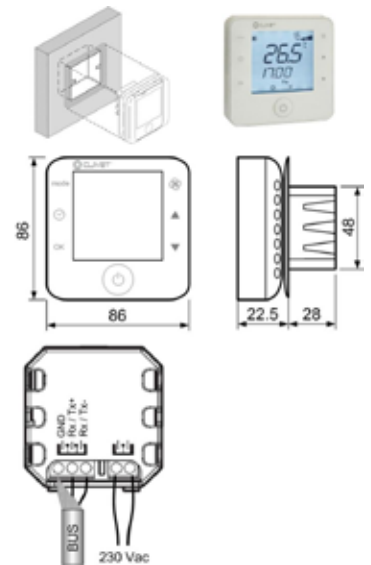
Option which allows the remote control of the unit which can be easily installed in the main built-in units which are available on the market with squared or rounded 65 mm diameter / 31 mm deep profiles.

The electronic control with display is simple to use even for non-specialised users.

Thanks to icon menu complete with backlight, allows control of the different unit functions, including:

- Switching the unit on and off
- reading the temperature using the probe in its interior
- displaying of the operating stata and any alarms
- password protection to access the unit's parameters
- Changing the manual operating mode (hot or cold) and/or set point
- Programming the daily and weekly time schedule for switching on and off and for setting the standard or economic set point.
- management of the operating parameters.
- language management for the navigation menu

The device is connected to the unit electrical panel by shielded twisted pair cables (section from 0.5 a 1.5 mm²), at a maximum distance of 200 m. The power supply is at 230Vac.



Installation, electrical power supply and connection to the electrical panel are encharged to the client.

CONTE - Electronic room control with display visible on the unit

The electronic control with display is simple to use even for non-specialised users.

Thanks to the back-lit icon menù, enabling all the unit functions to be controlled, including these main functions:

- switching the unit on and off
- reading the temperature using the probe in its interior
- displaying of the operating stata and any alarms
- machine parameter protection with password
- changing the manual operating mode (hot or cold) and/or set point
- programming the daily and weekly time schedule for switching on and off and for setting the standard or economic set point.
- management of the operating parameters.
- language management for the navigation menu

The device is installed built-in the unit.



The device requires matching with one of the following options:
CTEM - Temperature ambient control by on board probe
CSOND - Humidity and temperature control with built-in probes



(1) Electronic control with display installed on board
(2) Probes on board

CTEM - Temperature control with built-in probes

This option enables the temperature of the served ambient to be read directly from the unit return air flow.

Automatic thermoregulation takes place using on board probes while those on the electronic control are inhibited.

The device is installed and wired built-in the unit.



The device requires matching with the option:
CONTE - Electronic room control with display visible on the unit

CSOND - Humidity and temperature control with built-in probes

This option makes it possible to measure the temperature and humidity ambient directly on the air flow entering the unit.

The automatic thermal regulation is done using the on-board probes, whereas the probes on the remote control are inhibited.

The device is installed and wired built-in the unit.





The device requires matching with the option:
CONTE - Electronic room control with display visible on the unit

CUE - External humidifier control with 0-10V command

In applications where the air humidification can be available, the unit sends a control signal from the 0-10V or 4-20mA to manage an external humidifier, by the customer.

The unit electronics provides a 0-10V or 4-20mA control signal.

 External humidifier installation and electrical power supply is encharged to the client.

 This accessory is to be matched with the electronic ambient control supplied as standard with the CWM or, alternatively, with the CIWM option - electronic ambient control with display for uncased wall installation or CSOND - ambient temperature and humidity control with built-in probes.

PM - Phase monitor

The phase monitor makes it possible to check the correct connection of the phases and their imbalance in units powered with a tri-phase system.

If the connection of the phases is not correct, or the threshold of phase imbalance is exceeded, or the voltage is too high or too low for a certain amount of time, the monitor acts on the control circuit and orders the machine to be shut down.

As soon as nominal line conditions are restored, the unit is automatically reset.

PFCP - Power factor correction capacitors (cosfi > 0.9)

The component is necessary to lower the phase difference between current and voltage in the electromagnetic components of the unit (e.g. asynchronous motors).

The component allows to put the cosfi power factor to values on average higher than 0.9, reducing the network reactive power.

This often leads to an economic benefit which the energy provider grants to the final user.

