

INDUSTRIAL
AIR CONDITIONING

Product catalogue

2016


ferroli

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> Ferroli production plant

THE PRODUCTION PLANT OF THE INDUSTRIAL AIR CONDITIONING DIVISION COVERS AN AREA OF 20,000 M² AND IS LOCATED IN VILLANOVA, NEAR SAN BONIFACIO (VR) CLOSE TO THE HEAD QUARTERS. RECENT IMPORTANT INVESTMENTS HAVE BEEN MADE TO IMPROVE AND UPGRADE THE PRODUCTION PROCESS STAGES.

A MICRO-FACTORY WITHIN THE MAIN PRODUCTION FACILITIES WITH **LEAN PRODUCTION** KANBAN SYSTEM PRODUCES HIGH SPECIFICATION FAN COIL TERMINALS.

>>> INDUSTRIAL AIR-CONDITIONING <<<



>>> The production process begins with the production of the finned coil in copper and aluminium, complete with a welding and testing line.



>>> The assembly cell (picture opposite) assembles the components such as fan-motor, condensate tray and heat exchanger along with the main structure.



>>> The final assembling and packaging cell assembles the cabinets and all components, such as valves, supplementary trays, and the controls.



>>> Chillers with capacity from 5 to 350 kW are built on the assembly line. The 5 lines total a length of 300 m.



fig. a



fig. b



fig. c

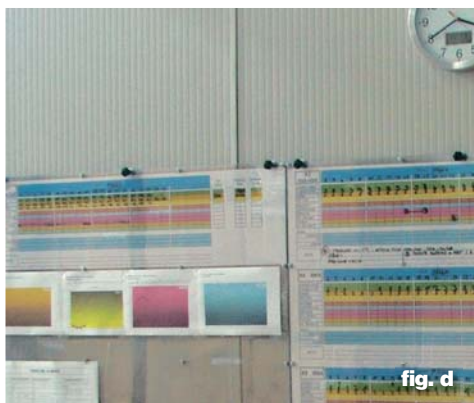


fig. d

Ferrolli

>> For the testing of medium to high capacity chillers (fig. a-b) there are three test chambers which enables units to be tested according to EUROVENT conditions. A very important investment by FERROLI, which offers our customers guarantee that our equipment fully comply the project specification.

>> The functional tests vary from a minimum of 4 hours for 20 kW units with heat pump (minimum 2 hours for operational mode) and up to 8 hours for 200 kW units (approx. 4 hours per operational mode). Complete test reports are compiled and made available to entire Ferrolli world.

>> Chillers up to 1400 kW (fig. c) are tested by specialised technical personnel who undergo a rigorous and intensive training schedules coordinated by the project engineers. Testing can last up to 8 hours for operation modes, with particular attention to ensuring correct operation of all alarms and adjustment functions of the units. Again complete test reports are compiled and made available to entire Ferrolli world.

>> Charts and reports for monitoring production schedules, efficiency, construction and the safety within the departments are updated and displayed (fig. d) inside the plant are available to all, as well as visiting customers and professionals.

> Laboratory R&D

THE RESEARCH & DEVELOPMENT LABORATORIES ARE THE PRESTIGIOUS AREAS OF FERROLI PRODUCTION FACILITIES. INDIVIDUAL R & D LABORATORIES OPERATING INSIDE THE PRODUCTION PLANT ARE DEDICATED TO INDUSTRIAL AIR CONDITIONING TOTALLING AN AREA OF 1400 M².

ITS MAIN DUTIES INCLUDE DESIGNING PROTOTYPES FOR THE TECHNICAL DEPARTMENT AND CARRYING OUT FUNCTIONAL TESTS IN D.B. AND W.B.

TEMPERATURE CONDITIONS CERTIFIED BY EUROVENT. THE RESEARCH AND DEVELOPMENT STRUCTURE COMPRISES A HEAD OF DEPARTMENT, FOUR TECHNICIANS FOR THE CONSTRUCTION OF PROTOTYPES AND ANOTHER FOUR LABORATORY TECHNICIANS FOR THE TESTINGS. THE NEW LABORATORY IS EQUIPPED WITH:

>> A compensated-type calorimeter **C2**, with a cavity separated chambers, for checking units up to $P=16.5$ kW with the capability of testing units to a temperature of -10°C (**fig. a**).

>> A calibrated-type calorimeter **C1** (with double chamber without cavity separated chambers where losses are taken into account) for checking units up to $P=16.5$ kW and to a temperature of -10°C , equipped inside with an enthalpy tunnel for calculating the performance of internal split or fan coil units up to $Q=1,500$ m³/h, built to AMCA 210 specifications (**fig. a**).

>> A fan test tunnel, according to ISO 5801 and UNI 10531, for checking the air flow-rate values of axial-flow and tangential fans and monitoring of the flow-rate/head curve of centrifugal fans for values up to $Q=5000$ m³ (**fig. a**).

>> A semi anechoic chamber **C3** for sound power and pressure tests reconditioned for carrying out the tests at temperatures stipulated by Eurovent conditions. The chamber is suitable for units up to $P=50$ kW and therefore for the whole range of terminal units and chillers up to the powers conditions;

>> All the chambers allow our technicians to control cooling only or heat pump units, with heat recovery in the de-superheating phase or total heat recovery and In addition process units for leaving water temperature down to -8°C .



fig. a



fig. d





Ferrol



Ferrol

The financial investment in R&D in recent years have enabled the production of systems that meet individual market demands needs in terms of performance (efficiency, quiet operation, reliability).

>> The most significant and largest financial investment is certainly the climatic chamber C5, which is one of the largest in Italy and able to test units for powers up to 1800 kW (**fig. c-d**). The total internal volume (approx. 1200 m³) is controlled by a system of water and re circulated air circuits with inverter control and a smart software system enabling testing without personnel for temperatures to -10°C, with the option of dividing the chamber into separate zones for testing two units at the same time under different conditions.

>> The steam for test some unit is produced by a boiler at low pressure, specially designed by the industrial heating division technical department.



fig. b



fig. c

REFERENCES

ITALY

HOSPITAL AUTHORITIES

Milazzo (ME) RHA + RGA + UTA	Sarcone (BA) RGA	Manduria (TA) RXA + RMA + FAN COIL + TERMOVENTILANTI	ASL di Frosinone (FR) RLA + CENTRALI TRATTAMENTO ARIA
Piemonte (ME) RLA + FAN COIL	S. Anna (CO) UTA	Moscato (TA) RXA + TERMOVENTILANTI	Casa di Cura Columbus (MI) CENTRALI TRATTAMENTO ARIA
S. Filippo Neri Roma RMA + FAN COIL	Belcolle (VT) UTA	S. Vito al Tagliamento (UD) UTA + TERMOVENTILANTI	Istituto Zooprofilattico (SS) RLA + RHA
Militare Celio (RM) UTA + FAN COIL	Maggiore (BO) UTA	Niguarda (MI) TERMOVENTILANTI	Regione Lazio (RM) CENTRALI TRATTAMENTO ARIA
Opera Pia (VB) RMA + FAN COIL	S.Martino (GE) RGA	Maggiore della Carità (NO) UTA + RLA + RGA	Clinica Villa Sandra (RM) CENTRALI TRATTAMENTO ARIA
Cotugno (NA) RGA + UTA + FAN COIL	Barcellona (ME) UTA	Gubbio (PG) RGA + FAN COIL	Casa di Cura S. Lorenzino (FC) RGA
Vecchio Palmanova (UD) FAN COIL	G. Rummo (BN) RGA	Presidio Ospedaliero ASL n. 4 APICELLA (NA) RGA	Laboratorio TUV Scarmagno (TO) RGA + FCS
V. Emanuele Gela (RG) RHA + UTA	Cà Foncello (TV) UTA	Azienda Ospedaliera Senese (SI) RXA	I.P.A.B. Ist. Giovanni XXIII (BO) RHA + CENTRALI TRATTAMENTO ARIA
Borgosesia (VC) RHV + UTA	Vittorio Emanuele III (CL) UTA	Policlinico di Monza (MI) RGA	Centro Sterilizzazione "Steril Piemonte" (VC) RHV + RLA + CENTRALI TRATTAMEN- TO ARIA
Misericordia (GR) FAN COIL	Vincenzo dell'Erba (BA) RMA + UTA	USL 4 di Prato (PO) CENTRALI TRATTAMENTO ARIA + RGA + VENTILCONVETTORI	Ingegneria Biomedica S. Lucia (NO) RGA + VENTILCONVETTORI
Silvestrini (PG) FAN COIL	Santhià (TO) RLA + FCF		
Villa San Pietro (RM) UTA	Borgomanero (NO) RHA + UTA		
San Bonifacio (VR) UTA	Bambin Gesù Roma UTA + FANCOIL		
C. Poma (MN) FAN COIL	Sandro Pertini (RM) RGA + FAN COIL	USL 13 (BA) CENTRALI TRATTAMENTO ARIA	
Monaldi (NA) RLA + UTA		ASL NAPOLI 2 (NA) CENTRALI TRATTAMENTO ARIA	

SCHOOLS, UNIVERSITIES, LIBRARIES / HOTEL / CATERING

SCHOOLS, UNIVERSITIES, LIBRARIES

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Biblioteca Com. Macomer (SS) ROOF TOP	Università di Salerno (SA) ROOF TOP	Hotel Tilibas (SS) UTA	Cantina Zaccagnini (PE) ROOF TOP
Biblioteca Com. Caserta (CE) RLA	Palazzo Reale (NA) RGC	Hotel Tiberio Palace (NA) RHA + RHV + FCF + UTA + UT REC	Castello di Radda (SI) UTA
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	HOTEL / HOTEL Hotel San Marco (VR) UTA	Residence "La Giurlita" (LE) RMA + FCF + TCX	Best Western Soave Hotel (VR) RLA + FAN COIL + UT REC
	Hotel Mediterraneo (RG) RLA		

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Banca Finconsumo RSA + RPC + FAN COIL	Olivetti Multiservices SpA (TO) UTA	SALES OUTLETS Luisa Spagnoli S.P.A. (PG) POLAR	Concessionaria AUDI (NO) RLA
Banca d'Italia (BS) RXA	Sede Municipale S. Teresa di Riva (ME) RGA	LIDL Cairo Montenotte (SV) RGA	Caliese Centrum (CE) RLA + FTP + MERCURY ST + VEC

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MILITARY SECTOR / SECTEUR MILITAIRE

MILITARY SECTOR

Caserma Guardia di Finanza
"Cefalonia Corfù" (PG)

FCF

Scuola di Polizia Ministero
Infrastrutture (RM)

RFA + RMA + RGA + RLA

Esercito Italiano (RM)

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(TP)

RLA

Caserma U. Polonio (GO)

RGA + FAN COIL + UTA

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RGA + FCS

Arsenale di Taranto (TA)

RHA + FAN COIL + UTA

Scuola Militare di Cavalleria
(TO)

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RGA + FAN COIL

Piscina Intercomunale Fucecchio
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UTA

Museo Etnografico Caravel
(AO)

RGA + UTA

Museo Comunale (RN)

RLA + UTA

Centro Comm.le Ortuso (RC)

UTA

Centro Comm.le Corolla
(ME)

UTA

De Martini Shipping (GE)

UTA

Teatro San Carlo (NA)

UTA

Teatro Diana (SA)

RLA

Mercato Tartini (BO)

UTA

Multisala Impero (VA)

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Sala Bingo di Gallipoli (LE)

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Stab. Artema S.P.A. Zegna
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Stabilimento AIA (VR)

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Stab. Doimo City Line (TV)

RLA

Stabilimento LIOLà Spa (NO)

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Stabilimento Ferrero (CN)

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RHV + UTA

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Stabilimento Ansaldo (TO)

RGA + UTA + FAN COIL

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RGA + FAN COIL + UT REC

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RLA

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UTA

Militare "F. Baracca" (RM)

RGA

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OSPEDALE DI SAN BONIFACIO (VR)



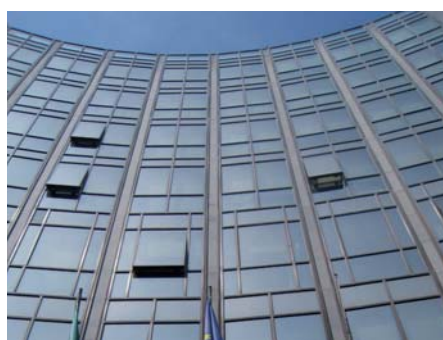
TIBERIO PALACE, HOTEL & CONFERENCE CENTER - NAPOLI



TEATRO SAN CARLO - NAPOLI



PALACILENTO - SALERNO



SEDE FINMECCANICA - ROMA



COMPLEJO HOTELERO TERRALTA - ALICANTE, SPAGNA

REFERENCES

SPAIN

Hospital de Alta Resolución de Loja
Hospital de Sagrado Corazón
Hospital Meixorio de Vigo
Hospital de Enfermedades Raras
Hospital Benito Menni
Hospital Xanit
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"SBER-BANK Russia" Moscow office.
Moscow,
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Bank "URASLIV" Moscow,
Russia
RGA

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JEWELLER Department store
Krasnodar,
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RGA + TOP FAN
"Medical center branch" Moscow,
RGA + FCP
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"Historical – Archeological Museum-Felizina"
FCS

REPUBLIC OF BELARUS

The Skating Ring "Ice Palace" Baranovichi,
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Center "Mother and Child" Minsk,
9- th municipal clinical hospital
Minsk,
Research and Production Corporation "Integral" Minsk,
Business Center "BME BUSINESS CENTER" Minsk,
Republican theoretical and practical

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TURKEY & REST OF THE WORLD

TURKEY

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Izmit Ticaret Odasi
Izmit Skoda Plaza
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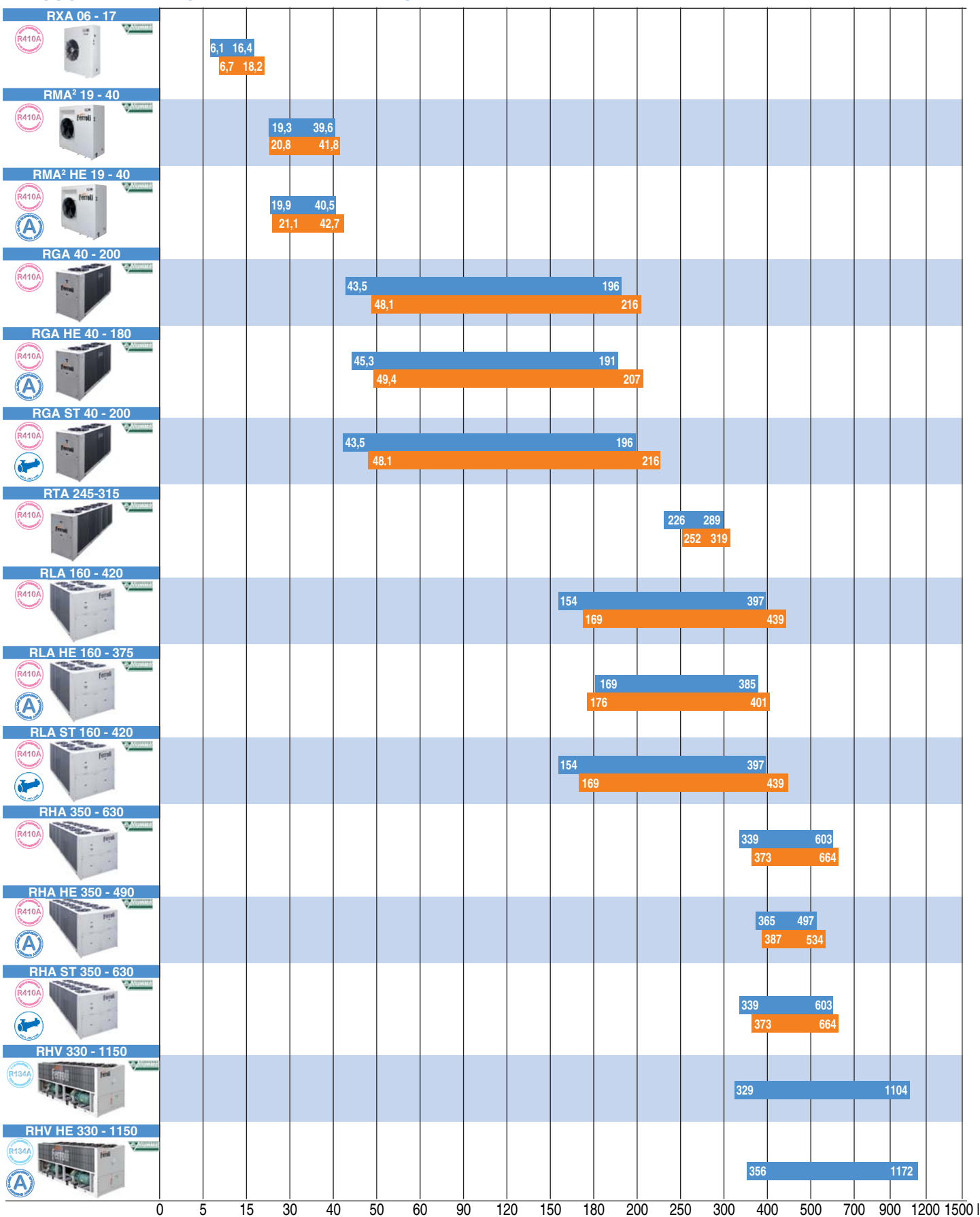
Aksoy Plaza
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REST OF THE WORLD

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New Nork Shopping Center
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Product range

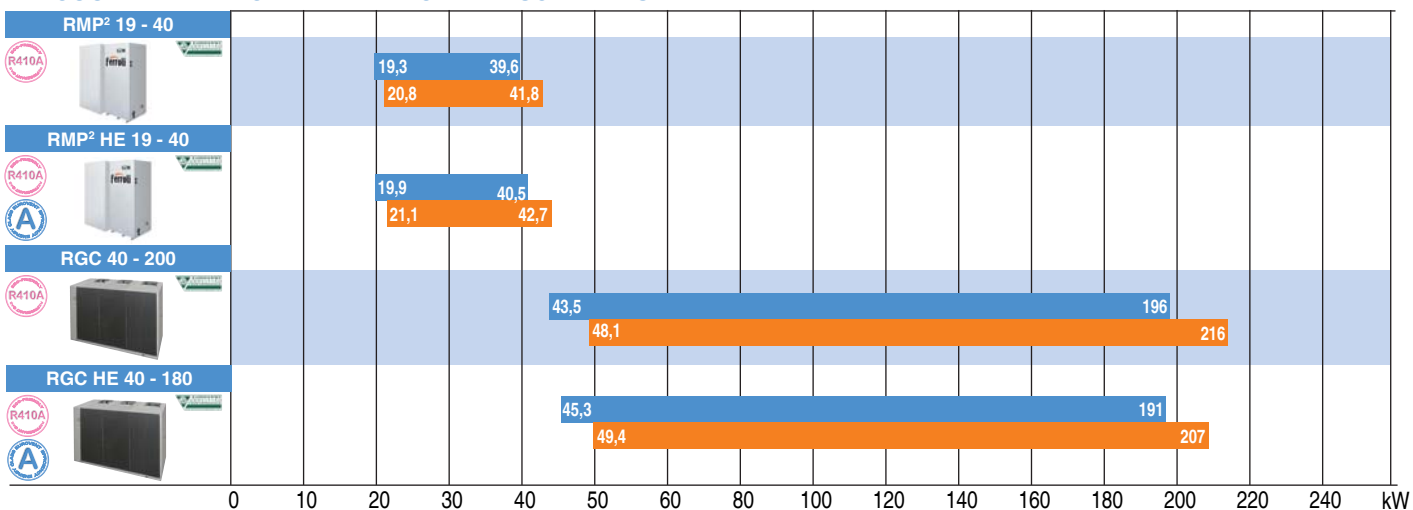
AIR COOLED WATER CHILLER WITH AXIAL FANS



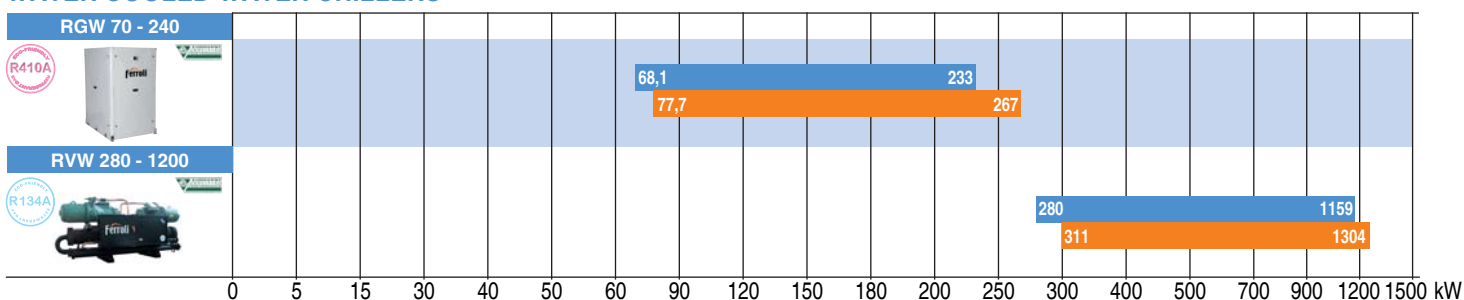
The list of certified products is available on the website www.eurovent-certification.com.
The Eurovent certification program LCP-HP shall apply to air cooled water chillers with nominal cooling capacity up to 600 kW and water cooled chillers with nominal cooling capacity up to 1500 kW.