The device is installed and wired built-in the unit.




MOB - RS485 Serial port with Modbus protocol.

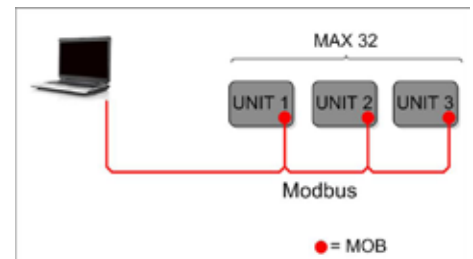
It allows the serial connection to supervision systems, using Modbus as the communication protocol.

It allows the access to the complete list of operating variables, controls and alarms.

On the serial line can be connected up to 32 units for a typical distance of 1000 m.

The connection is made using a suitable cable to RS485 network or formed by a twisted pair and shielded wires.

 The device is installed and wired built-in the unit.

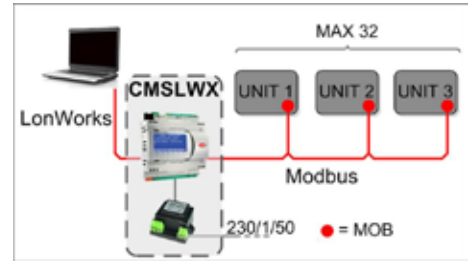


Accessories separately supplied

CMSLWX - LonWorks communication serial module

It allows the serial connection to supervision systems, using LonWorks as the communication protocol. It allows access to a list of operating variables, control and alarms compliant with the Echelon standard.

With this accessory, each unit can communicate with the main supervisor systems such as Trend, Johnson Controls, PlantVisor.



The device needs to be combined with the RS485 serial port option with Modbus protocol.



The package includes the transformer, which is powered by 230/1/50, and the Gateway of communication between the supervisor and the Modbus serial line. The configuration and management of the LonWorks network are the responsibility of the Customer.

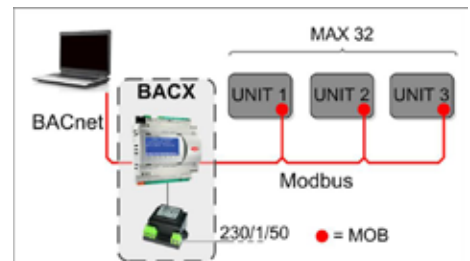


The device is prearranged to mounting in DIN rail, for external installation (7 DIN modules, installed by the customer)

BACX - BACnet communication serial module

Allows to perform the serial connection to supervision systems by using BACnet as a communication protocol. It allows the access to the entire list of operating variables, controls and alarms

With this accessory, each unit can communicate with the main supervisor systems such as Trend, Johnson Controls, PlantVisor.



The device needs to be combined with the RS485 serial port option with Modbus protocol.



The package includes the transformer, which is powered by 230/1/50, and the Gateway of communication between the supervisor and the Modbus serial line. The configuration and management of the BACnet network are the responsibility of the customer.



The device is prearranged to mounting in DIN rail, for external installation (7 DIN modules, installed by the customer)

PF500X - Front air supply plenum H=500mm

The plenum allows you to introduce frontally the treated air, it must be installed at the supply opening using screws.

It's made of galvanized and painted in color RAL 9001 and equipped with supply grille with a double row of adjustable fins with protective grille.



PO3X - Supply plenum on three sides

The plenum allows you to introduce the treated air on three sides, it must be installed with screws on the outlet.

It's made of galvanized and painted in color RAL 7016, and is equipped with supply grille with a double row of adjustable fins with protective grille.



Available from size 31 to size 81

AMRX - Rubber anti-vibrating dampers

Mounts can be adjusted in height, and in case of irregular flooring.

They are made of a zincplated metric screw, reinforced polyamide head, nyltrilic NBR rubber disc with antivibration features (70 shore)



Option compatibility

Option compatibility		
REF.	DESCRIPTION	
Accessories		
CHW2	two-rows hot water coil	Δ
3WVPX	Modulating 3-way valve	◇ ¹
3WVM	Modulating 3-way valve	0 ²
EH	Electric heaters.	Δ
Refrigeration circuit		
EVE	Electronic expansion valve	√
MHP	High and low pressure gauges	0
CPHG	hot gas re-heating coil	Δ ²
Aeraulic circuit		
FPG4	Pleated air filter class G4 (EN779 norm)	√
PSAF	Clogged filter differential pressure switch air side	0
PCOSM	Constant supply airflow	0
PF500X	Front air supply plenum H=500mm	◇
P03X	Supply plenum on three sides	◇ ¹
Electric circuit		
CWM	Electronic room control with display, for wall installation	√
CIWM	Electronic room control with display, for wall installation in built-in box	0
CONTE	Electronic room control with display visible on the unit	0*
CTEM	Temperature ambient control by on board probe	0*
CSOND	Ambient humidity and temperature control with built-in probes	0*
CUE	External humidifier control with 0-10V command	0
MOB	RS485 Serial port with Modbus protocol	0
BACX	BACnet serial communication module	◇*
CMSLWX	LonWorks serial communication module	◇*
PM	Phase monitor	0
PFCP	Power factor correction capacitors (cosφ > 0.9)	0
AMRX	Rubber antivibration mounts	◇

√ Standard component

0 Optional component

Δ Optional components that can not be installed at the same time

◇ Accessory separately supplied (optional)

◇* Accessory separately supplied (optional): available only with MOB - RS485 Serial port with Modbus protocol

0* Match required: temperature control or temperature and humidity control with electronic display unit installed in visible position on the unit