Product range

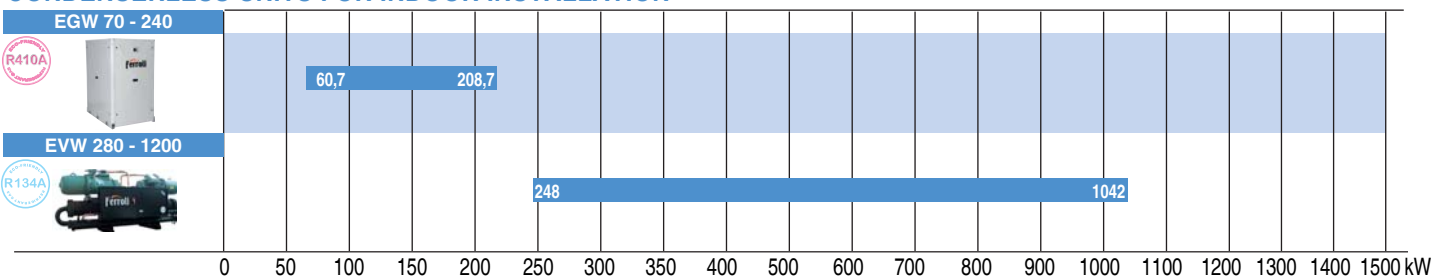
AIR COOLED WATER CHILLER WITH CENTRIFUGAL FANS



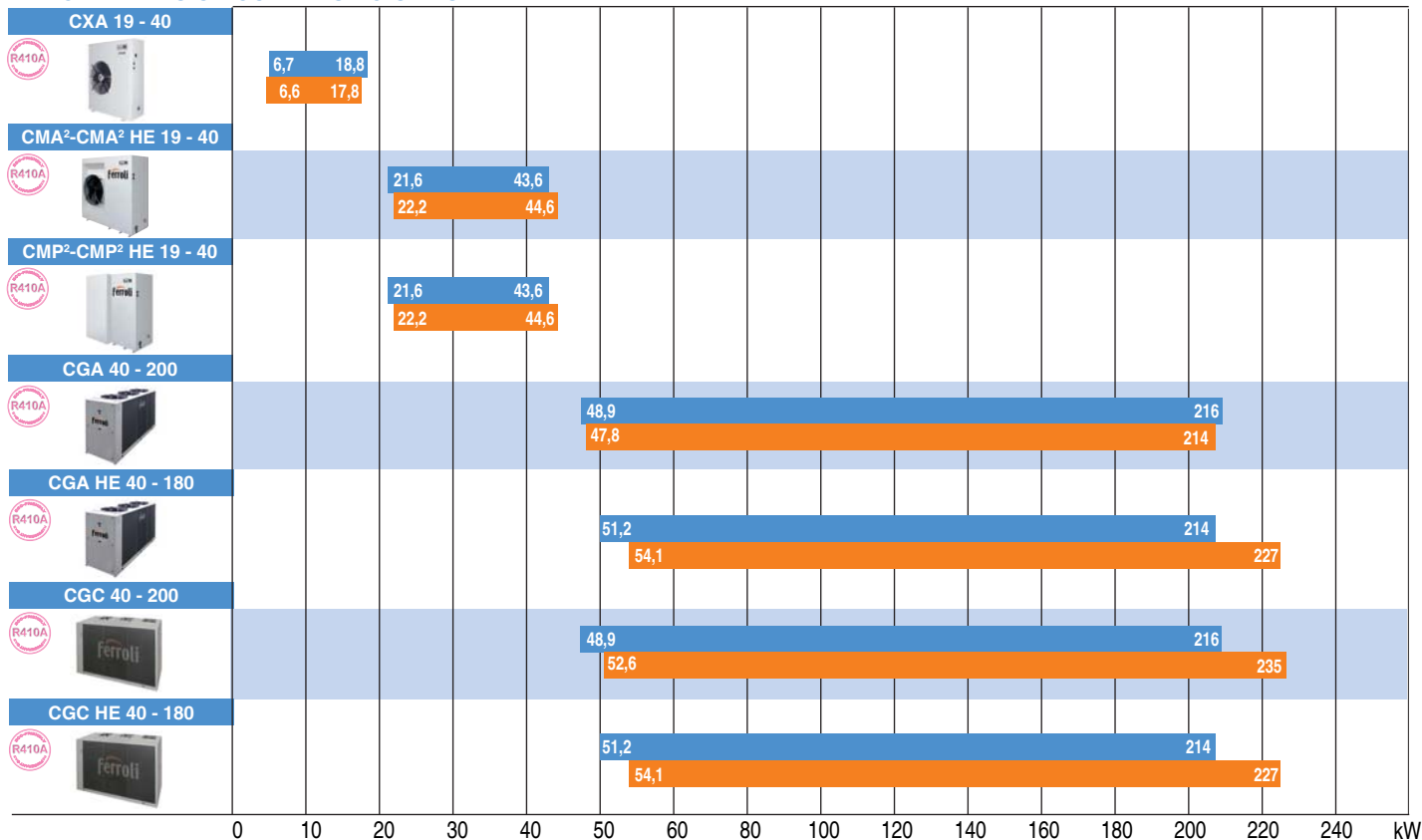
WATER COOLED WATER CHILLERS



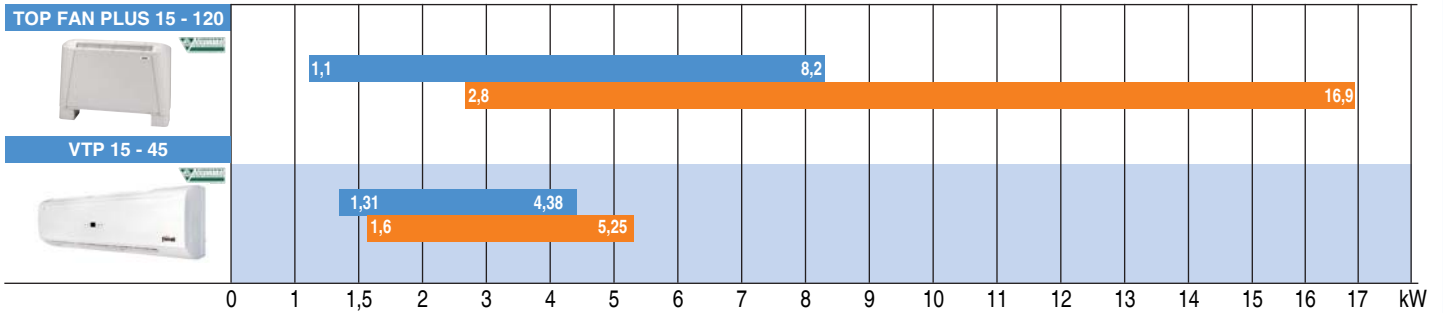
CONDENSERLESS UNITS FOR INDOOR INSTALLATION



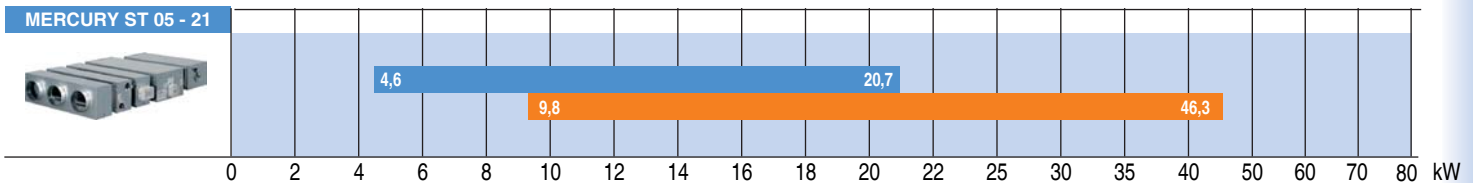
DIRECT EXPANSION CONDENSING UNITS



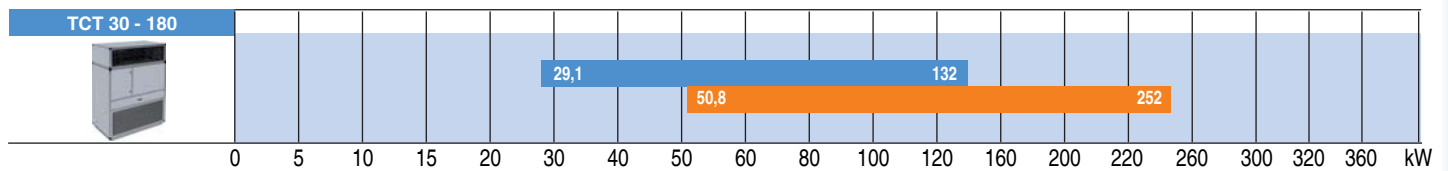
FAN COIL UNIT



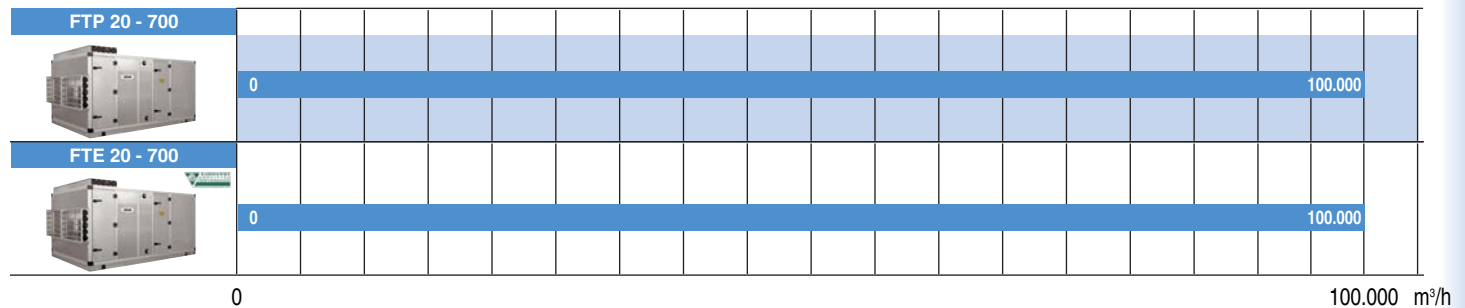
DUCTED FAN COIL



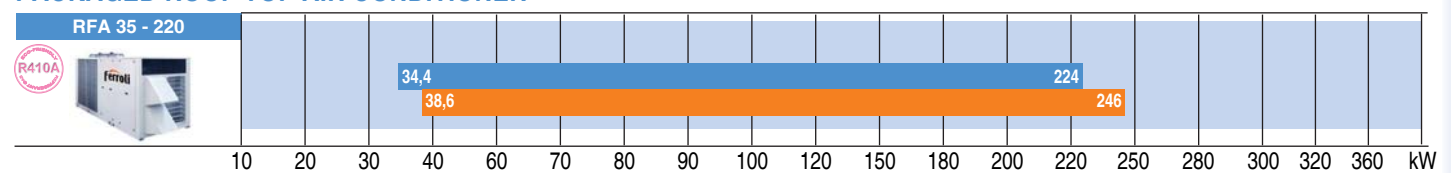
LARGE CAPACITY FAN COIL



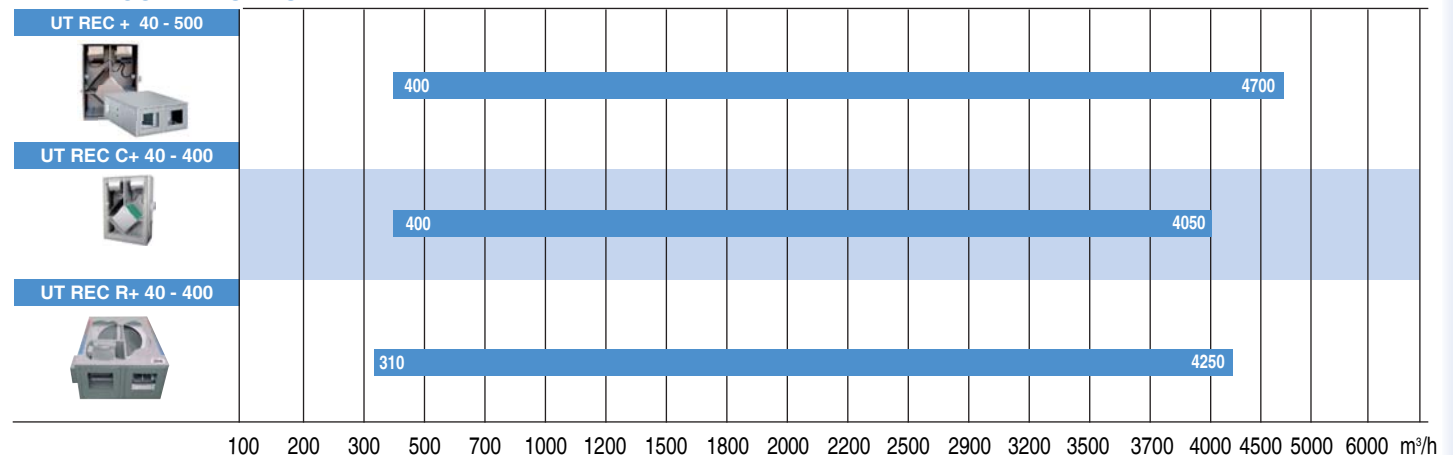
AIR HANDLING UNITS



PACKAGED ROOF TOP AIR CONDITIONER



HEAT RECOVERY UNITS



The list of certified products is available on the website www.eurovent-certification.com.
The Eurovent certification program LCP-HP shall apply to air cooled water chillers with nominal cooling capacity up to 600 kW and water cooled chillers with nominal cooling capacity up to 1500 kW.

> Main characteristics water chillers

TECHNICAL SOLUTION
NOISE CONFIGURATION
HYDRAULIC SYSTEM ON THE UNIT
SETTINGS FOR PUMPING MODULES SAFETY

> TECHNICAL SOLUTIONS

TYPE OF INSTALLATION

- I** for installation in hydronic systems
- B** for installation in hydronic systems with Brine solution (process application)

OPERATION

- R** chiller
- P** reversible chiller
- W** water side reversible chiller

VERSIONS

Basic Version VB

cooling only IR or heat pump IP

De-superheated Version VD

heat recovery only in de-superheating phases for cooling only units **IR** or heat pump units **IP**

Total Recovery Version VR

total heat recovery where all the thermal energy extracted by the fans is recovered by a condenser sized for the type of application

> SOUND CONFIGURATION

Basic Configuration AB

Low noise Configuration AS

Reduction in the number of fan speed with compressor insulation and a housing compartment with sound-absorbing material (fig. a).

Extra Low noise Configuration AX

A further reduction in the speed number due to larger exchangers.

New-concept fans with plastic blades and lower noise, in addition new **sound-absorbing materials** for covering the compressor and housing compartment has created a considerable noise reduction during operation (fig. b).





fig. a

> HYDRAULIC SYSTEM ON THE UNIT

The following accessories are available to allow the unit to be configured according to the system needs:

Storage Tank

Large capacity completely insulated and with air-vent, safety valves and drain.

Pumping module

- available with single pump or with backup pump,
- available **with variable-flow pump**;
- up to three levels of useful static pressure are available to adapt to any system design need,
- with a storage tank fitted, this allows configuration of the tank on the system delivery or primary circuit only.

Pumping-storage tank module

for installation next to the unit, the module is supplied complete with tank and pump or with twin pump version.

All the pumping accessories are complete with shut-off and safety valves, air vent, drain, expansion tank, one-way valves (only in case of twin pump), filter and pressure gauge for complete installation and easy service access (fig. c).



fig. b

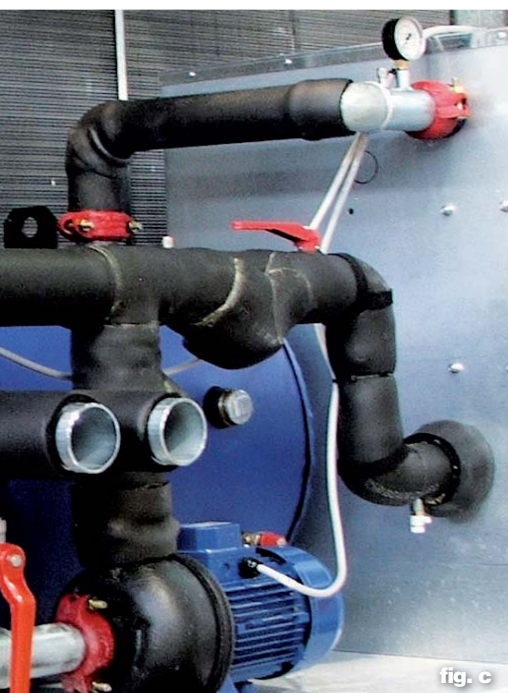


fig. c

> SETTINGS FOR PUMPING MODULES SAFETY

The research and development of advanced electronics controls has enhanced the development of regulation logics. This ensures correct operation of the pumping systems. Therefore:

Unit with twin pump

The control system provides pump rotation to balance the hours of operation.