¹ Available from size 31 to size 81

² Available only from size 82 to size 222

Dimensional drawings

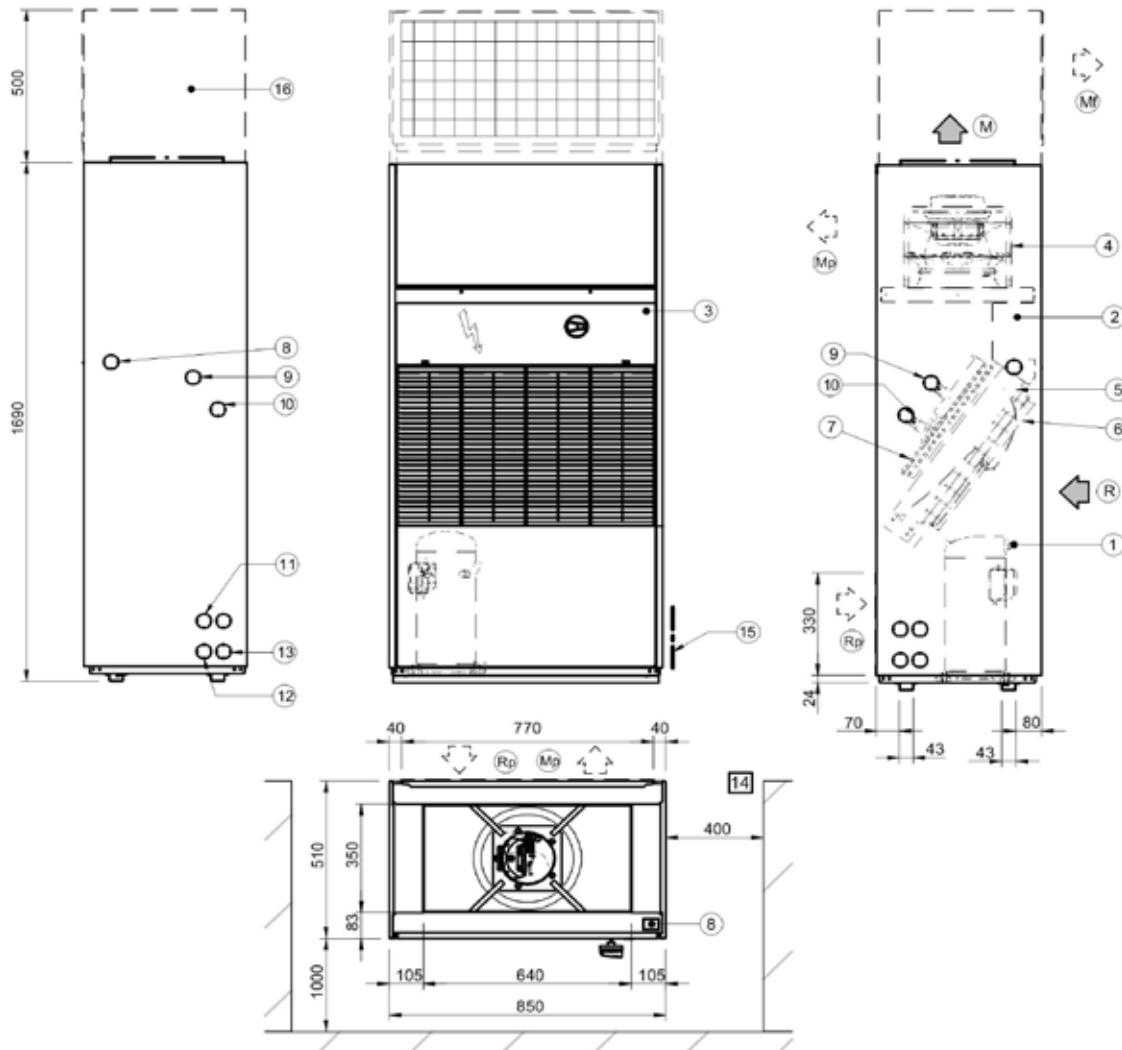
Functional spaces

When placing the unit, it is necessary to comply with the functional spaces indicated in the dimensions. Compliance with functional spaces is essential to:

- ensure proper operation of the unit
- allow maintenance technicians easy access to the equipment compartments
- protect authorized operators and exposed persons.

SERIE: CASR-X 31-51

DAA4U31_51_Pf500X_0
Date: 05/09/2013



- Compressor
- Electrical panel
- Access to the electrical panel
- Supply fan
- Direct expansion coil
- G4 air filters
- Hot water coil (Optional) o Electric heaters (Optional)
- Power input
- Hot water heat exchanger water outlet Ø 1"
- Hot water heat exchanger water inlet Ø 1"
- Inlet for gas line connection
- Inlet for liquid line connections

- Condensate discharge
- Functional spaces
- Water connection side
- Plenum for front air delivery or on three sides (Optional)

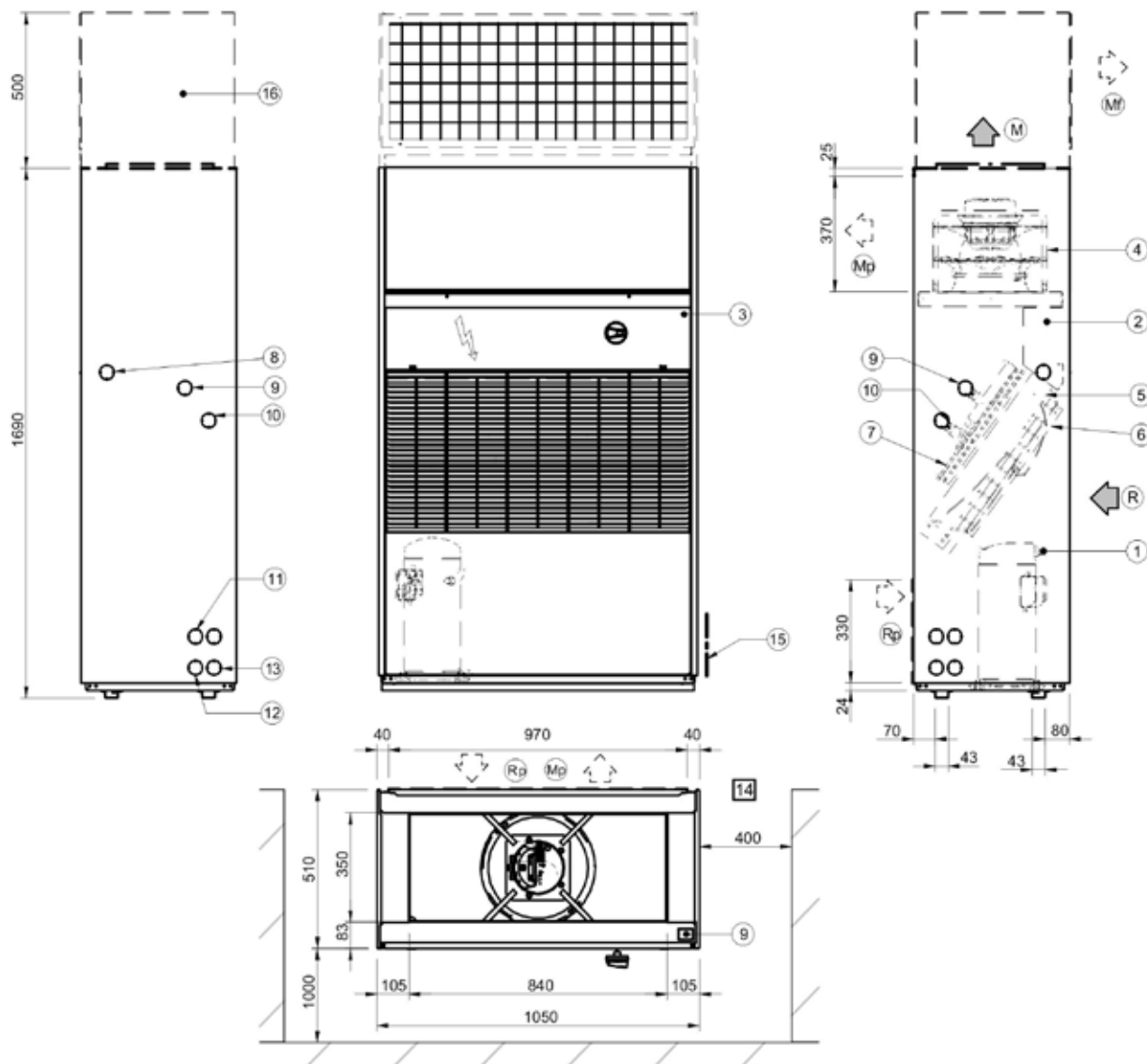
- R. Air return
M. Standard supply
MP. Rear supply air (Optional)
MF. Front air outlet (Optional)
RP. Rear air inlet (Optional)