Unit with twin pump

If one pump shuts down, the second pump starts automatically and the UNIT CONTROL signals the fault.

Protection

If the unit remains on standby for long periods, the pump is started periodically to ensure correct and continuous operation.

Anti-freeze function

With the unit in standby, the setting starts the pump if the water probe detects a temperature below a certain threshold.

NB: please refer to each series solutions.



> Main characteristics water chillers

SETTING
EUROVENT
HIGH ESEER

> SETTING

Qualified Ferroli internal personnel have designed, developed and inspected the control logics for management of the unit, to ensure continuous operation and always with a view to energy-saving.

Settings for the technical use of the product are designed for residential, commercial or industrial units; refer to each unit the specific settings.

CLIMATE CONTROL FUNCTION (SLIDING TEMPERATURE)

(this function is only available in presence of outside air probe);
in the heating mode, the Set point is adjusted according to the climatic conditions, optimising operation.
It is also available in cooling mode, after modifying the regulator parameters,

DYNAMIC DEFROST

(this function is only available in presence of outside air probe);
with harsh outside temperatures, the efficiency of the system is optimised, avoiding unnecessary defrosts.

TIME PROGRAMMING

Modifies the Set point to adapt unit operation to energy-saving.

ECONOMY MODE

Modify the Set point to move the unit operation into energy saving mode.

DOUBLE SET POINT

In cooling or heat pump mode the Set Point can be changed to a second value controlled by keyboard.

ADVANCED TEMPERATURE CONTROL (ATC)

In cooling mode, with outside temperatures above the limits, ATC prevents unit shut down by modulating the compressor steps, keeping the system active to ensure its continuous operation.

DEMAND LIMIT

Enables capacity control of the unit's maximum power absorption.

HEATING INTEGRATIVE

In the heat pump mode a heat generator (a conventional or condensing boiler) can be activated, for integration.

NOISE CONTROL

For multi-circuit Extra low noise units (AX), one of the circuits is saturated to minimise fan noise. The control system provides for a regulation logic enabling this system to be Low noise as much as possible.

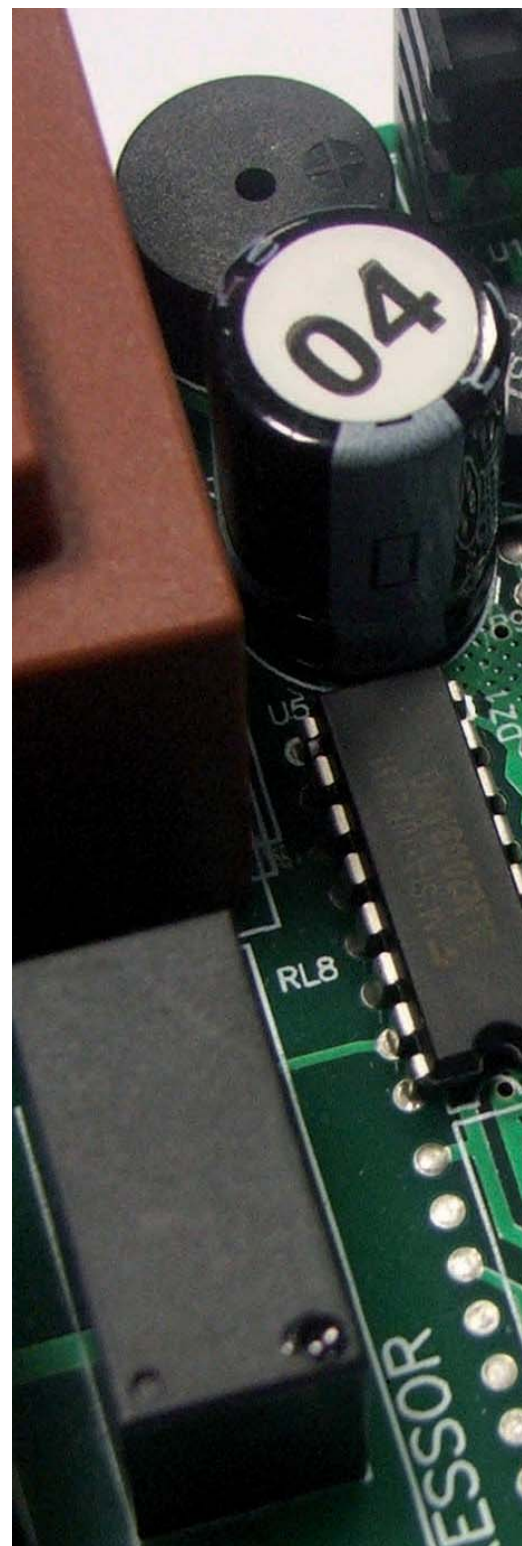
> EUROVENT

Ferroli is associated with formula **CERTIFY ALL**



Products and certification rules are present on the site:

www.eurovent-certification.com





> HIGH ESEER

ESEER is calculated as follows:
$$\text{ESEER} = A \times \text{EER}100\% + B \times \text{EER}75\% + C \times \text{EER}50\% + D \times \text{EER}25\%$$

With the following weighting coefficients:

- A = 0,03 EER 100% amb. air 35°C
- B = 0,33 EER 75% amb. air 30°C
- C = 0,41 EER 50% amb. air 25°C
- D = 0,23 EER 25% amb. air 20°C

These coefficients indicate the significance and importance of the EER value according to the load and outside temperature.

Based on EUROVENT conditions, in a normal work cycle the units work at full load (35°C) for only 3% of the time.

A better capacity control of power delivered or absorbed at partial loads involves higher seasonal efficiencies.

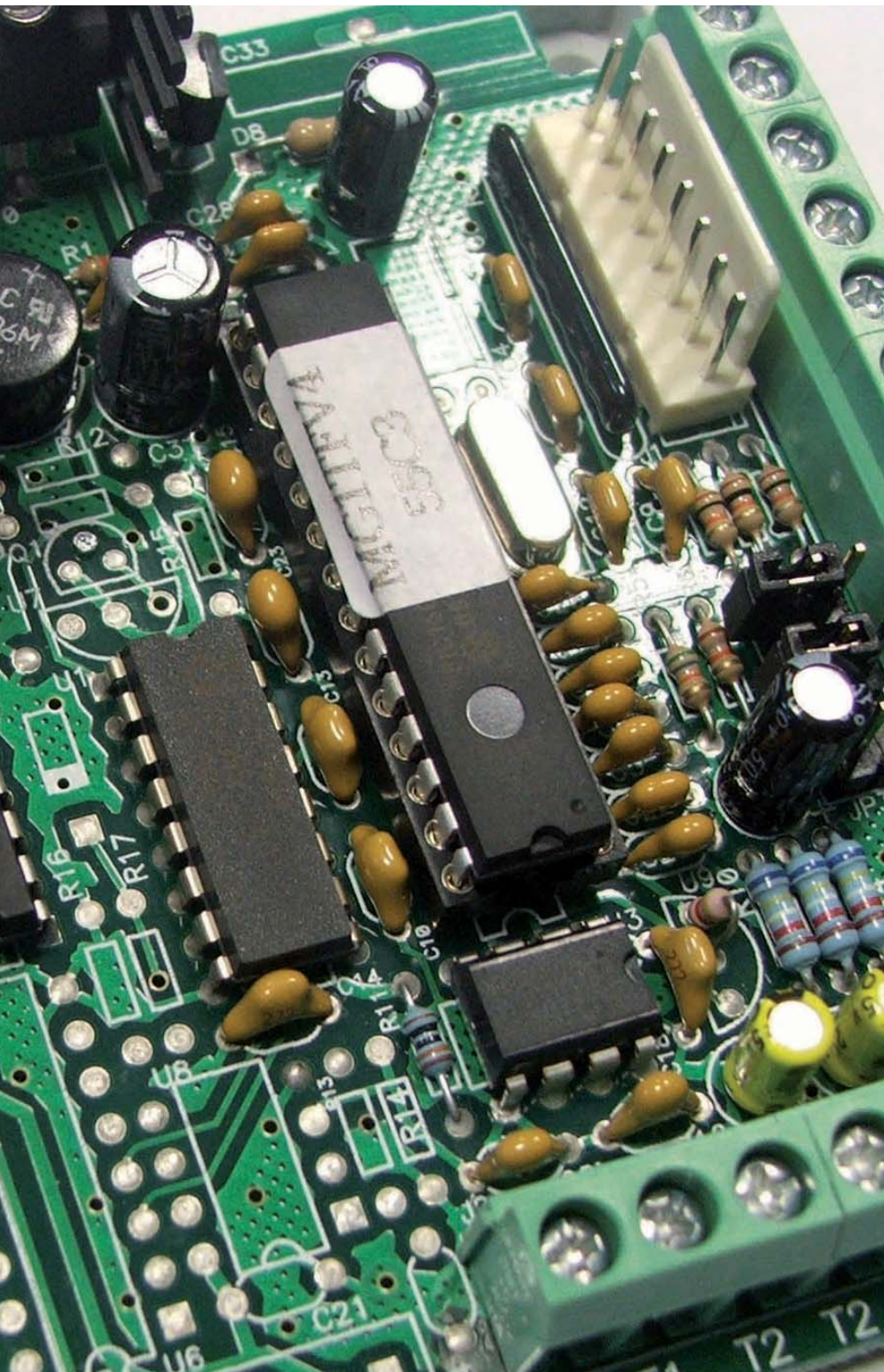
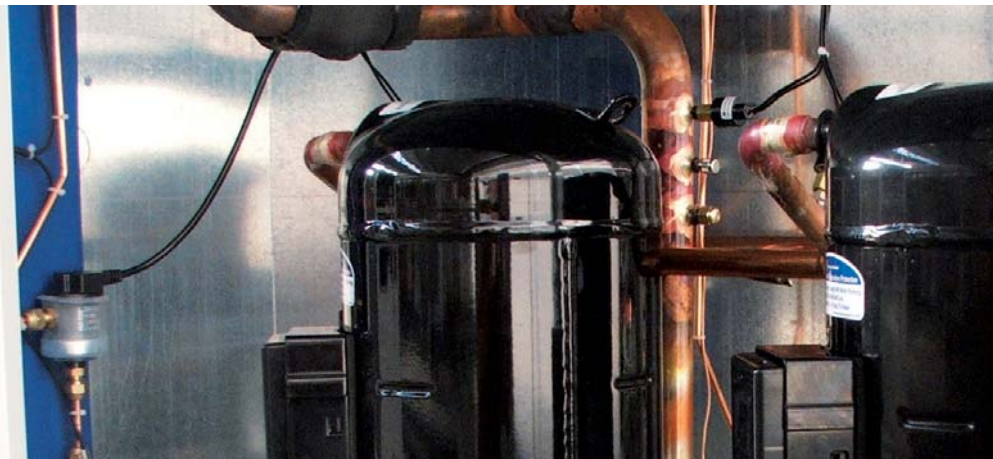
Choice of unit should also take into account the ESEER value because it reflects the overall unit operation.

FERROLI follows this philosophy with Multiscroll solutions and Twin-screw compressors.

Single-circuit Double compressor units with multi stages have higher ESEER values than similar units Dual circuit type. For screw type double compressors units, the saturation of circuits occurs in parallel.

Everything converts into high efficiency at partial loads and therefore significant ESEER values are achieved.

NB: please refer to each series-specific adjustments.



> Main characteristics water chillers

SAFETY

RELIABILITY

CAREFUL DETAILS

RESPECTING THE ENVIRONMENT

AQUASEL

> SAFETY

The units as standard are complete with:

- differential pressure switch on the plate-type exchanger,
- antifreeze heater on the plate-type exchanger,
- compressor high temperature protection,
- PED safety valve

Available as accessories:

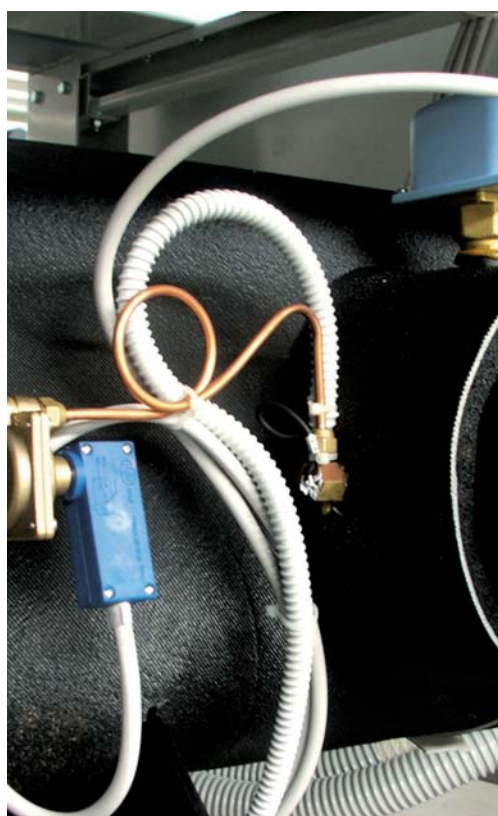
- condensation control (standard on some units),
- water flowswitch
- voltage monitor and sequence meter

> RELIABILITY

The design components chosen are highly reliable and the suppliers are all certified according to the current quality systems.

> CAREFUL DETAILS

Particular attention to the arrangement of the main components in the design stage, careful and scheduled testing, and the important stage of final production, ensure systems that are easy serviceable and guarantee a lasting high performance package.





> RESPECTING ENVIRONMENT

Use of ecological refrigerant gases (ODP equal to 0) for obtaining optimum performance and **DO NOT** harm the ozone.



> AQUASEL

The Ferrolì design staff have developed software for choosing the right unit for your system needs, calculating the performance values according to the air and water temperature, depending on the model or acoustic version.

There is also the selected choice of accessories the printing of the description of the unit's specifications and a complete technical data sheet.

At the end of selection the customer can have a list price or net price with discounts of all the selected units.

A sales tool much appreciated by professionals for its easy use and prompt answers.

The screenshot shows the 'casa' software interface. On the left, there are configuration options for 'Tipologia', 'Fondità', and 'Refrigerante'. The main area contains input fields for 'Livello sul mare [m]', 'Potenza frigorifera [kW]', and temperature settings for 'Estate' and 'Inverno'. A table of 'SERIE DISPONIBILI' is visible on the right, listing various models and their specifications.

Serie	Unità	Alimentazione	IP	PA	PT	PA	SWL	SPL
RGA	50.2	AB w3S - Base + Kit Silenzamento	51,3	19,7	51,6	19,7	84,0	69,0
RGA	50.2	AB - Base	52,9	19,0	53,2	19,0	87,0	69,0
RGA	50.2	A5S - Super Silenzato	50,1	19,2	50,5	19,9	81,0	63,0
RGA	60.2	A5S - Super Silenzato	54,5	21,6	55,1	20,7	81,0	66,0
RGA	60.2	AB w3S - Base + Kit Silenzamento	55,7	21,0	56,2	20,6	84,0	66,0
RGA	60.2	AB - Base	57,5	20,2	58,0	19,8	87,0	68,0
RGA	70.2	AB w3S - Base + Kit Silenzamento	65,1	23,4	65,8	22,0	84,0	68,0
RGA	70.2	AB - Base	67,2	22,3	67,7	22,1	87,0	69,0
RGA	70.2	A5S - Super Silenzato	63,6	24,1	64,5	23,1	81,0	63,0
RGA	80.2	AB - Base	74,1	26,5	76,2	24,9	87,0	69,0
RGA	80.2	AB w3S - Base + Kit Silenzamento	71,9	27,6	71,9	25,9	84,0	69,0
RGA	90.2	A5S - Super Silenzato	84,5	31,8	86,8	30,2	82,0	64,0
RGA	90.2	AB w3S - Base + Kit Silenzamento	86,5	32,9	88,6	30,1	85,0	67,0
RGA	90.2	AB - Base	89,2	31,6	91,4	29,8	89,0	70,0
RGA	100.2	AB - Base	99,0	35,0	101	33,0	89,0	70,0
RGA	100.2	A5S - Super Silenzato	93,8	37,4	97,9	36,6	82,0	64,0
RGA	100.2	AB w3S - Base + Kit Silenzamento	96,0	36,4	99,8	36,4	85,0	67,0
RGA	110.2	A5S - Super Silenzato	104	42,8	107	40,1	82,0	64,0
RGA	115.2	AB w3S - Base + Kit Silenzamento	107	40,4	110	40,0	85,0	67,0
RGA	115.2	AB - Base	115	39,0	115	38,4	88,0	70,0
RGA	130.2	A5S - Super Silenzato	116	46,7	119	44,6	82,0	64,0
RGA	130.2	AB w3S - Base + Kit Silenzamento	118	45,4	121	44,4	85,0	67,0
RGA	130.2	AB - Base	122	43,6	125	42,6	88,0	70,0
RGA	145.2	A5S - Super Silenzato	131	54,8	136	52,8	85,0	66,0
RGA	145.2	AB w3S - Base + Kit Silenzamento	134	53,2	139	52,5	88,0	69,0
RGA	145.2	AB - Base	138	51,2	143	50,5	91,0	72,0

For more information contact Ferrolì Air conditioning Industrial department

> RXA

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Efficiency capacity in heating mode - Heat pump low temperature - Medium temperature level

Acoustic setting up	6.1	7.1	9.1	11.1	14.1	17.1
AB	A	A	A	A	A	A

NOTA: Declared according to European regulation 811/2013. The values are referred to units without options and accessories.

Available range

Unit type

- IR Chiller
- IP Heat pump
(reversible on the refrigerant side)

Versions

- VB Base Version
- VP Pump version
- VA Tank version

Acoustic setting up

- AB Base setting up

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of small and medium size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with rotary or scroll compressor (according to the model) mounted on damper supports, brazed plate heat

exchanger, thermostatic expansion valve, reverse cycle valve, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by high and low pressure switches and differential pressure switch on the plate heat exchanger.

The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units are equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All three-phase power supply units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module

- not present (VB - base version)
- standard, high head or modulating pump (VP - pump version)
- tank and standard, high head or modulating pump (VA - tank version)

Integrative electrical heaters

- standard in the flow (only VB and VP versions)
- standard in the tank (only VA version)
- upsized in the tank (only VA version)

Compressor starting

- standard (contactors)
- soft starter

Accessories

Rubber vibration dampers

Coil protection grille

Tank antifreeze electrical heater

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	6.1	7.1	9.1	11.1	14.1	17.1	
A35W7	Cooling capacity	6,24	7,24	9,12	10,6	14,1	16,7	kW
	Power input	2,31	2,81	3,52	4,16	5,25	6,49	kW
	EER	2,70	2,58	2,59	2,55	2,69	2,57	W/W
	ESEER	3,23	2,92	2,83	2,93	3,02	2,92	W/W
	Water flow rate	0,30	0,35	0,44	0,51	0,68	0,80	l/s
	Pressure drops	17	21	31	40	43	39	kPa
IP	Base setting up (AB)	6.1	7.1	9.1	11.1	14.1	17.1	
A35W7	Cooling capacity	6,12	7,10	8,95	10,4	13,8	16,4	kW
	Power input	2,31	2,81	3,51	4,15	5,24	6,49	kW
	EER	2,65	2,53	2,55	2,51	2,63	2,53	W/W
	ESEER	3,11	2,79	2,76	2,88	2,98	2,89	W/W
	Water flow rate	0,29	0,34	0,43	0,50	0,66	0,79	l/s
	Pressure drops	16	20	30	39	42	38	kPa
A7W45	Heating capacity	6,78	7,87	9,95	11,7	15,4	18,2	kW
	Power input	2,22	2,71	3,38	4,01	5,06	6,25	kW
	COP	3,05	2,90	2,94	2,92	3,04	2,91	W/W
	Water flow rate	0,32	0,37	0,47	0,55	0,73	0,86	l/s
	Pressure drops	18	24	35	45	48	43	kPa

The values are referred to units without options and accessories.