Size			31	41	51
A - Length		mm	850	850	850
B - Width		mm	510	510	510
C - Height		mm	1705	1705	1705
Standard unit weight					
Shipping weight		kg	173	175	181
Operating weight		kg	173	175	181

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

SERIE: CASR-X 61-81

DAA4U61_81_PF500X_0
Date: 05/09/2013



- 1. Compressor
- 2. Electrical panel
- 3. Access to the electrical panel
- 4. Supply fan
- 5. Direct expansion coil
- 6. G4 air filters
- 7. Hot water coil (Optional) o Electric heaters (Optional)
- 8. Power input
- 9. Hot water heat exchanger water outlet Ø 1"
- 10. Hot water heat exchanger water inlet Ø 1"
- 11. Inlet for gas line connection
- 12. Inlet for liquid line connections

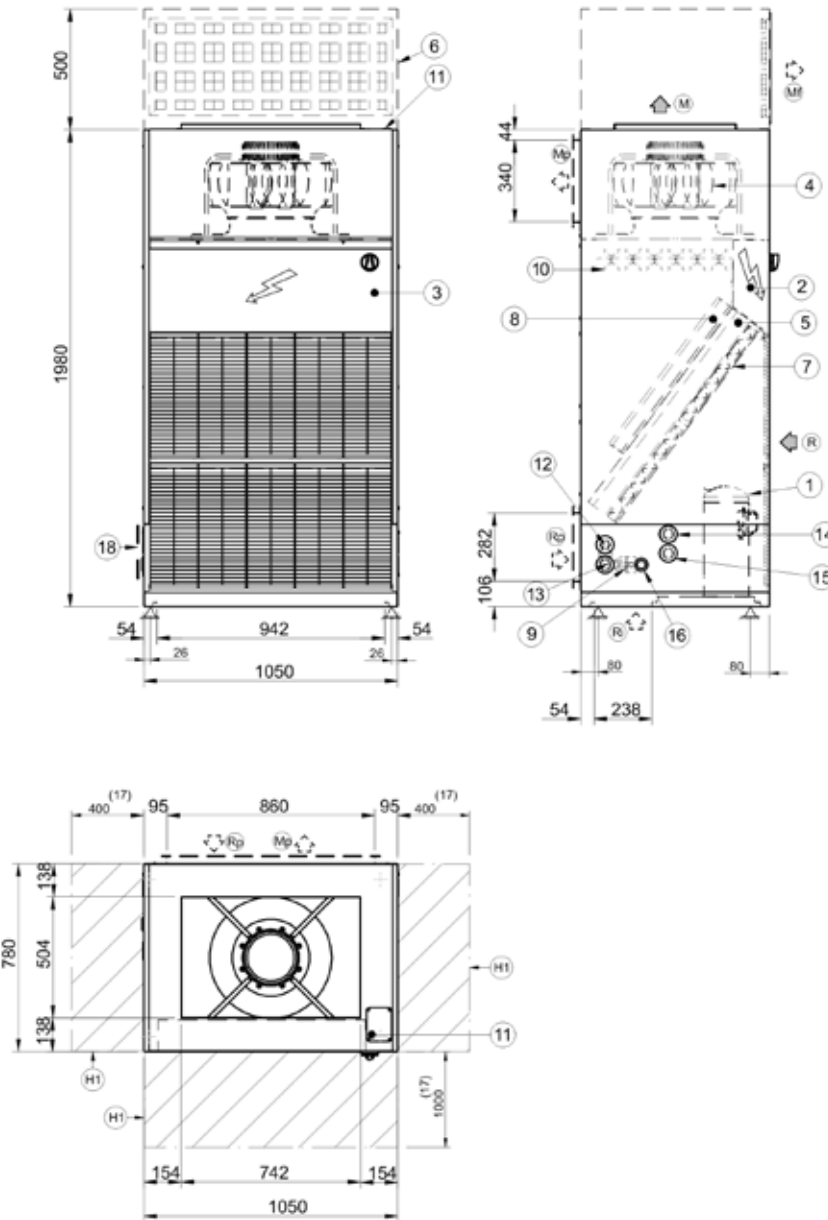
- 13. Condensate discharge
 - 14. Functional spaces
 - 15. Water connection side
 - 16. Plenum for front air delivery or on three sides (Optional)
- R. Air return
 M. Standard supply
 MP. Rear supply air (Optional)
 MF. Front air outlet (Optional)
 RP. Rear air inlet (Optional)