Data declared according to **EN 14511** :

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

= Unit in **A CLASS**.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	6.1	7.1	9.1	11.1	14.1	17.1	
Sound power level ^(E)	69	69	72	72	74	74	dB(A)
Sound pressure level at 1 meter	55	55	57	57	59	59	dB(A)
Sound pressure level at 5 meters	44	44	46	46	48	48	dB(A)
Sound pressure level at 10 meters	38	38	41	41	43	43	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	6.1	7.1	9.1	11.1	14.1	17.1	
Power supply	230 - 1 - 50		230 - 1 - 50 400 - 3N - 50		400 - 3N - 50		V-ph-Hz
Compressor type	rotative		scroll				-
N° compressors / N° refrigerant circuits	1 / 1						n°
Plant side heat exchanger type	stainless steel brazed plates						-
Source side heat exchanger type	finned coil						-
Fans type	axial						-
N° fans	1						n°
Tank volume	33		50		71		l
Hydraulic fittings	1" M						-

Electrical data

Standard unit	6.1	7.1	9.1	11.1	14.1	17.1	
Power supply	230 - 1 - 50	230 - 1 - 50	230 - 1 - 50 / 400 -3N- 50	230 - 1 - 50 / 400 -3N- 50	400 -3N- 50	400 -3N- 50	V-ph-Hz
FLA - Full load current at maximum tolerated conditions	13,4	17,1	22,0 / 8,1	24,8 / 9,0	11,1	13,9	A
FLI - Full load power input at maximum tolerated conditions	2,9	3,7	4,7 / 4,7	5,3 / 5,3	6,2	8,0	kW
MIC - Maximum instantaneous current of the unit	82	112	141 / 54	174 / 69	87	106	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	41	43	49 / 33	59 / 40	48	55	A
Unit with high head modulating pump	6.1	7.1	9.1	11.1	14.1	17.1	
Power supply	230 - 1 - 50	230 - 1 - 50	230 - 1 - 50 / 400 -3N- 50	230 - 1 - 50 / 400 -3N- 50	400 -3N- 50	400 -3N- 50	V-ph-Hz
FLA - Full load current at maximum tolerated conditions	14.4	18.1	23.3 / 9.4	26.1 / 10.3	12.9	15.7	A
FLI - Full load power input at maximum tolerated conditions	3.1	3.9	4.95 / 4.95	5.55 / 5.55	6.55	8.35	kW
MIC - Maximum instantaneous current of the unit	83	113	142.3 / 55.3	175.3 / 70.3	88.8	107.8	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	42	44	50.3 / 34.3	60.3 / 41.3	49.8	56.8	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, IP	-10	48	-15	42	°C
Water outlet temperature	IR, IP	5	25	30	55	°C

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

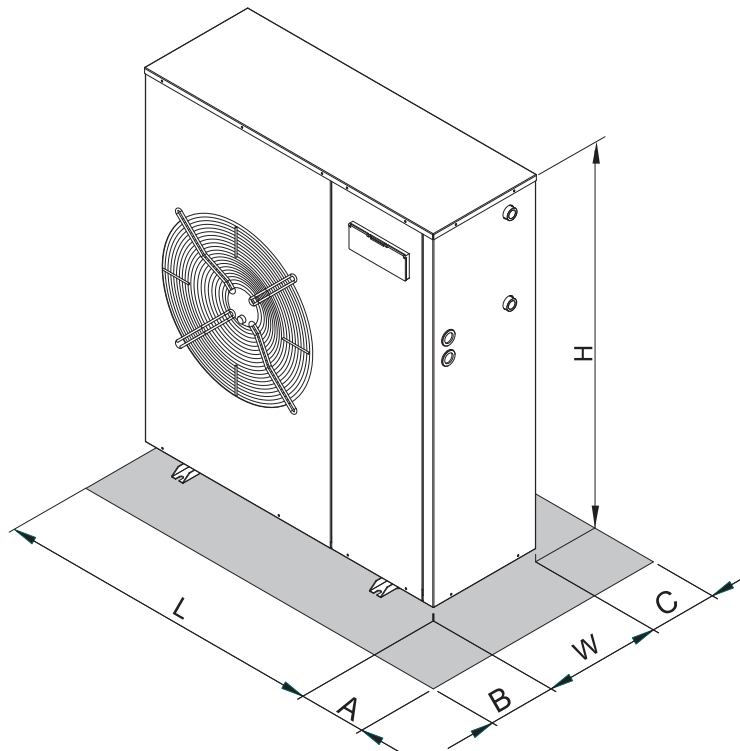
The main functions available are :

- water temperature management (through set point adjustment)
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic

- fans management by means of continuous rotational speed control
- pump management
- integrative electrical heaters management in heating mode (2 step logic)
- compressor and pump operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output



DIMENSIONS AND MINIMUM OPERATING AREA



	Version	6.1	7.1	9.1	11.1	14.1	17.1	
L	VB - VP	994	994	994	994	994	994	mm
	VA	1329	1329	1329	1329	1329	1329	mm
W	-	356	356	356	356	356	356	mm
H	-	903	903	1153	1153	1453	1453	mm
A	-	400	400	400	400	400	400	mm
B	-	600	600	600	600	600	600	mm
C	-	200	200	200	200	200	200	mm
Operating maximum weight*	VA	164	171	220	238	285	294	kg

> RMA²

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Efficiency capacity in heating mode - Heat pump low temperature - Medium temperature level

Acoustic setting up	19.1	22.1	26.1	30.1	35.1	40.1
AB	◀ A	◀ A	◀ A	◀ A	◀ A	◀ A
AS	◀ A	◀ A	◀ A	◀ A	◀ A	◀ A

NOTA: Declared according to European regulation 811/2013. The values are referred to units without options and accessories.

Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Versions

VB	Base Version
VP	Pump version
VA	Tank version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of small and medium size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressor mounted on damper supports, brazed plate heat

exchanger, thermostatic expansion valve, reverse cycle valve, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by high and low pressure switches and differential pressure switch on the plate heat exchanger.

The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors.

All the units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module

- not present (VB - base version)
- standard, high head or modulating pump (VP - pump version)

- tank and standard, high head or modulating pump (VA - tank version)

Tank electrical heater

- not present
- antifreeze
- integrative

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control) standard for AS unit

Electrical loads protection

- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers

Coil protection grille

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Manometer

Oil crankcase electrical heater (only for IR/BR unit, standard for IP/BP unit)

Pressure transducer

Coil protection kit for shipment

Outdoor air sensor

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,7	22,2	25,7	30,2	34,6	40,4	kW
	Power input	6,84	7,67	8,80	10,80	12,1	14,0	kW
	EER	2,88	2,89	2,92	2,80	2,86	2,88	W/W
	ESEER	3,23	3,24	3,28	3,13	3,20	3,23	W/W
	Water flow rate	3412	3848	4459	5233	5998	6988	l/h
	Pressure drops	32	41	37	40	39	37	kPa
IR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	18,9	21,3	24,7	29,0	33,3	38,8	kW
	Power input	7,34	8,25	9,43	11,57	13,1	15,1	kW
	EER	2,58	2,58	2,62	2,51	2,55	2,57	W/W
	ESEER	2,89	2,89	2,94	2,81	2,85	2,88	W/W
	Water flow rate	3275	3691	4286	5030	5763	6710	l/h
	Pressure drops	30	38	34	37	36	34	kPa
IP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,3	21,8	25,2	29,6	34,0	39,6	kW
	Power input	6,76	7,58	8,68	10,66	12,00	13,90	kW
	EER	2,85	2,87	2,91	2,78	2,83	2,85	W/W
	ESEER	3,20	3,22	3,26	3,11	3,17	3,19	W/W
	Water flow rate	3344	3778	4373	5132	5881	6850	l/h
	Pressure drops	31	40	35	38	38	36	kPa
A7W45	Heating capacity	20,8	23,4	27,2	32,2	37,0	41,8	kW
	Power input	6,53	7,35	8,52	10,54	11,82	13,28	kW
	COP	3,18	3,18	3,19	3,06	3,13	3,15	W/W
	Water flow rate	3543	3990	4648	5504	6312	7138	l/h
	Pressure drops	35	44	40	44	43	39	kPa
IP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	18,5	20,9	24,3	28,5	32,6	38,0	kW
	Power input	7,26	8,18	9,34	11,46	13,00	14,92	kW
	EER	2,55	2,55	2,60	2,48	2,51	2,55	W/W
	ESEER	2,86	2,86	2,91	2,78	2,81	2,85	W/W
	Water flow rate	3207	3622	4200	4928	5645	6572	l/h
	Pressure drops	28	36	32	35	35	33	kPa
A7W45	Heating capacity	19,7	22,3	25,9	30,8	35,2	39,8	kW
	Power input	6,32	7,05	8,21	10,16	11,40	12,80	kW
	COP	3,12	3,16	3,16	3,03	3,09	3,11	W/W
	Water flow rate	3357	3801	4424	5248	6009	6799	l/h
	Pressure drops	31	40	36	40	39	35	kPa

The values are referred to units without options and accessories.

Data declared according to **EN 14511** :

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level ^(E)	77	77	78	81	82	82	dB(A)
Sound pressure level at 1 meter	61	62	62	65	66	66	dB(A)
Sound pressure level at 5 meters	51	51	52	55	55	56	dB(A)
Sound pressure level at 10 meters	46	46	47	50	50	50	dB(A)
Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level ^(E)	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	59	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	48	48	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3+N - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	1 / 1						n°
Plant side heat exchanger type	stainless steel brazed plates						-
Source side heat exchanger type	finned coil						-
Fans type	axial						-
N° fans	1						n°
Tank volume	85						l
Hydraulic fittings	1"1/4 GAS						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	15,8	17,6	19,1	24,4	26,8	30,8	A
FLI - Full load power input at maximum tolerated conditions	9,2	10,7	12,0	14,6	16,1	18,4	kW
MIC - Maximum instantaneous current of the unit	106	116	129	156	160	191	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	61	67	74	85	87	106	A
Unit with standard modulating pump	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	17,3	19,1	20,6	26,0	28,4	32,4	A
FLI - Full load power input at maximum tolerated conditions	9,8	11,3	12,6	15,4	16,9	19,2	kW
MIC - Maximum instantaneous current of the unit	107	117	130	158	162	193	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	62	68	76	86	89	107	A
Unit with high head modulating pump	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	17,5	19,3	20,8	27,4	29,8	33,8	A
FLI - Full load power input at maximum tolerated conditions	10,1	11,5	12,9	16,2	17,7	20,0	kW
MIC - Maximum instantaneous current of the unit	108	118	131	159	163	194	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	62	68	76	88	90	109	A

Operating range

Temperatura	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	48	-15	42	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)

* with fans modulating control option (condensation / evaporation control)

CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

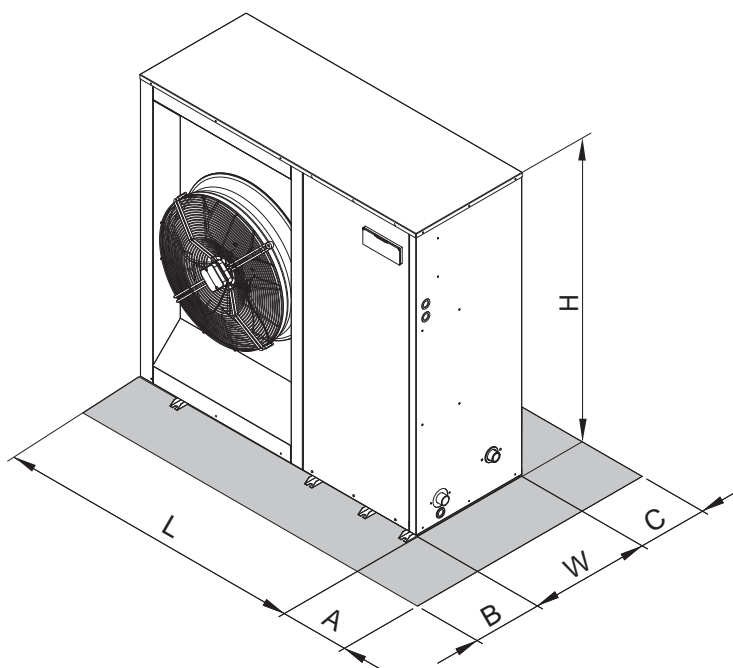
The main functions available are :

- water temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode, automatic set point adjustment according to outdoor air temperature (if present "outdoor air sensor" accessory)
- dynamic defrost cycle management according to outdoor air temperature (if present "outdoor air sensor" accessory)
- alarm memory management and diagnostic

- fans management by means of continuous rotational speed control
- pump management
- integrative electrical heaters management in heating mode
- compressor and pump operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output



DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L		1494			1704		mm
W		576			576		mm
H		1453			1453		mm
A		400			400		mm
B		600			600		mm
C		200			200		mm
Maximum weight operation (VA Tank version)	349	352	371	385	410	412	kg

> RMA² HE

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Efficiency capacity in heating mode - Heat pump low temperature - Medium temperature level

Acoustic setting up	19.1	22.1	26.1	30.1	35.1	40.1
AB	A+	A+	A+	A	A+	A+
AS	A+	A+	A+	A	A+	A+

NOTA: Declared according to European regulation 811/2013. The values are referred to units without options and accessories.

Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Versions

VB	Base Version
VP	Pump version
VA	Tank version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of small and medium size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressor mounted on damper supports, brazed plate heat exchanger, thermostatic expansion valve, reverse cycle valve, axial fans with safety

protection grilles, finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by high and low pressure switches and differential pressure switch on the plate heat exchanger.

The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors.

All the units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module

- not present (VB - base version)
- standard, high head or modulating pump (VP - pump version)
- tank and standard, high head or modulating pump (VA - tank version)

Integrative electrical heaters

- not present
- standard in the tank

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Electrical loads protection

- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers

Coil protection grille

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Manometer

Oil crankcase electrical heater (only for IR/BR unit, standard for IP/BP unit)

Pressure transducer

Coil protection kit for shipment

Outdoor air sensor

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	20,3	22,7	26,4	31,5	35,5	41,4	kW
	Power input	6,49	7,25	8,36	10,09	11,3	13,0	kW
	EER	3,12	3,13	3,16	3,12	3,14	3,17	W/W
	ESEER	3,50	3,51	3,54	3,49	3,52	3,55	W/W
	Water flow rate	3512	3929	4566	5442	6140	7150	l/h
	Pressure drops	27	25	24	28	29	27	kPa
IR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,5	21,8	25,4	30,3	34,2	39,9	kW
	Power input	6,98	7,80	9,00	10,85	12,1	13,9	kW
	EER	2,79	2,80	2,82	2,79	2,81	2,87	W/W
	ESEER	3,13	3,13	3,16	3,13	3,15	3,22	W/W
	Water flow rate	3372	3771	4391	5235	5905	6890	l/h
	Pressure drops	25	23	22	26	27	25	kPa
IP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,9	22,3	25,9	30,9	34,8	40,5	kW
	Power input	6,42	7,17	8,25	9,96	11,20	12,95	kW
	EER	3,10	3,11	3,14	3,10	3,11	3,13	W/W
	ESEER	3,47	3,49	3,51	3,47	3,48	3,51	W/W
	Water flow rate	3442	3859	4478	5337	6020	7008	l/h
	Pressure drops	26	24	23	27	28	26	kPa
A7W45	Heating capacity	21,1	24,0	27,8	32,3	37,0	42,7	kW
	Power input	6,42	7,14	8,25	10,01	11,21	12,83	kW
	COP	3,29	3,36	3,37	3,22	3,29	3,33	W/W
	Water flow rate	3612	4096	4763	5517	6320	7310	l/h
	Pressure drops	29	27	26	29	31	28	kPa
IP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,1	21,4	24,9	29,7	33,5	39,0	kW
	Power input	6,91	7,74	8,91	10,75	12,06	13,74	kW
	EER	2,76	2,77	2,79	2,76	2,77	2,84	W/W
	ESEER	3,09	3,10	3,13	3,09	3,11	3,18	W/W
	Water flow rate	3302	3700	4303	5129	5785	6748	l/h
	Pressure drops	24	22	21	25	26	24	kPa
A7W45	Heating capacity	20,1	22,9	26,6	31,0	35,2	40,8	kW
	Power input	6,23	6,90	8,00	9,70	10,87	12,42	kW
	COP	3,22	3,32	3,32	3,20	3,24	3,28	W/W
	Water flow rate	3422	3902	4533	5261	6016	6963	l/h
	Pressure drops	26	25	23	26	28	26	kPa

The values are referred to units without options and accessories.

Data declared according to **EN 14511**:

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

= Unit in **A CLASS**.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level ^(E)	77	77	78	81	82	82	dB(A)
Sound pressure level at 1 meter	61	62	62	65	66	66	dB(A)
Sound pressure level at 5 meters	51	51	52	55	55	56	dB(A)
Sound pressure level at 10 meters	46	46	47	50	50	50	dB(A)
Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level ^(E)	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	59	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	48	48	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unità	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3+N - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	1 / 1						n°
Plant side heat exchanger type	stainless steel brazed plates						-
Source side heat exchanger type	finned coil						-
Fans type	axial						-
N° fans	1						n°
Tank volume	85						l
Hydraulic fittings	1"1/4 GAS						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	15,8	17,6	19,1	24,4	26,8	30,8	A
FLI - Full load power input at maximum tolerated conditions	9,2	10,7	12,0	14,6	16,1	18,4	kW
MIC - Maximum instantaneous current of the unit	106	116	129	156	160	191	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	61	67	74	85	87	106	A
Unit with standard modulating pump	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	17,3	19,1	20,6	26,0	28,4	32,4	A
FLI - Full load power input at maximum tolerated conditions	9,8	11,3	12,6	15,4	16,9	19,2	kW
MIC - Maximum instantaneous current of the unit	107	117	130	158	162	193	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	62	68	76	86	89	107	A
Unit with high head modulating pump	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	17,5	19,3	20,8	27,4	29,8	33,8	A
FLI - Full load power input at maximum tolerated conditions	10,1	11,5	12,9	16,2	17,7	20,0	kW
MIC - Maximum instantaneous current of the unit	108	118	131	159	163	194	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	62	68	76	88	90	109	A

Operating range

Temperatura	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	50	-15	42	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)

* with fans modulating control option (condensation / evaporation control)

CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

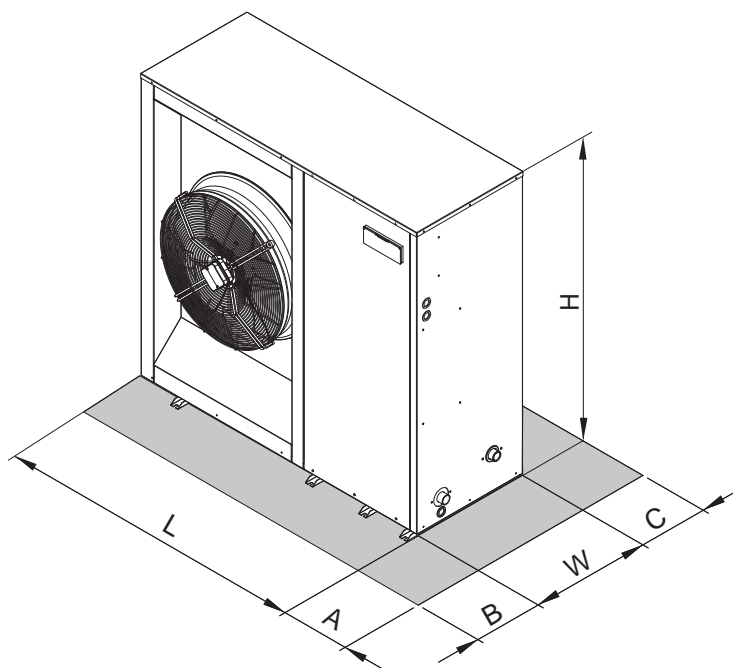
The main functions available are :

- water temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode, automatic set point adjustment according to outdoor air temperature (if present "outdoor air sensor" accessory)
- dynamic defrost cycle management according to outdoor air temperature (if present "outdoor air sensor" accessory)
- alarm memory management and diagnostic

- fans management by means of continuous rotational speed control
- pump management
- integrative electrical heaters management in heating mode
- compressor and pump operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output



DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L		1494			1704		mm
W		576			576		mm
H		1453			1453		mm
A		400			400		mm
B		600			600		mm
C		200			200		mm
Maximum weight operation (VA Tank version)	364	367	391	412	438	440	kg

> RGA

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Efficiency capacity in heating mode - Heat pump low temperature - Medium temperature level

Acoustic setting up	40.2	50.2	60.2	70.2	80.2
AB	A+	A+	A+	A+	A+
AS	A+	A+	A+	A+	A+
AX	A+	A+	A+	A+	A+

NOTA: Declared according to European regulation 811/2013. The values are referred to units without options and accessories.

Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, brazed plate heat exchanger, thermostatic expansion valve (standard for IR) or electronic expansion valve (standard for IP / option for IR),

reverse cycle valve, dehydrator filter, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins with subcooling section. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the plate heat exchanger. The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module available in the configurations :

- Storage tank arranged as buffer on the flow or as primary-secondary buffer
- 1 or 2 pumps
- standard or high head pump
- modulating pump

Expansion valve

- thermostatic
- electronic (standard for IP)

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Tank antifreeze electrical heater

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for IP)

High and low pressure gauges

High temperature thermostat

Outdoor air sensor

Water flow switch

Victaulic hydraulic fittings

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7	Cooling capacity	45,0	53,0	58,1	68,2	78,1	90,3	101	111	125	142	157	179	198	kW
	Power input	15,7	18,8	20,8	24,1	28,0	32,5	35,9	39,9	45,1	51,5	57,1	64,6	71,6	kW
	EER	2,87	2,82	2,79	2,83	2,79	2,78	2,81	2,78	2,77	2,76	2,75	2,77	2,77	W/W
	ESEER	3,88	3,85	3,80	3,86	3,79	3,88	3,81	3,88	3,77	3,84	3,72	3,75	3,77	W/W
	Water flow rate	2,16	2,56	2,80	3,29	3,76	4,35	4,87	5,35	6,02	6,83	7,55	8,60	9,56	l/s
	Pressure drops	40	56	55	51	50	48	46	44	48	47	48	48	50	kPa
	IR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2
A35W7	Cooling capacity	43,6	51,5	56,3	66,2	75,7	87,6	97,8	108	121	138	152	174	193	kW
	Power input	16,3	19,4	21,6	24,9	29,2	33,7	37,3	41,4	46,8	53,4	59,2	67,0	74,3	kW
	EER	2,67	2,65	2,61	2,66	2,59	2,60	2,62	2,61	2,59	2,58	2,57	2,60	2,60	W/W
	ESEER	3,76	3,74	3,70	3,75	3,66	3,76	3,69	3,78	3,65	3,74	3,62	3,65	3,66	W/W
	Water flow rate	2,10	2,48	2,71	3,19	3,65	4,21	4,71	5,21	5,83	6,64	7,31	8,36	9,27	l/s
	Pressure drops	38	53	52	48	47	45	43	42	45	44	45	45	47	kPa
	IR	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2
A35W7	Cooling capacity	42,7	50,3	55,1	64,7	74,0	85,6	95,6	105	118	134	149	169	188	kW
	Power input	16,3	19,8	22,1	25,4	29,9	32,8	38,3	42,6	48,1	54,3	60,3	68,8	76,2	kW
	EER	2,62	2,54	2,49	2,55	2,47	2,61	2,50	2,46	2,45	2,47	2,47	2,46	2,47	W/W
	ESEER	3,91	3,83	3,75	3,84	3,71	4,04	3,74	3,81	3,70	3,81	3,71	3,69	3,71	W/W
	Water flow rate	2,05	2,42	2,65	3,12	3,56	4,12	4,60	5,06	5,69	6,45	7,17	8,12	9,03	l/s
	Pressure drops	36	50	49	46	45	43	41	39	43	42	43	43	45	kPa
	IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2
A35W7	Cooling capacity	43,5	52,4	57,0	66,7	73,6	88,5	98	109	121	137	153	177	196	kW
	Power input	15,5	19,0	20,7	24,1	27,0	32,3	35,7	39,8	44,5	50,3	56,3	63,5	71,2	kW
	EER	2,81	2,76	2,75	2,77	2,73	2,74	2,75	2,74	2,72	2,72	2,72	2,79	2,75	W/W
	ESEER	3,79	3,77	3,75	3,75	3,69	3,82	3,73	3,82	3,69	3,79	3,68	3,77	3,74	W/W
	Water flow rate	2,09	2,53	2,75	3,21	3,54	4,26	4,73	5,26	5,83	6,59	7,36	8,50	9,46	l/s
	Pressure drops	37	55	53	49	44	46	43	43	45	44	46	47	49	kPa
	A7W45	Heating capacity	48,1	58,1	63,2	74,5	83,0	99,6	110	125	136	154	173	197	216
Power input		15,6	19,1	20,9	24,4	27,6	33,5	35,9	41,1	44,9	51,8	56,9	65,1	71,7	kW
COP		3,08	3,04	3,02	3,05	3,01	2,97	3,06	3,04	3,03	2,97	3,04	3,03	3,01	W/W
Water flow rate		2,28	2,75	2,99	3,53	3,93	4,72	5,21	5,92	6,45	7,31	8,17	9,32	10,2	l/s
Pressure drops		45	65	63	59	55	57	53	54	55	54	56	56	57	kPa
IP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7	Cooling capacity	41,8	50,4	54,8	64,0	70,6	85,0	94,4	105	116	131	147	170	189	kW
	Power input	16,0	20,0	21,8	25,5	28,6	34,1	37,7	42,0	47,0	53,1	59,5	67,1	75,3	kW
	EER	2,61	2,52	2,51	2,51	2,47	2,49	2,50	2,50	2,47	2,47	2,47	2,53	2,51	W/W
	ESEER	3,65	3,56	3,54	3,54	3,48	3,61	3,51	3,63	3,48	3,56	3,48	3,56	3,53	W/W
	Water flow rate	2,01	2,43	2,64	3,08	3,40	4,09	4,54	5,06	5,59	6,31	7,07	8,17	9,08	l/s
	Pressure drops	35	50	49	45	41	42	40	39	41	40	42	43	45	kPa
	A7W45	Heating capacity	46,9	56,5	61,7	72,5	80,9	97,0	107	122	133	150	168	192	211
Power input		14,9	18,2	20,0	23,2	26,4	31,9	34,2	39,2	42,8	49,4	54,3	62,1	68,5	kW
COP		3,15	3,10	3,09	3,13	3,06	3,04	3,13	3,11	3,11	3,04	3,09	3,09	3,08	W/W
Water flow rate		2,23	2,68	2,92	3,44	3,83	4,60	5,06	5,78	6,31	7,12	7,98	9,08	9,99	l/s
Pressure drops		43	61	60	56	52	54	50	51	53	51	54	54	55	kPa
IP	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7	Cooling capacity	41,0	49,3	53,7	62,8	69,3	83,3	92,5	102	114	129	144	166	185	kW
	Power input	17,1	21,1	23,0	26,8	30,1	35,9	39,8	44,3	49,5	56,0	62,7	70,8	79,4	kW
	EER	2,40	2,34	2,33	2,34	2,30	2,32	2,32	2,30	2,30	2,30	2,30	2,34	2,33	W/W
	ESEER	3,58	3,52	3,51	3,51	3,45	3,58	3,49	3,56	3,46	3,56	3,45	3,52	3,49	W/W
	Water flow rate	1,97	2,37	2,58	3,02	3,33	4,00	4,45	4,92	5,49	6,21	6,93	7,98	8,89	l/s
	Pressure drops	33	48	47	43	39	41	38	37	40	39	40	41	43	kPa
	A7W45	Heating capacity	45,2	54,5	59,4	70,0	78,0	93,5	104	118	128	145	162	184	203
Power input		14,2	17,3	19,0	22,2	25,1	30,4	32,7	37,3	40,8	47,1	51,7	59,1	65,1	kW
COP		3,18	3,15	3,13	3,15	3,11	3,08	3,18	3,16	3,14	3,08	3,13	3,11	3,12	W/W
Water flow rate		2,15	2,58	2,81	3,32	3,70	4,43	4,92	5,59	6,07	6,88	7,69	8,74	9,60	l/s
Pressure drops		40	57	55	52	48	50	47	48	49	48	50	50	50	kPa

The values are referred to units without options and accessories.
 Data declared according to EN 14511:
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
 = Unit in A CLASS.
A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C
A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C
A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C
A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level ^(E)	82	82	83	84	84	85	85	85	86	87	87	88	88	dB(A)
Sound pressure level at 1 meter	64	64	65	66	66	67	67	67	68	69	69	69	69	dB(A)
Sound pressure level at 5 meters	55	55	56	57	57	58	58	58	59	60	60	61	61	dB(A)
Sound pressure level at 10 meters	50	50	51	52	52	53	53	53	54	55	55	56	56	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level ^(E)	79	79	80	81	81	82	82	82	83	84	84	85	85	dB(A)
Sound pressure level at 1 meter	61	61	62	63	63	64	64	64	65	66	66	66	66	dB(A)
Sound pressure level at 5 meters	52	52	53	54	54	55	55	55	56	57	57	58	58	dB(A)
Sound pressure level at 10 meters	47	47	48	49	49	50	50	50	51	52	52	53	53	dB(A)
eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level ^(E)	77	77	78	79	79	80	80	80	81	82	82	83	83	dB(A)
Sound pressure level at 1 meter	59	59	60	61	61	62	62	62	63	64	64	64	64	dB(A)
Sound pressure level at 5 meters	50	50	51	52	52	53	53	53	54	55	55	56	56	dB(A)
Sound pressure level at 10 meters	45	45	46	47	47	48	48	48	49	50	50	51	51	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2			
Power supply	400 - 3+N - 50						400 - 3 - 50						V-ph-Hz			
Compressor type	scroll													-		
N° compressors / N° refrigerant circuits	2 / 1													n°		
Plant side heat exchanger type	stainless steel brazed plates													-		
Source side heat exchanger type	finned coil													-		
Fans type	axial													-		
N° fans	2			3			2			3			4			n°
Tank volume	200						400						460			l
Hydraulic fittings	2" VICTAULIC						2" 1/2 VICTAULIC									-

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	40,2	45,7	53,3	58,7	69,6	75,5	90,0	97,9	106	123	136	159	170	A
FLI - Full load power input at maximum tolerated conditions	21,6	24,4	28,4	31,0	36,2	44,0	55,0	60,5	66,0	75,7	83,3	95,4	103	kW
MIC - Maximum instantaneous current of the unit	134	143	149	173	213	264	259	267	267	348	361	355	391	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	89,3	96,3	101	117	143	174	175	183	183	200	246	248	272	A
Unit with high head modulating pump	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	46,3	51,8	59,4	64,8	76,0	81,6	96,1	107	115	132	147	169	180	A
FLI - Full load power input at maximum tolerated conditions	25,1	27,9	31,9	34,5	42,1	47,5	58,5	65,1	70,6	80,3	89,6	102	109	kW
MIC - Maximum instantaneous current of the unit	140	150	155	179	219	270	265	276	276	357	372	365	402	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	95,4	102	107	123	150	180	181	192	192	209	257	258	282	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-10	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger. The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat. **The Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7 - W45	Cooling capacity	46,8	55,1	60,3	71	81,1	93,8	105	115	130	148	163	185	206	kW
	Total power input	15,3	18,3	20,3	23,4	27,3	31,8	35,1	38,9	44	50,3	55,8	63	69,9	kW
	EER	3,05	3	2,98	3,03	2,97	2,95	2,99	2,96	2,95	2,94	2,92	2,94	2,95	W/W
	HRE	3,93	3,86	3,84	3,88	3,83	3,8	3,86	3,85	3,83	3,81	3,8	3,82	3,83	W/W
	Water flow rate	2,25	2,66	2,91	3,42	3,91	4,52	5,06	5,54	6,26	7,12	7,84	8,93	9,94	l/s
	Water pressure drop	43	60	59	55	54	52	50	47	52	51	52	52	54	kPa
	Heating recovery capacity	13,5	15,7	17,6	20	23,6	27,1	30,4	34,4	38,4	44	49,3	55,4	61,3	kW
	Water flow rate recovery	0,65	0,75	0,84	0,96	1,13	1,29	1,45	1,64	1,83	2,1	2,36	2,65	2,93	l/s
	Water pressure drop recovery	6	9	11	14	19	15	18	11	14	18	22	18	21	kPa
	IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2
Cooling capacity		45,3	54,5	59,3	69,3	76,5	92,1	102	113	126	143	159	183	204	kW
Total power input		15,1	18,5	20,1	23,5	26,4	31,5	34,9	38,7	43,4	49,1	54,9	62,1	69,5	kW
EER		3	2,94	2,94	2,95	2,9	2,92	2,93	2,92	2,9	2,91	2,89	2,95	2,94	W/W
HRE		3,86	3,76	3,79	3,78	3,77	3,75	3,77	3,78	3,76	3,77	3,75	3,8	3,77	W/W
Water flow rate		2,18	2,63	2,86	3,34	3,68	4,43	4,92	5,45	6,07	6,88	7,64	8,84	9,84	l/s
Water pressure drop		41	59	57	53	48	50	47	46	49	48	49	51	53	kPa
Heating recovery capacity		13	15,2	17	19,4	22,9	26,2	29,2	33,2	37,1	42,4	47,5	52,4	58,1	kW
Water flow rate recovery		0,62	0,73	0,81	0,93	1,09	1,25	1,4	1,59	1,77	2,03	2,27	2,5	2,78	l/s
Water pressure drop recovery		6	8	10	13	18	14	17	10	13	17	21	16	19	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7 - W45	Cooling capacity	46,8	55,1	60,3	71	81,1	93,8	105	115	130	148	163	185	206	kW
	Total power input	13,9	16,9	18,4	21,4	25,3	27,9	31,1	35	40	44,4	49,9	55,3	62,1	kW
	EER	3,36	3,25	3,28	3,31	3,2	3,36	3,38	3,29	3,25	3,33	3,26	3,35	3,32	W/W
	HRE	7,67	7,46	7,52	7,58	7,35	7,67	7,71	7,52	7,45	7,61	7,47	7,65	7,59	W/W
	Water flow rate	2,25	2,66	2,91	3,42	3,91	4,52	5,06	5,54	6,26	7,12	7,84	8,93	9,94	l/s
	Water pressure drop	43	60	59	55	54	52	50	47	52	51	52	52	54	kPa
	Heating recovery capacity	60	71,2	77,8	91,4	105	120	135	148	168	190	210	238	265	kW
	Water flow rate recovery	2,87	3,4	3,72	4,37	5,02	5,73	6,45	7,07	8,03	9,08	10	11,4	12,7	l/s
	Water pressure drop recovery	35	49	41	45	50	48	52	47	52	51	52	55	55	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

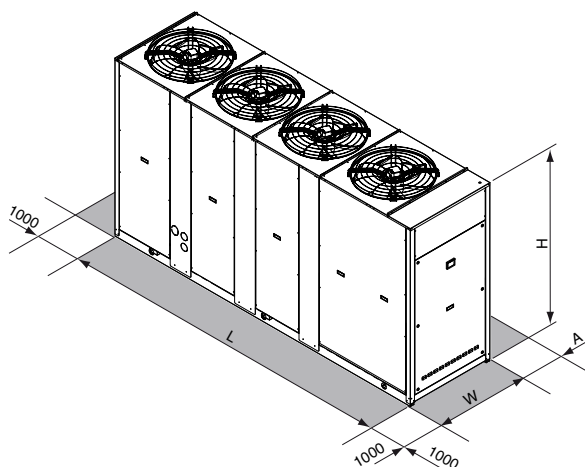
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
L			2480				3322			3322			4080	mm
W			954				1104			1104			1104	mm
H			1930				1793			2193			2193	mm
A			1600							2000				mm
Operating maximum weight*	1027	1031	1053	1088	1107	1587	1668	1749	1833	1891	1935	2260	2296	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RGA HE

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Efficiency capacity in heating mode - Heat pump low temperature - Medium temperature level

Acoustic setting up	40.2	50.2	60.2	70.2	80.2
AB	A+	A+	A+	A+	A+
AS	A+	A+	A+	A+	A+
AX	A+	A+	A+	A+	A+

NOTA: Declared according to European regulation 811/2013. The values are referred to units without options and accessories.

Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, brazed plate heat exchanger, thermostatic expansion valve (standard for IR) or electronic expansion valve (standard for IP / option for IR),

reverse cycle valve, dehydrator filter, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins with subcooling section. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the plate heat exchanger. The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module available in the configurations :

- Storage tank arranged as buffer on the flow or as primary-secondary buffer
- 1 or 2 pumps
- standard or high head pump
- modulating pump

Expansion valve

- thermostatic
- electronic (standard for IP)

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

Accessories

- Rubber vibration dampers
- Spring vibration dampers
- Coil protection grilles
- Tank antifreeze electrical heater
- Remote control
- Modbus serial interface on RS485
- Programmer clock
- Phase sequence and voltage controller
- Low temperature kit (standard for IP)
- High and low pressure gauges
- High temperature thermostat
- Outdoor air sensor
- Water flow switch
- Victaulic hydraulic fittings

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	47,2	55,9	63,1	70,5	83,4	94,9	106	120	133	153	173	197	kW
	Power input	14,9	17,2	19,8	22,1	27,2	31,2	34,6	38,6	42,7	50,0	55,5	64,6	kW
	EER	3,17	3,25	3,19	3,19	3,07	3,04	3,06	3,11	3,11	3,06	3,12	3,05	W/W
	ESEER	4,26	4,26	4,29	4,34	4,12	4,22	4,15	4,32	4,21	4,26	4,22	4,11	W/W
	Water flow rate	2,26	2,69	3,03	3,39	4,00	4,56	5,11	5,78	6,40	7,36	8,31	9,46	l/s
	Pressure drops	24	34	33	41	31	32	34	33	35	35	38	39	kPa
IR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	45,0	53,3	60,1	67,3	79,5	90,5	101	114	127	146	165	188	kW
	Power input	15,5	17,9	20,6	22,9	27,7	31,9	35,6	39,8	44,3	51,3	57,2	66,3	kW
	EER	2,90	2,98	2,92	2,94	2,87	2,84	2,84	2,86	2,87	2,85	2,88	2,84	W/W
	ESEER	4,05	4,18	4,08	4,12	4,01	4,07	3,98	4,12	4,03	4,10	4,04	3,97	W/W
	Water flow rate	2,16	2,56	2,89	3,23	3,82	4,34	4,87	5,49	6,12	7,02	7,93	9,03	l/s
	Pressure drops	22	31	30	37	28	29	31	30	32	32	35	36	kPa
IR	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	44,3	52,4	59,1	66,1	78,2	89,0	100	112	125	143	162	184	kW
	Power input	15,6	18,1	20,8	23,2	27,9	32,3	36,0	40,4	44,9	51,8	57,8	66,9	kW
	EER	2,84	2,90	2,84	2,85	2,80	2,76	2,76	2,77	2,78	2,76	2,80	2,75	W/W
	ESEER	4,21	4,31	4,26	4,28	4,17	4,23	4,13	4,27	4,17	4,26	4,21	4,12	W/W
	Water flow rate	2,12	2,51	2,84	3,18	3,75	4,27	4,78	5,40	6,02	6,88	7,79	8,84	l/s
	Pressure drops	21	30	29	36	27	28	30	29	31	31	33	34	kPa
IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	45,3	53,6	60,7	67,8	81,3	92,4	103	115	128	147	166	191	kW
	Power input	14,6	17,1	19,4	21,7	26,7	30,2	33,8	37,8	41,8	48,5	54,3	62,8	kW
	EER	3,10	3,13	3,13	3,12	3,04	3,06	3,05	3,04	3,06	3,03	3,06	3,04	W/W
	ESEER	4,17	4,24	4,22	4,23	4,10	4,23	4,11	4,23	4,14	4,21	4,12	4,10	W/W
	Water flow rate	2,17	2,58	2,91	3,26	3,90	4,43	4,97	5,54	6,16	7,07	7,98	9,17	l/s
	Pressure drops	22	31	30	38	29	30	32	30	32	32	35	37	kPa
A7W45	Heating capacity	49,4	58,3	66,0	74,1	88,4	100	113	126	141	161	181	207	kW
	Power input	15,5	18,1	20,8	23,4	27,9	31,6	35,5	39,7	44,3	51,0	57,1	65,6	kW
	COP	3,19	3,22	3,17	3,17	3,17	3,16	3,18	3,17	3,18	3,16	3,17	3,16	W/W
	Water flow rate	2,35	2,77	3,13	3,52	4,20	4,77	5,35	5,97	6,69	7,64	8,60	9,84	l/s
	Pressure drops	26	36	35	44	34	35	37	35	38	38	41	42	kPa
IP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	43,2	51,1	57,8	64,6	77,5	88,0	98,6	110	122	140	158	182	kW
	Power input	15,1	17,7	20,1	22,6	27,1	31,0	34,8	39,0	43,3	49,8	56,1	64,4	kW
	EER	2,86	2,89	2,88	2,86	2,86	2,84	2,83	2,82	2,82	2,81	2,82	2,83	W/W
	ESEER	3,95	4,02	4,02	4,01	3,98	4,08	3,96	4,03	3,95	4,05	3,95	3,95	W/W
	Water flow rate	2,07	2,45	2,78	3,11	3,72	4,22	4,73	5,26	5,88	6,74	7,60	8,74	l/s
	Pressure drops	20	28	28	35	27	27	29	27	30	29	32	33	kPa
A7W45	Heating capacity	48,1	56,8	64,2	72,2	86,0	97,7	110	123	137	157	176	202	kW
	Power input	14,9	17,5	20,0	22,7	26,4	30,1	34,0	38,2	42,8	48,8	54,8	62,7	kW
	COP	3,23	3,25	3,21	3,18	3,26	3,25	3,24	3,22	3,20	3,22	3,21	3,22	W/W
	Water flow rate	2,29	2,70	3,05	3,43	4,09	4,64	5,21	5,83	6,50	7,45	8,36	9,60	l/s
	Pressure drops	25	34	33	42	32	33	35	34	36	36	38	40	kPa
IP	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	42,5	50,3	56,9	63,6	76,2	86,5	97,0	109	120	138	155	179	kW
	Power input	15,3	18,0	20,3	22,8	27,4	31,4	35,2	39,6	44,0	50,2	56,7	65,0	kW
	EER	2,78	2,79	2,80	2,79	2,78	2,75	2,76	2,75	2,73	2,75	2,73	2,75	W/W
	ESEER	4,11	4,16	4,17	4,17	4,14	4,23	4,10	4,21	4,10	4,23	4,10	4,12	W/W
	Water flow rate	2,04	2,41	2,73	3,05	3,66	4,15	4,65	5,21	5,78	6,64	7,45	8,60	l/s
	Pressure drops	20	27	27	33	26	27	28	27	29	28	31	32	kPa
A7W45	Heating capacity	47,6	56,1	63,4	71,3	85,0	96,5	109	121	136	155	174	199	kW
	Power input	14,7	17,2	19,6	22,2	25,9	29,5	33,3	37,4	42,0	47,7	53,6	61,3	kW
	COP	3,24	3,26	3,23	3,21	3,28	3,27	3,27	3,24	3,24	3,25	3,25	3,25	W/W
	Water flow rate	2,26	2,67	3,01	3,38	4,04	4,59	5,16	5,73	6,45	7,36	8,27	9,46	l/s
	Pressure drops	24	33	33	41	32	32	35	32	36	35	38	39	kPa

The values are referred to units without options and accessories.
 Data declared according to **EN 14511**:
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
 = Unit in **A CLASS**.
A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C
A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C
A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C
A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level ^(E)	82	82	83	84	85	85	85	85	86	87	87	88	dB(A)
Sound pressure level at 1 meter	64	64	65	66	67	67	67	67	68	69	69	69	dB(A)
Sound pressure level at 5 meters	55	55	56	57	58	58	58	58	59	60	60	61	dB(A)
Sound pressure level at 10 meters	50	50	51	52	53	53	53	53	54	55	55	56	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level ^(E)	79	79	80	81	82	82	82	82	83	84	84	85	dB(A)
Sound pressure level at 1 meter	61	61	62	63	64	64	64	64	65	66	66	66	dB(A)
Sound pressure level at 5 meters	52	52	53	54	55	55	55	55	56	57	57	58	dB(A)
Sound pressure level at 10 meters	47	47	48	49	50	50	50	50	51	52	52	53	dB(A)
eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level ^(E)	77	77	78	79	80	80	80	80	81	82	82	83	dB(A)
Sound pressure level at 1 meter	59	59	60	61	62	62	62	62	63	64	64	64	dB(A)
Sound pressure level at 5 meters	50	50	51	52	53	53	53	53	54	55	55	56	dB(A)
Sound pressure level at 10 meters	45	45	46	47	48	48	48	48	49	50	50	51	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Power supply	400 - 3+N - 50				400 - 3 - 50								V-ph-Hz
Compressor type	scroll												-
N° compressors / N° refrigerant circuits	2 / 1												n°
Plant side heat exchanger type	stainless steel brazed plates												-
Source side heat exchanger type	finned coil												-
Fans type	axial												-
N° fans	2	3		2				3		4			n°
Tank volume	200				400				460				l
Hydraulic fittings	2" VICTAULIC						2" 1/2 VICTAULIC						-

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
FLA - Full load current at maximum tolerated conditions	40,2	45,7	53,3	58,7	69,6	75,5	90,0	97,9	106	123	136	159	A
FLI - Full load power input at maximum tolerated conditions	21,6	24,4	28,4	31,0	36,2	44,0	55,0	60,5	66,0	75,7	83,3	95,4	kW
MIC - Maximum instantaneous current of the unit	134	143	149	173	213	264	259	267	267	348	361	355	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	89,3	96,3	101	117	143	174	175	183	183	200	246	248	A
Unit with high head modulating pump	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
FLA - Full load current at maximum tolerated conditions	46,3	51,8	59,4	64,8	76,0	81,6	96,1	107	115	132	147	169	A
FLI - Full load power input at maximum tolerated conditions	25,1	27,9	31,9	34,5	42,1	47,5	58,5	65,1	70,6	80,3	89,6	102	kW
MIC - Maximum instantaneous current of the unit	140	150	155	179	219	270	265	276	276	357	372	365	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	95,4	102	107	123	150	180	181	192	192	209	257	258	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-15	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7 - W45	Cooling capacity	49,1	58,1	65,5	73,3	86,7	98,6	110	125	138	159	180	205	kW
	Total power input	14,5	16,7	19,4	21,5	26,6	30,5	33,8	37,7	41,6	48,8	54,1	63,1	kW
	EER	3,38	3,47	3,38	3,41	3,26	3,24	3,27	3,32	3,32	3,26	3,32	3,24	W/W
	HRE	4,36	4,48	4,36	4,4	4,21	4,18	4,22	4,28	4,29	4,21	4,29	4,19	W/W
	Water flow rate	2,36	2,79	3,15	3,53	4,17	4,74	5,3	6,02	6,64	7,64	8,65	9,84	l/s
	Water pressure drop	26	37	36	44	34	35	37	36	38	38	41	42	kPa
	Heating recovery capacity	14,2	16,9	19	21,3	25,1	28,6	32,1	36,2	40,3	46,3	52,3	59,4	kW
	Water flow rate recovery	0,68	0,81	0,91	1,02	1,2	1,37	1,53	1,73	1,93	2,21	2,5	2,84	l/s
	Water pressure drop recovery	7	10	13	16	21	16	20	12	15	20	25	20	kPa
	IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2
A35W7 - W45	Cooling capacity	47,1	55,8	63,1	70,4	84,6	96	107	120	133	153	173	199	kW
	Total power input	14,2	16,6	18,9	21,2	26	29,5	33	36,8	40,7	47,3	53,1	61,4	kW
	EER	3,32	3,36	3,33	3,33	3,25	3,25	3,25	3,27	3,27	3,24	3,26	3,24	W/W
	HRE	4,28	4,34	4,3	4,3	4,19	4,2	4,2	4,21	4,22	4,18	4,2	4,17	W/W
	Water flow rate	2,26	2,68	3,03	3,39	4,06	4,61	5,16	5,78	6,4	7,36	8,31	9,56	l/s
	Water pressure drop	24	34	33	41	32	33	35	33	35	35	38	40	kPa
	Heating recovery capacity	13,6	16,2	18,3	20,5	24,5	27,9	31,1	34,7	38,6	44,4	50,1	57,5	kW
	Water flow rate recovery	0,65	0,77	0,87	0,98	1,17	1,33	1,49	1,66	1,84	2,12	2,39	2,75	l/s
	Water pressure drop recovery	7	9	12	14	20	16	19	11	14	18	23	19	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7 - W45	Cooling capacity	49,1	58,1	65,5	73,3	86,7	98,6	110	125	138	159	180	205	kW
	Total power input	13,2	15,4	17,4	19,5	22,8	26,6	29,9	33,7	37,7	43	48,2	55,4	kW
	EER	3,72	3,76	3,77	3,75	3,81	3,72	3,7	3,71	3,66	3,7	3,73	3,7	W/W
	HRE	8,39	8,47	8,49	8,46	8,55	8,39	8,35	8,37	8,27	8,36	8,42	8,34	W/W
	Water flow rate	2,36	2,79	3,15	3,53	4,17	4,74	5,3	6,02	6,64	7,64	8,65	9,84	l/s
	Water pressure drop	26	37	36	44	34	35	37	36	38	38	41	42	kPa
	Heating recovery capacity	61,7	72,7	82,1	91,9	108	124	139	157	174	200	226	257	kW
	Water flow rate recovery	2,95	3,47	3,92	4,39	5,16	5,92	6,64	7,5	8,31	9,56	10,8	12,3	l/s
	Water pressure drop recovery	34	47	42	41	48	47	52	49	51	50	54	53	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

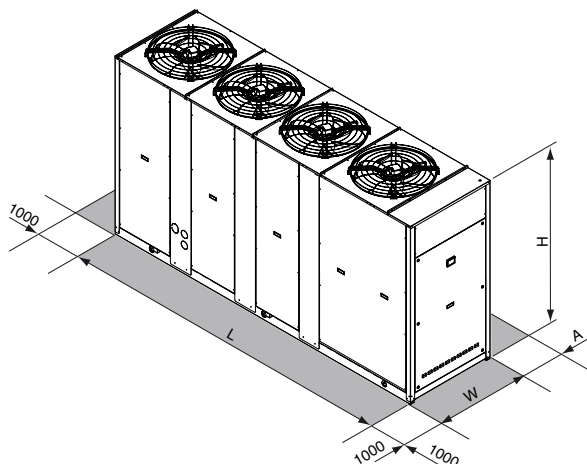
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
L	2480			3322			3322			4080			mm
W	954			1104			1104			1104			mm
H	1930			1793			2193			2193			mm
A	1600			2000			2000			2000			mm
Operating maximum weight*	1068	1072	1095	1132	1569	1650	1735	1877	1906	1967	2292	2350	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RGA ST

AIR-WATER CHILLERS AND HEAT PUMPS
FOR OUTDOOR INSTALLATION



Efficiency capacity in heating mode - Heat pump low temperature - Medium temperature level

Acoustic setting up	40.2	50.2	60.2	70.2	80.2
AB	A+	A+	A+	A+	A+
AS	A+	A+	A+	A+	A+
AX	A+	A+	A+	A+	A+

NOTA: Declared according to European regulation 811/2013. The values are referred to units without options and accessories.

Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version (with plate heat exchanger)
VR	Total recovery version (with plate heat exchanger)

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, shell and tube heat exchanger with threaded or viciaulic fittings (according to the model),

thermostatic expansion valve (standard for IR) or electronic expansion valve (standard for IP / option for IR), reverse cycle valve, dehydrator filter, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins with subcooling section. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the heat exchanger. The heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing module available in the configurations :

- 1 or 2 pumps
- standard or high head pump
- modulating pump

Expansion valve

- thermostatic
- electronic (standard for IP)

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for IP)

High and low pressure gauges

High temperature thermostat

Outdoor air sensor

Water flow switch

Viciaulic hydraulic fittings

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	82	82	83	84	84	85	85	85	86	87	87	88	88	dB(A)
Sound pressure level at 1 meter	64	64	65	66	66	67	67	67	68	69	69	69	69	dB(A)
Sound pressure level at 5 meters	55	55	56	57	57	58	58	58	59	60	60	61	61	dB(A)
Sound pressure level at 10 meters	50	50	51	52	52	53	53	53	54	55	55	56	56	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	79	79	80	81	81	82	82	82	83	84	84	85	85	dB(A)
Sound pressure level at 1 meter	61	61	62	63	63	64	64	64	65	66	66	66	66	dB(A)
Sound pressure level at 5 meters	52	52	53	54	54	55	55	55	56	57	57	58	58	dB(A)
Sound pressure level at 10 meters	47	47	48	49	49	50	50	50	51	52	52	53	53	dB(A)
eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	77	77	78	79	79	80	80	80	81	82	82	83	83	dB(A)
Sound pressure level at 1 meter	59	59	60	61	61	62	62	62	63	64	64	64	64	dB(A)
Sound pressure level at 5 meters	50	50	51	52	52	53	53	53	54	55	55	56	56	dB(A)
Sound pressure level at 10 meters	45	45	46	47	47	48	48	48	49	50	50	51	51	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Power supply	400 - 3+N - 50						400 - 3 - 50						V-ph-Hz	
Compressor type	scroll													-
N° compressors / N° refrigerant circuits	2 / 1													n°
Plant side heat exchanger type	shell and tube													-
Source side heat exchanger type	finned coil													-
Fans type	axial													-
N° fans	2	3			2			3	4			n°		
Water volume plant side heat exchanger	9,5	15,3			21,7			29,2	37,8			l		
Hydraulic fittings plant side heat exchanger	2" GAS M			2" ½ GAS M			3" GAS M						-	

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	40,2	45,7	53,3	58,7	69,6	75,5	90,0	97,9	106	123	136	159	170	A
FLI - Full load power input at maximum tolerated conditions	21,6	24,4	28,4	31,0	36,2	44,0	55,0	60,5	66,0	75,7	83,3	95,4	103	kW
MIC - Maximum instantaneous current of the unit	134	143	149	173	213	264	259	267	267	348	361	355	391	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	89,3	96,3	101	117	143	174	175	183	183	200	246	248	272	A
Unit with high head modulating pump	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	46,3	51,8	59,4	64,8	76,0	81,6	96,1	107	115	132	147	169	180	A
FLI - Full load power input at maximum tolerated conditions	25,1	27,9	31,9	34,5	42,1	47,5	58,5	65,1	70,6	80,3	89,6	102	109	kW
MIC - Maximum instantaneous current of the unit	140	150	155	179	219	270	265	276	276	357	372	365	402	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	95,4	102	107	123	150	180	181	192	192	209	257	258	282	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-10	40*	(°C)
Water outlet temperature	IR, IP	5	15	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional plate heat exchanger. The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat. **The Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7 - W45	Cooling capacity	46,8	55,1	60,3	71	81,1	93,8	105	115	130	148	163	185	206	kW
	Total power input	15,3	18,3	20,3	23,4	27,3	31,8	35,1	38,9	44	50,3	55,8	63	69,9	kW
	EER	3,05	3	2,98	3,03	2,97	2,95	2,99	2,96	2,95	2,94	2,92	2,94	2,95	W/W
	HRE	3,93	3,86	3,84	3,88	3,83	3,8	3,86	3,85	3,83	3,81	3,8	3,82	3,83	W/W
	Water flow rate	2,25	2,66	2,91	3,42	3,91	4,52	5,06	5,54	6,26	7,12	7,84	8,93	9,94	l/s
	Water pressure drop	25	36	30	41	52	47	59	69	50	62	76	51	62	kPa
	Heating recovery capacity	13,5	15,7	17,6	20	23,6	27,1	30,4	34,4	38,4	44	49,3	55,4	61,3	kW
	Water flow rate recovery	0,65	0,75	0,84	0,96	1,13	1,29	1,45	1,64	1,83	2,1	2,36	2,65	2,93	l/s
	Water pressure drop recovery	6	9	11	14	19	15	18	11	14	18	22	18	21	kPa
	A35W7 - W45	IP Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2
Cooling capacity		45,3	54,5	59,3	69,3	76,5	92,1	102	113	126	143	159	183	204	kW
Total power input		15,1	18,5	20,1	23,5	26,4	31,5	34,9	38,7	43,4	49,1	54,9	62,1	69,5	kW
EER		3	2,94	2,94	2,95	2,9	2,92	2,93	2,92	2,9	2,91	2,89	2,95	2,94	W/W
HRE		3,86	3,76	3,79	3,78	3,77	3,75	3,77	3,78	3,76	3,77	3,75	3,8	3,77	W/W
Water flow rate		2,18	2,63	2,86	3,34	3,68	4,43	4,92	5,45	6,07	6,88	7,64	8,84	9,84	l/s
Water pressure drop		23	35	29	38	47	45	54	67	47	59	73	50	61	kPa
Heating recovery capacity		13	15,2	17	19,4	22,9	26,2	29,2	33,2	37,1	42,4	47,5	52,4	58,1	kW
Water flow rate recovery		0,62	0,73	0,81	0,93	1,09	1,25	1,4	1,59	1,77	2,03	2,27	2,5	2,78	l/s
Water pressure drop recovery		6	8	10	13	18	14	17	10	13	17	21	16	19	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7 - W45	Cooling capacity	46,8	55,1	60,3	71	81,1	93,8	105	115	130	148	163	185	206	kW
	Total power input	13,9	16,9	18,4	21,4	25,3	27,9	31,1	35	40	44,4	49,9	55,3	62,1	kW
	EER	3,36	3,25	3,28	3,31	3,2	3,36	3,38	3,29	3,25	3,33	3,26	3,35	3,32	W/W
	HRE	7,67	7,46	7,52	7,58	7,35	7,67	7,71	7,52	7,45	7,61	7,47	7,65	7,59	W/W
	Water flow rate	2,25	2,66	2,91	3,42	3,91	4,52	5,06	5,54	6,26	7,12	7,84	8,93	9,94	l/s
	Water pressure drop	25	36	30	43	52	50	59	69	50	64	76	52	64	kPa
	Heating recovery capacity	60	71,2	77,8	91,4	105	120	135	148	168	190	210	238	265	kW
	Water flow rate recovery	2,87	3,4	3,72	4,37	5,02	5,73	6,45	7,07	8,03	9,08	10	11,4	12,7	l/s
	Water pressure drop recovery	35	49	41	45	50	48	52	47	52	51	52	55	55	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input
A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