Size			61	71	81
A - Length	mm		1050	1050	1050
B - Width	mm		510	510	510
C - Height	mm		1705	1705	1705
Standard unit weight					
Shipping weight	kg		200	200	202
Operating weight	kg		200	200	202

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

SERIE: CASR-X 82-102

DAA4U82_102_Pf500X_0
Date: 11/08/2011



- 1. Compressor
- 2. Electrical panel
- 3. Access to the electrical panel
- 4. Supply fan
- 5. Direct expansion coil
- 6. Front air supply plenum (Optional)
- 7. G4 air filters
- 8. Hot water coil - Re-heating coil (Optional)
- 9. 3-way valve (Optional)
- 10. Electric heaters (Optional)
- 11. Power input
- 12. Hot water heat exchanger water outlet Ø 1"
- 13. Hot water heat exchanger water inlet Ø 1"

- 14. Inlet for gas line connection
- 15. Inlet for liquid line connections
- 16. Condensate discharge
- 17. Functional spaces
- 18. Water connection side

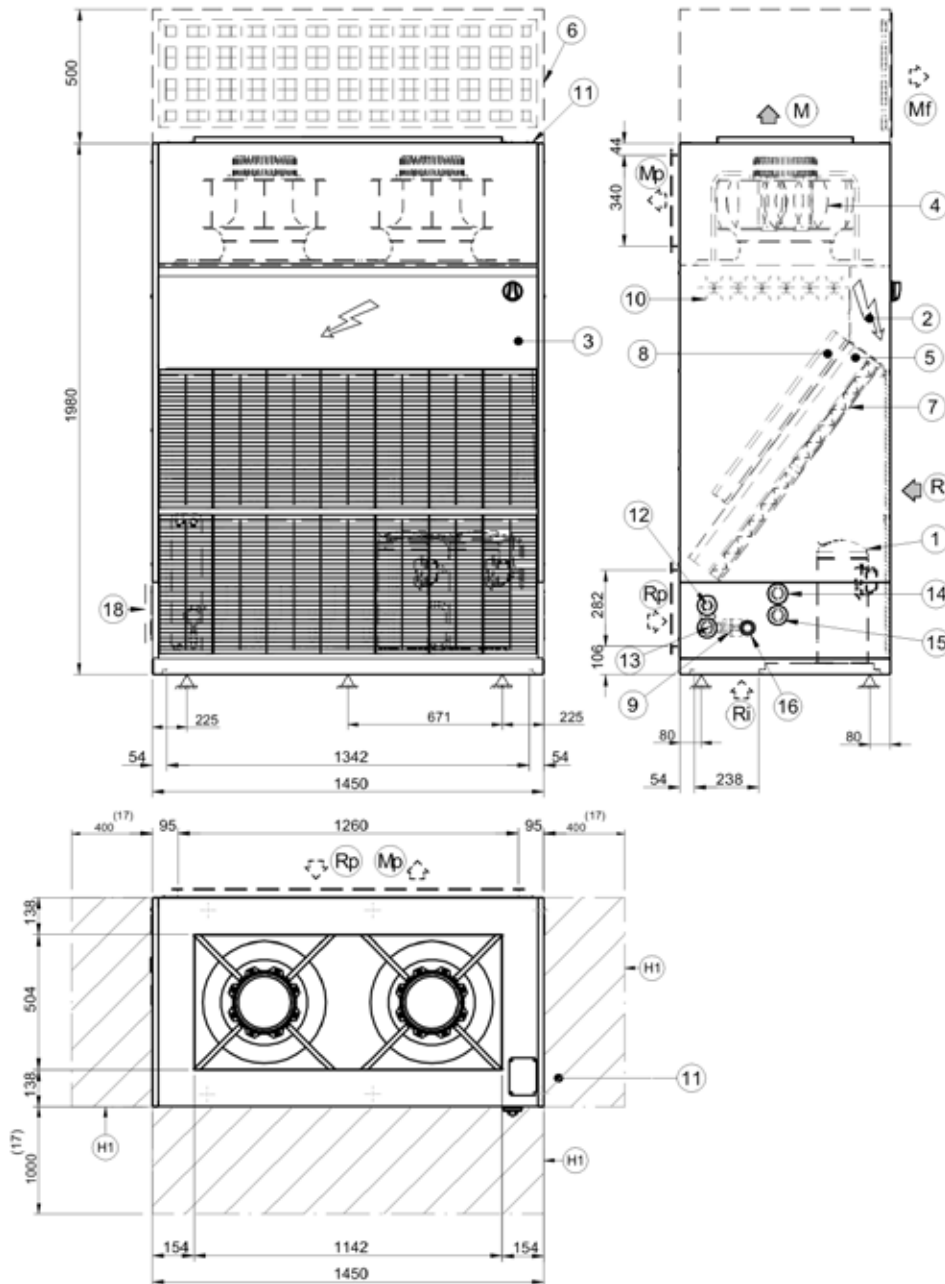
- R. Air return
- M. Standard supply
- MP. Rear supply air (Optional)
- MF. Front air outlet
- RP. Rear air inlet
- RL. Floor air inlet

Size			82	102
A - Length		mm	1050	1050
B - Width		mm	780	780
C - Height		mm	2000	2000
Standard unit weight				
Shipping weight		kg	297	302
Operating weight		kg	297	302

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

SERIE: CASR-X 122-162

DAA4U122_162_PF500X_0
Date: 11/08/2011



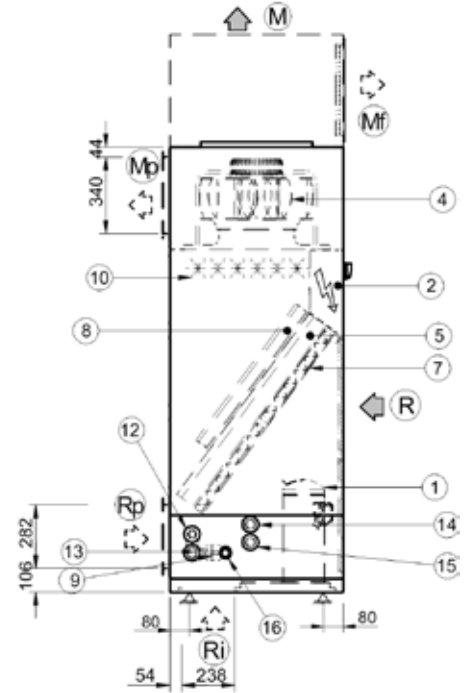
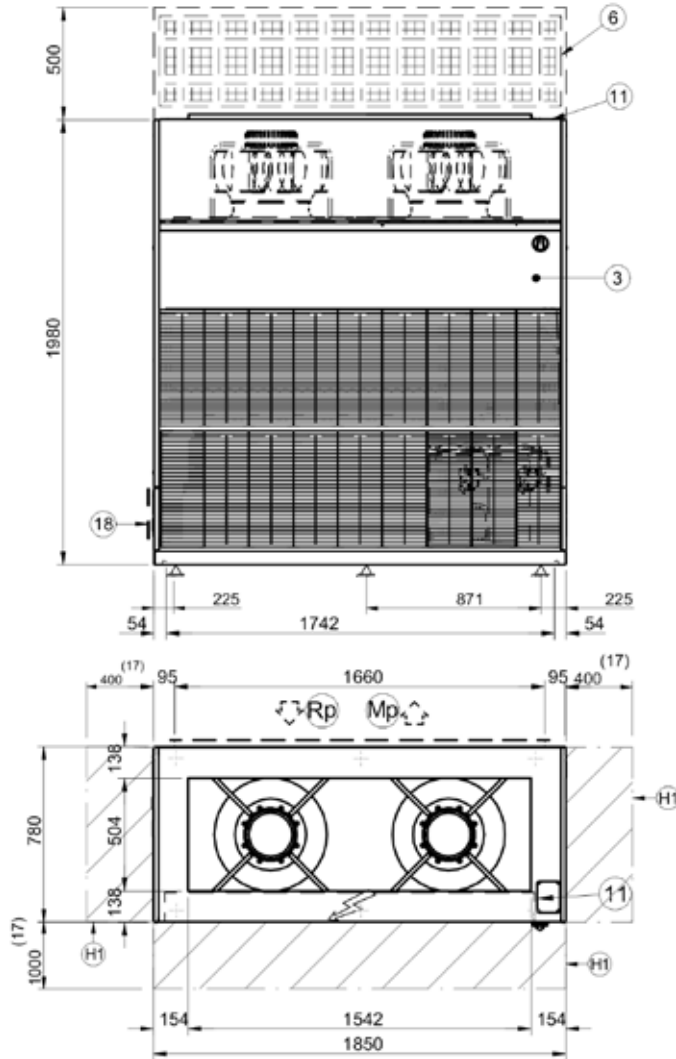
- 1. Compressor
 - 2. Electrical panel
 - 3. Access to the electrical panel
 - 4. Supply fan
 - 5. Direct expansion coil
 - 6. Front air supply plenum (Optional)
 - 7. G4 air filters
 - 8. Hot water coil - Re-heating coil (Optional)
 - 9. 3-way valve (Optional)
 - 10. Electric heaters (Optional)
 - 11. Power input
 - 12. Hot water heat exchanger water outlet \varnothing 1 1/4" F
 - 13. Hot water heat exchanger water inlet \varnothing 1 1/4" F
 - 14. Inlet for gas line connection
 - 15. Inlet for liquid line connections
 - 16. Condensate discharge
 - 17. Functional spaces
 - 18. Water connection side
- R. Air return
M. Standard supply
MP. Rear supply air (Optional)
MF. Front air outlet
RP. Rear air inlet
Ri. Floor air inlet

Size			122	162
A - Length	mm		1450	1450
B - Width	mm		780	780
C - Height	mm		2000	2000
Standard unit weight				
Shipping weight	kg		387	392
Operating weight	kg		387	392

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

SERIE: CASR-X 182-222

DAA4U182_222_PF500X_0
Date: 11/08/2011



- 1. Compressor
- 2. Electrical panel
- 3. Access to the electrical panel
- 4. Supply fan
- 5. Direct expansion coil
- 6. Front air supply plenum (Optional)
- 7. G4 air filters
- 8. Hot water coil - Re-heating coil (Optional)
- 9. 3-way valve (Optional)
- 10. Electric heaters (Optional)
- 11. Power input
- 12. Hot water heat exchanger water outlet \varnothing 1 1/2"
- 13. Hot water heat exchanger water inlet \varnothing 1 1/2"

- 14. Inlet for gas line connection
- 15. Inlet for liquid line connections
- 16. Condensate discharge
- 17. Functional spaces
- 18. Water connection side

- R. Air return
- M. Standard supply
- MP. Rear supply air (Optional)
- MF. Front air outlet
- RP. Rear air inlet
- RI. Floor air inlet

Size			182	222
A - Length	mm		1850	1850
B - Width	mm		780	780
C - Height	mm		2000	2000
Standard unit weight				
Shipping weight	kg		472	482
Operating weight	kg		472	482

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

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