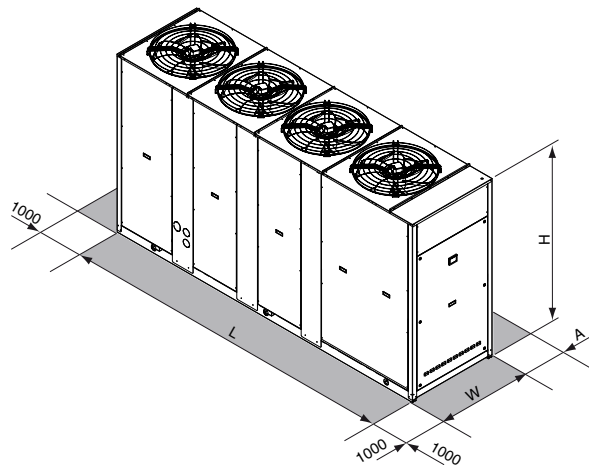
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
L			2480				3322			3322			4080	mm
W			954				1104			1104			1104	mm
H			1930				1793			2193			2193	mm
A			1600							2000				mm
Operating maximum weight*	791	793	844	876	893	1197	1278	1414	1465	1522	1561	1784	1812	kg

* Weight refers to the unit IP complete with 2 pumps module without tank.

> RTA

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Available range

Unit type

- IR Chiller
- IP Heat pump
(reversible on the refrigerant side)
- BR Chiller Brine
- BP Heat pump Brine
(reversible on the refrigerant side)

Version

- VB Base version
- VD Desuperheater version
- VR Total recovery version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up
- AX eXtra low noise setting up

Source temperature level

- M Medium temperature level
- A High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, brazed plate heat exchanger, electronic expansion valve, reverse cycle valve, dehydra-

tor filter, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins with sub-cooling section. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the plate heat exchanger. The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module available in the configurations :

- Storage tank arranged as buffer on the flow or as primary-secondary buffer
- 1 or 2 pumps
- standard or high head pump
- modulating pump

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Tank antifreeze electrical heater

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for IP)

High and low pressure gauges

High temperature thermostat

Coil shut off valves

Outdoor air sensor

Water flow switch

Victaulic hydraulic fittings

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	245.3	280.3	315.3	
A35W7	Cooling capacity	235	277	299	kW
	Power input	87,3	104	111	kW
	EER	2,69	2,66	2,69	W/W
	ESEER	3,81	3,81	3,84	W/W
	Water flow rate	11,3	13,4	14,4	l/s
	Pressure drops	54	60	53	kPa
IR	Low noise setting up (AS)	245.3	280.3	315.3	
A35W7	Cooling capacity	228	270	291	kW
	Power input	92,0	109	116	kW
	EER	2,48	2,48	2,51	W/W
	ESEER	3,66	3,69	3,69	W/W
	Water flow rate	11,0	13,0	14,0	l/s
	Pressure drops	51	57	50	kPa
IR	eXtra low noise setting up (AX)	245.3	280.3	315.3	
A35W7	Cooling capacity	223	264	285	kW
	Power input	94,0	111	118	kW
	EER	2,37	2,38	2,42	W/W
	ESEER	3,74	3,72	3,78	W/W
	Water flow rate	10,8	12,7	13,7	l/s
	Pressure drops	49	54	48	kPa
IP	Base setting up (AB)	245.3	280.3	315.3	
A35W7	Cooling capacity	226	268	289	kW
	Power input	85,3	101	108	kW
	EER	2,65	2,65	2,68	W/W
	ESEER	3,71	3,71	3,75	W/W
	Water flow rate	10,9	12,9	13,9	l/s
	Pressure drops	50	56	49	kPa
A7W45	Heating capacity	252	300	319	kW
	Power input	86,4	102	109	kW
	COP	2,92	2,93	2,93	W/W
	Water flow rate	11,9	14,2	15,1	l/s
Pressure drops	60	67	58	kPa	
IP	Low noise setting up (AS)	245.3	280.3	315.3	
A35W7	Cooling capacity	219	260	280	kW
	Power input	90,0	106	113	kW
	EER	2,43	2,45	2,48	W/W
	ESEER	3,55	3,57	3,60	W/W
	Water flow rate	10,6	12,5	13,5	l/s
	Pressure drops	47	52	47	kPa
A7W45	Heating capacity	242	288	306	kW
	Power input	81,6	96,9	103	kW
	COP	2,97	2,97	2,97	W/W
	Water flow rate	11,5	13,6	14,5	l/s
Pressure drops	56	62	54	kPa	
IP	eXtra low noise setting up (AX)	245.3	280.3	315.3	
A35W7	Cooling capacity	215	255	274	kW
	Power input	92,0	108	116	kW
	EER	2,34	2,36	2,36	W/W
	ESEER	3,64	3,66	3,66	W/W
	Water flow rate	10,4	12,3	13,2	l/s
	Pressure drops	46	51	45	kPa
A7W45	Heating capacity	240	285	302	kW
	Power input	79	94	100	kW
	COP	3,04	3,03	3,02	W/W
	Water flow rate	11,4	13,5	14,3	l/s
Pressure drops	55	61	52	kPa	

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio) = Unit in A CLASS.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	245.3	280.3	315.3	
Sound power level ^(E)	90	91	91	dB(A)
Sound pressure level at 1 meter	71	72	72	dB(A)
Sound pressure level at 5 meters	63	64	64	dB(A)
Sound pressure level at 10 meters	58	59	59	dB(A)
Low noise setting up (AS)	245.3	280.3	315.3	
Sound power level ^(E)	86	87	87	dB(A)
Sound pressure level at 1 meter	67	68	68	dB(A)
Sound pressure level at 5 meters	59	60	60	dB(A)
Sound pressure level at 10 meters	54	55	55	dB(A)
eXtra low noise setting up (AX)	245.3	280.3	315.3	
Sound power level ^(E)	84	85	85	dB(A)
Sound pressure level at 1 meter	65	66	66	dB(A)
Sound pressure level at 5 meters	57	58	58	dB(A)
Sound pressure level at 10 meters	52	53	53	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	245.3	280.3	315.3	
Power supply		400 - 3 - 50		V-ph-Hz
Compressor type		scroll		-
N° compressors / N° refrigerant circuits		3 / 1		n°
Plant side heat exchanger type		stainless steel brazed plates		-
Source side heat exchanger type		finned coil		-
Fans type		axial		-
N° fans	4		5	n°
Tank volume		460		l
Hydraulic fittings		3" VICTAULIC		-

Electrical data

Standard unit	245.3	280.3	315.3	
FLA - Full load current at maximum tolerated conditions	199	231	247	A
FLI - Full load power input at maximum tolerated conditions	121	137	148	kW
MIC - Maximum instantaneous current of the unit	425	428	470	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	311	313	351	A
Unit with high head modulating pump	245.3	280.3	315.3	
FLA - Full load current at maximum tolerated conditions	213	245	261	A
FLI - Full load power input at maximum tolerated conditions	130	146	157	kW
MIC - Maximum instantaneous current of the unit	439	442	483	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	324	327	364	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	50	-10	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	25	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	245.3	280.3	315.3	
A35W7 - W45	Cooling capacity	244	288	311	kW
	Total power input	85,3	101,0	107,6	kW
	EER	2,86	2,85	2,89	W/W
	HRE	3,77	3,75	3,80	W/W
	Water flow rate	11,8	13,9	15,0	l/s
	Water pressure drop	59	65	57	kPa
	Heating recovery capacity	77,3	90,8	97,7	kW
	Water flow rate recovery	3,69	4,34	4,67	l/s
	Water pressure drop recovery	30	19	20	kPa
IP	Base setting up (AB)	245.3	280.3	315.3	
A35W7 - W45	Cooling capacity	235	278	300	kW
	Total power input	83,2	98,7	105,2	kW
	EER	2,82	2,82	2,85	W/W
	HRE	3,73	3,72	3,76	W/W
	Water flow rate	11,3	13,4	14,5	l/s
	Water pressure drop	54	60	54	kPa
	Heating recovery capacity	75,5	88,7	95,5	kW
	Water flow rate recovery	3,61	4,24	4,56	l/s
	Water pressure drop recovery	29	18	19	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	245.3	280.3	315.3	
A35W7 - W45	Cooling capacity	246	291	314	kW
	Total power input	77,4	91,2	97,7	kW
	EER	3,19	3,19	3,21	W/W
	HRE	7,32	7,34	7,38	W/W
	Water flow rate	11,9	14,0	15,2	l/s
	Water pressure drop	60	66	59	kPa
	Heating recovery capacity	320	378	407	kW
	Water flow rate recovery	15,3	18,1	19,4	l/s
	Water pressure drop recovery	51	55	68	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

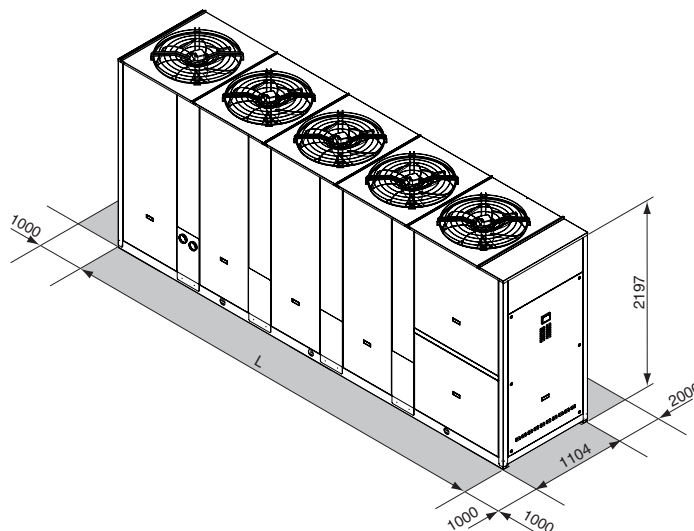
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	245.3	280.3	315.3	
L		5020		mm
Operating maximum weight*	2663	2744	2841	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RLA

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of medium-large size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, brazed plate heat exchanger, electronic expansion valve, reverse cycle valve, dehydrator filter, axial fans with safety protection grilles, finned coil made of copper pipes

and aluminium louvered fins with sub-cooling section. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the plate heat exchanger. The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

[Storing and pumping module](#) available in the configurations :

- storage tank arranged as buffer on the flow or as primary-secondary buffer
- 1 or 2 pumps
- standard or high head pump

[Refrigerant circuit pressures visualization](#)

- high and low pressure gauges
- high and low pressure transducers

[High temperature thermostat](#)

[Compressor starting](#)

- standard (contactors)
- soft starter

[Fans control](#)

- on-off control
- modulating control (condensation / evaporation control)

[Compressor power factor correction](#)

[Electrical load protection](#)

- fuses
- thermal magnetic circuit breakers

[Coil condensate tray](#)

Accessories

[Rubber vibration dampers](#)

[Spring vibration dampers](#)

[Coil protection grilles](#)

[Tank antifreeze electrical heater](#)

[Remote control](#)

[Modbus serial interface on RS485](#)

[Programmer clock](#)

[Phase sequence and voltage controller](#)

[Water flow switch](#)

[Victaulic hydraulic fittings](#)

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	161	178	199	228	255	289	323	368	409	kW	
	Power input	56,2	62,7	70,9	80,4	90,7	103	115	130	146	kW	
	EER	2,86	2,84	2,81	2,84	2,81	2,81	2,81	2,81	2,83	2,80	W/W
	ESEER	3,84	3,81	3,79	3,82	3,79	3,80	3,79	3,80	3,80	3,79	W/W
	Water flow rate	7,74	8,55	9,60	11,0	12,3	14,0	15,6	17,7	19,7	l/s	
	Pressure drops	51	51	58	57	60	64	54	58	58	kPa	
IR	Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	155	171	191	219	245	277	311	353	393	kW	
	Power input	59,2	66,1	75,0	85,2	95,5	109	121	137	154	kW	
	EER	2,62	2,59	2,55	2,57	2,57	2,54	2,57	2,58	2,55	W/W	
	ESEER	3,85	3,80	3,77	3,80	3,79	3,76	3,78	3,80	3,76	W/W	
	Water flow rate	7,45	8,22	9,22	10,6	11,8	13,4	15,0	17,0	18,9	l/s	
	Pressure drops	47	47	53	53	56	58	50	53	54	kPa	
IR	eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	151	167	187	214	240	272	304	346	385	kW	
	Power input	59,8	66,9	76,0	86,4	96,6	111	123	138	157	kW	
	EER	2,53	2,50	2,46	2,48	2,48	2,45	2,47	2,51	2,45	W/W	
	ESEER	3,90	3,85	3,82	3,84	3,86	3,82	3,82	3,88	3,81	W/W	
	Water flow rate	7,26	8,03	9,03	10,3	11,6	13,1	14,6	16,7	18,5	l/s	
	Pressure drops	45	45	51	50	54	56	47	51	51	kPa	
IP	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	154	171	192	215	244	275	310	357	397	kW	
	Power input	55,4	61,8	69,6	78,5	89,9	102	113	129	144	kW	
	EER	2,78	2,77	2,76	2,74	2,71	2,70	2,74	2,77	2,76	W/W	
	ESEER	3,72	3,70	3,72	3,68	3,65	3,65	3,66	3,72	3,73	W/W	
	Water flow rate	7,41	8,22	9,27	10,4	11,8	13,3	14,9	17,2	19,2	l/s	
	Pressure drops	47	47	54	51	56	57	49	54	55	kPa	
A7W45	Heating capacity	169	191	215	240	273	308	345	395	439	kW	
	Power input	56,8	64,0	72,3	81,2	92,7	104	116	132	147	kW	
	COP	2,98	2,98	2,97	2,96	2,94	2,96	2,97	2,99	2,99	W/W	
	Water flow rate	8,03	9,03	10,2	11,4	12,9	14,6	16,3	18,7	20,8	l/s	
Pressure drops	55	57	65	62	66	69	59	64	65	kPa		
IP	Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	148	164	185	206	234	265	298	343	382	kW	
	Power input	58,3	65,2	73,6	86,4	94,7	107	123	136	152	kW	
	EER	2,54	2,52	2,51	2,38	2,47	2,48	2,42	2,52	2,51	W/W	
	ESEER	3,72	3,69	3,69	3,51	3,64	3,63	3,55	3,73	3,70	W/W	
	Water flow rate	7,12	7,88	8,89	9,94	11,3	12,8	14,3	16,5	18,4	l/s	
	Pressure drops	43	44	49	47	51	53	45	50	51	kPa	
A7W45	Heating capacity	162	183	206	230	262	296	331	379	422	kW	
	Power input	53,5	60,3	68,2	76,6	87,3	99	110	125	140	kW	
	COP	3,03	3,03	3,02	3,00	3,00	2,99	3,01	3,03	3,01	W/W	
	Water flow rate	7,69	8,65	9,75	10,9	12,4	14,0	15,7	17,9	20,0	l/s	
Pressure drops	50	52	59	56	61	64	54	59	60	kPa		
IP	eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	145	161	181	203	229	259	291	335	374	kW	
	Power input	59,0	66,1	74,6	84,4	95,8	109	122	137	153	kW	
	EER	2,46	2,44	2,43	2,41	2,39	2,38	2,39	2,45	2,44	W/W	
	ESEER	3,79	3,75	3,75	3,71	3,70	3,69	3,69	3,79	3,77	W/W	
	Water flow rate	6,98	7,74	8,70	9,75	11,0	12,5	14,0	16,1	18,0	l/s	
	Pressure drops	42	42	47	45	48	51	43	48	49	kPa	
A7W45	Heating capacity	161	181	204	228	259	293	328	374	417	kW	
	Power input	51,8	58,5	66,2	74,5	84,6	95,6	106	121	135	kW	
	COP	3,11	3,09	3,08	3,06	3,06	3,06	3,09	3,09	3,09	W/W	
	Water flow rate	7,64	8,60	9,65	10,8	12,3	13,9	15,5	17,7	19,7	l/s	
Pressure drops	50	52	58	55	60	63	53	58	58	kPa		

Data declared according to EN 14511. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
 = Unit in **A CLASS**.
A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C
A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C
A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C
A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Sound power level ^(E)	91	92	92	92	93	94	94	95	95	dB(A)
Sound pressure level at 1 meter	72	73	73	73	74	75	74	75	75	dB(A)
Sound pressure level at 5 meters	64	65	65	65	66	67	67	68	68	dB(A)
Sound pressure level at 10 meters	59	60	60	60	61	62	62	63	63	dB(A)
Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Sound power level ^(E)	85	86	86	86	87	88	88	89	89	dB(A)
Sound pressure level at 1 meter	66	67	67	67	68	69	68	69	69	dB(A)
Sound pressure level at 5 meters	58	59	59	59	60	61	61	62	62	dB(A)
Sound pressure level at 10 meters	53	54	54	54	55	56	56	57	57	dB(A)
eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Sound power level ^(E)	82	83	83	83	84	85	85	86	86	dB(A)
Sound pressure level at 1 meter	63	64	64	64	65	66	65	66	66	dB(A)
Sound pressure level at 5 meters	55	56	56	56	57	58	58	59	59	dB(A)
Livello di pressione sonora a 10 metri	50	51	51	51	52	53	53	54	54	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Power supply	400 - 3 - 50									V-ph-Hz
Compressor type	scroll									-
N° compressors / N° refrigerant circuits	4 / 2									n°
Plant side heat exchanger type	stainless steel brazed plates									-
Source side heat exchanger type	finned coil									-
Fans type	axial									-
N° fans	4			6			8			n°
Tank volume	325						710			l
Hydraulic fittings	3" VICTAULIC						4" VICTAULIC			-

Electrical data

Standard unit	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
FLA - Full load current at maximum tolerated conditions	140	151	177	193	217	243	269	314	335	A
FLI - Full load power input at maximum tolerated conditions	76	87	107	118	133	148	163	186	200	kW
MIC - Maximum instantaneous current of the unit	283	340	347	355	379	469	495	510	558	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	213	250	263	271	295	354	380	404	438	A
Unit with high head modulating pump	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
FLA - Full load current at maximum tolerated conditions	149	160	187	203	227	256	282	327	357	A
FLI - Full load power input at maximum tolerated conditions	81	91	113	124	139	156	171	194	212	kW
MIC - Maximum instantaneous current of the unit	292	348	357	365	389	482	508	524	580	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	222	258	273	281	305	368	394	417	460	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-10	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
A35W7 - W45	Cooling capacity	167	185	207	237	264	300	336	382	425	kW
	Total power input	55,0	61,2	69,3	78,5	88,7	101	112	127	143	kW
	EER	3,04	3,01	2,99	3,02	2,98	2,97	3,00	3,01	2,98	W/W
	HRE	3,90	3,89	3,87	3,91	3,85	3,85	3,90	3,88	3,86	W/W
	Water flow rate	8,05	8,89	10,0	11,4	12,8	14,5	16,2	18,4	20,5	l/s
	Water pressure drop	55	55	63	62	65	68	58	62	63	kPa
	Heating recovery capacity	47,2	53,4	61,2	70,3	76,6	88,7	99,9	110,8	126,6	kW
	Water flow rate recovery	2,25	2,55	2,93	3,36	3,66	4,24	4,77	5,29	6,05	l/s
	Water pressure drop recovery	5	7	8	10	13	16	16	21	25	kPa

IP	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
A35W7 - W45	Cooling capacity	160	177	200	224	253	286	322	371	413	kW
	Total power input	54,1	60,4	67,9	76,6	87,8	99	111	126	140	kW
	EER	2,96	2,94	2,94	2,92	2,89	2,88	2,91	2,95	2,96	W/W
	HRE	3,82	3,81	3,83	3,82	3,75	3,76	3,81	3,83	3,85	W/W
	Water flow rate	7,70	8,55	9,64	10,8	12,2	13,8	15,5	17,9	19,9	l/s
	Water pressure drop	51	51	58	55	59	62	53	59	59	kPa
	Heating recovery capacity	46,5	52,7	60,1	68,8	76,1	87,5	98,9	110	124	kW
	Water flow rate recovery	2,22	2,52	2,87	3,29	3,64	4,18	4,73	5,25	5,91	l/s
	Water pressure drop recovery	5	6	8	10	13	16	16	20	24	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
A35W7 - W45	Cooling capacity	169	186	209	239	267	303	339	386	429	kW
	Total power input	47,3	53,5	61,6	70,7	77,2	89,5	100	111	127	kW
	EER	3,56	3,48	3,39	3,38	3,46	3,39	3,38	3,46	3,37	W/W
	HRE	8,08	7,91	7,75	7,71	7,87	7,72	7,71	7,87	7,69	W/W
	Water flow rate	8,13	8,98	10,1	11,5	12,9	14,6	16,4	18,6	20,7	l/s
	Water pressure drop	56	57	64	63	66	69	59	64	64	kPa
	Heating recovery capacity	214	237	268	306	340	388	434	492	550	kW
	Water flow rate recovery	10,2	11,3	12,8	14,6	16,2	18,5	20,7	23,5	26,3	l/s
	Water pressure drop recovery	45	43	45	45	47	49	49	51	51	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

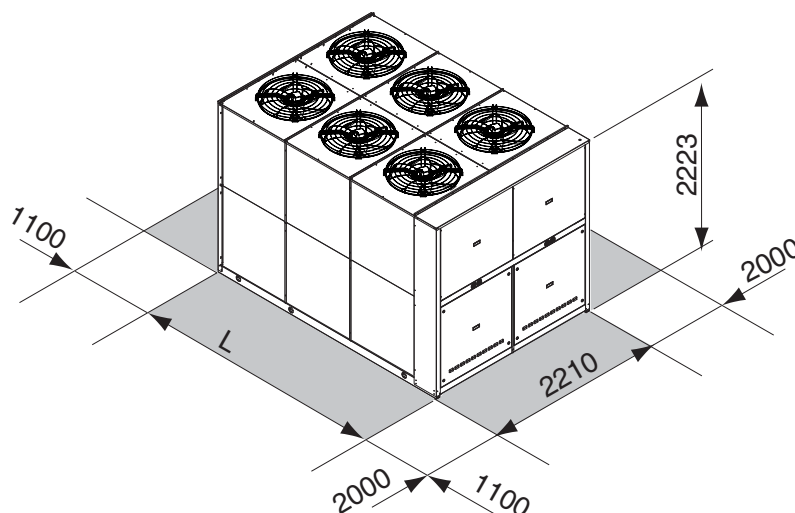
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- ATC outdoor high temperature protection function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Double set point function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
L	3164	3164	3164	3164	3164	3164	4097	4097	4097	mm
Operating maximum weight*	2441	2633	2829	3005	3069	3096	3790	3907	3980	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RLA HE

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of medium-large size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, brazed plate heat exchanger, electronic expansion valve, reverse cycle valve, dehydrator filter, axial fans with safety protection grilles, finned coil made of copper pipes

and aluminium louvered fins with sub-cooling section. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the plate heat exchanger. The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module available in the configurations :

- storage tank arranged as buffer on the flow or as primary-secondary buffer
- 1 or 2 pumps
- standard or high head pump

Refrigerant circuit pressures visualization

- high and low pressure gauges
- high and low pressure transducers

High temperature thermostat

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Tank antifreeze electrical heater

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Victaulic hydraulic fittings

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	172	191	212	237	267	304	340	387	kW
	Power input	52,7	58,0	65,4	74,1	83,6	95	106	122	kW
	EER	3,26	3,29	3,24	3,20	3,19	3,20	3,21	3,17	W/W
	ESEER	4,57	4,61	4,54	4,48	4,47	4,48	4,49	4,44	W/W
	Water flow rate	8,22	9,13	10,13	11,3	12,8	14,5	16,2	18,5	l/s
	Pressure drops	39	36	38	39	40	36	36	33	kPa
IR	Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	165	183	204	228	256	292	326	372	kW
	Power input	55,6	61,4	69,4	78,8	88,3	100,7	113	130	kW
	EER	2,97	2,98	2,94	2,89	2,90	2,90	2,89	2,86	W/W
	ESEER	4,57	4,59	4,53	4,46	4,46	4,47	4,45	4,41	W/W
	Water flow rate	7,88	8,74	9,75	10,9	12,2	14,0	15,6	17,8	l/s
	Pressure drops	36	33	35	36	36	33	34	31	kPa
IR	eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	162	180	199	223	251	286	320	364	kW
	Power input	56,3	62,2	70,4	80,1	89,4	102	114	132	kW
	EER	2,88	2,89	2,83	2,78	2,81	2,80	2,82	2,77	W/W
	ESEER	4,66	4,69	4,58	4,51	4,55	4,53	4,56	4,48	W/W
	Water flow rate	7,74	8,60	9,51	10,7	12,0	13,7	15,3	17,4	l/s
	Pressure drops	34	32	33	35	35	32	32	29	kPa
IP	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	169	187	208	234	266	301	339	385	kW
	Power input	52,7	58,0	65,3	73,3	83,2	94,0	106	121	kW
	EER	3,22	3,23	3,19	3,19	3,20	3,20	3,20	3,18	W/W
	ESEER	4,50	4,52	4,46	4,47	4,48	4,48	4,48	4,45	W/W
	Water flow rate	8,09	8,95	9,94	11,2	12,7	14,4	16,2	18,4	l/s
	Pressure drops	38	35	36	38	39	35	36	33	kPa
A7W45	Heating capacity	176	196	218	242	279	316	351	401	kW
	Power input	52,6	59,9	66,7	74,6	85,9	97	107	124	kW
	COP	3,34	3,28	3,27	3,24	3,25	3,26	3,28	3,23	W/W
	Water flow rate	8,39	9,37	10,4	11,6	13,3	15,1	16,8	19,2	l/s
	Pressure drops	41	38	40	41	43	39	39	36	kPa
IP	Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	163	180	200	225	255	289	325	370	kW
	Power input	55,6	61,4	69,2	77,9	87,9	99,6	113	129	kW
	EER	2,93	2,93	2,89	2,89	2,90	2,90	2,88	2,87	W/W
	ESEER	4,51	4,51	4,45	4,45	4,47	4,47	4,44	4,42	W/W
	Water flow rate	7,79	8,60	9,56	10,75	12,2	13,8	15,5	17,7	l/s
	Pressure drops	35	32	34	35	36	32	33	30	kPa
A7W45	Heating capacity	169	188	209	232	268	303	337	385	kW
	Power input	49,6	56,5	63,0	70,5	81,0	91,3	101	117	kW
	COP	3,41	3,33	3,32	3,29	3,31	3,32	3,35	3,29	W/W
	Water flow rate	8,07	8,98	9,99	11,1	12,8	14,5	16,1	18,4	l/s
	Pressure drops	37	35	37	37	40	36	36	33	kPa
IP	eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	159	176	196	220	250	283	319	362	kW
	Power input	56,3	62,2	70,3	79,2	89,0	101	114	131	kW
	EER	2,82	2,83	2,79	2,78	2,81	2,80	2,81	2,77	W/W
	ESEER	4,58	4,58	4,52	4,50	4,55	4,54	4,55	4,49	W/W
	Water flow rate	7,60	8,41	9,36	10,51	11,9	13,5	15,2	17,3	l/s
	Pressure drops	33	31	32	34	34	31	32	29	kPa
A7W45	Heating capacity	167	186	207	230	265	300	333	381	kW
	Power input	48,0	54,8	61,1	68,5	78,4	89	98	113	kW
	COP	3,48	3,39	3,39	3,36	3,38	3,39	3,40	3,39	W/W
	Water flow rate	7,98	8,89	9,89	11,0	12,7	14,3	15,9	18,2	l/s
	Pressure drops	37	34	36	37	39	35	35	32	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
 = Unit in **A CLASS**.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C
A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C
A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C
A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
Sound power level ^(E)	91	92	92	92	93	94	94	95	dB(A)
Sound pressure level at 1 meter	72	73	73	73	74	75	74	75	dB(A)
Sound pressure level at 5 meters	64	65	65	65	66	67	67	68	dB(A)
Sound pressure level at 10 meters	59	60	60	60	61	62	62	63	dB(A)
Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
Sound power level ^(E)	85	86	86	86	87	88	88	89	dB(A)
Sound pressure level at 1 meter	66	67	67	67	68	69	68	69	dB(A)
Sound pressure level at 5 meters	58	59	59	59	60	61	61	62	dB(A)
Sound pressure level at 10 meters	53	54	54	54	55	56	56	57	dB(A)
eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
Sound power level ^(E)	82	83	83	83	84	85	85	86	dB(A)
Sound pressure level at 1 meter	63	64	64	64	65	66	65	66	dB(A)
Sound pressure level at 5 meters	55	56	56	56	57	58	58	59	dB(A)
Livello di pressione sonora a 10 metri	50	51	51	51	52	53	53	54	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4		
Power supply	400 - 3 - 50								V-ph-Hz	
Compressor type	scroll								-	
N° compressors / N° refrigerant circuits	4 / 2								n°	
Plant side heat exchanger type	stainless steel brazed plates								-	
Source side heat exchanger type	finned coil								-	
Fans type	axial								-	
N° fans	4			6			8		n°	
Tank volume	325					710				l
Hydraulic fittings	3" VICTAULIC					4" VICTAULIC				-

Electrical data

Standard unit	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
FLA - Full load current at maximum tolerated conditions	140	151	177	193	217	243	269	314	A
FLI - Full load power input at maximum tolerated conditions	76	87	107	118	133	148	163	186	kW
MIC - Maximum instantaneous current of the unit	283	340	347	355	379	469	495	510	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	213	250	263	271	295	354	380	404	A
Unit with high head modulating pump	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
FLA - Full load current at maximum tolerated conditions	149	160	187	203	227	256	282	327	A
FLI - Full load power input at maximum tolerated conditions	81	91	113	124	139	156	171	194	kW
MIC - Maximum instantaneous current of the unit	292	348	357	365	389	482	508	524	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	222	258	273	281	305	368	394	417	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-15	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7 - W45	Cooling capacity	177	197	218	244	275	312	350	398	kW
	Total power input	53,1	58,5	66,1	74,7	84,5	96	106	123	kW
	EER	3,33	3,36	3,30	3,27	3,25	3,24	3,29	3,22	W/W
	HRE	4,18	4,22	4,17	4,15	4,10	4,11	4,17	4,09	W/W
	Water flow rate	8,55	9,49	10,5	11,8	13,3	15,1	16,9	19,2	l/s
	Water pressure drop	62	63	69	66	71	74	63	68	kPa
	Heating recovery capacity	45,0	50,3	57,6	66,2	72,0	83,4	94,0	107	kW
	Water flow rate recovery	2,15	2,40	2,75	3,16	3,44	3,98	4,49	5,11	l/s
	Water pressure drop recovery	5	6	8	10	12	16	20	26	kPa

IP	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7 - W45	Cooling capacity	174	193	214	241	274	309	349	396	kW
	Total power input	53,0	58,4	65,9	73,8	84,1	95	106	122	kW
	EER	3,29	3,31	3,25	3,26	3,25	3,25	3,28	3,23	W/W
	HRE	4,14	4,17	4,12	4,15	4,11	4,12	4,16	4,10	W/W
	Water flow rate	8,42	9,31	10,34	11,6	13,2	15,0	16,8	19,1	l/s
	Water pressure drop	60	61	67	64	70	73	62	67	kPa
	Heating recovery capacity	45,0	50,3	57,5	65,4	71,6	82,3	94,0	106	kW
	Water flow rate recovery	2,15	2,40	2,75	3,12	3,42	3,93	4,49	5,06	l/s
	Water pressure drop recovery	5	6	8	10	12	16	20	26	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7 - W45	Cooling capacity	179	198	220	246	277	315	353	402	kW
	Total power input	45,5	50,8	58,4	66,9	73,1	84,8	95	108	kW
	EER	3,93	3,91	3,77	3,68	3,79	3,72	3,72	3,72	W/W
	HRE	8,81	8,77	8,50	8,32	8,54	8,39	8,40	8,38	W/W
	Water flow rate	8,63	9,58	10,6	11,9	13,4	15,3	17,1	19,4	l/s
	Water pressure drop	64	64	70	67	72	76	65	69	kPa
	Heating recovery capacity	222	247	276	310	347	396	444	505	kW
	Water flow rate recovery	10,6	11,8	13,2	14,8	16,6	18,9	21,2	24,1	l/s
	Water pressure drop recovery	49	47	48	47	49	51	51	53	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

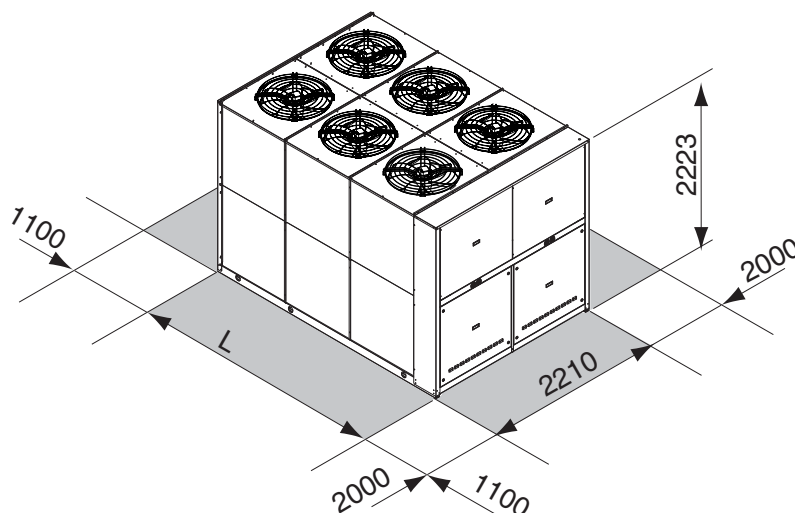
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- ATC outdoor high temperature protection function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Double set point function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
L	3164	3164	3164	3164	3164	4097	4097	4097	mm
Operating maximum weight*	2512	2712	2957	3122	3214	3787	3948	4046	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RLA ST

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version (with plate heat exchanger)
VR	Total recovery version (with plate heat exchanger)

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of medium-large size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, shell and tube heat exchanger with threaded or victaulic fittings (according to the model),

electronic expansion valve, reverse cycle valve, dehydrator filter, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins with subcooling section. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the heat exchanger. The heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing module available in the configurations :

- 1 or 2 pumps
 - standard or high head pump
- Refrigerant circuit pressures visualization**
- high and low pressure gauges
 - high and low pressure transducers

High temperature thermostat

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Victaulic hydraulic fittings

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	161	178	199	228	255	289	323	368	409	kW	
	Power input	56,2	62,7	70,9	80,4	90,7	103	115	130	146	kW	
	EER	2,86	2,84	2,81	2,84	2,81	2,81	2,81	2,81	2,83	2,80	W/W
	ESEER	3,84	3,81	3,79	3,82	3,79	3,80	3,79	3,80	3,80	3,79	W/W
	Water flow rate	7,74	8,55	9,60	11,0	12,3	14,0	15,6	17,7	19,7	l/s	
	Pressure drops	50	61	36	46	56	52	31	37	48	kPa	
IR	Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	155	171	191	219	245	277	311	353	393	kW	
	Power input	59,2	66,1	75,0	85,2	95,5	109	121	137	154	kW	
	EER	2,62	2,59	2,55	2,57	2,57	2,54	2,57	2,58	2,55	W/W	
	ESEER	3,85	3,80	3,77	3,80	3,79	3,76	3,78	3,80	3,76	W/W	
	Water flow rate	7,45	8,22	9,22	10,6	11,8	13,4	15,0	17,0	18,9	l/s	
	Pressure drops	46	57	33	43	52	48	29	35	44	kPa	
IR	eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	151	167	187	214	240	272	304	346	385	kW	
	Power input	59,8	66,9	76,0	86,4	96,6	111	123	138	157	kW	
	EER	2,53	2,50	2,46	2,48	2,48	2,45	2,47	2,51	2,45	W/W	
	ESEER	3,90	3,85	3,82	3,84	3,86	3,82	3,82	3,88	3,81	W/W	
	Water flow rate	7,26	8,03	9,03	10,3	11,6	13,1	14,6	16,7	18,5	l/s	
	Pressure drops	44	54	32	40	50	45	28	33	42	kPa	
IP	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	154	171	192	215	244	275	310	357	397	kW	
	Power input	55,4	61,8	69,6	78,5	89,9	102	113	129	144	kW	
	EER	2,78	2,77	2,76	2,74	2,71	2,70	2,74	2,77	2,76	W/W	
	ESEER	3,72	3,70	3,72	3,68	3,65	3,65	3,66	3,72	3,73	W/W	
	Water flow rate	7,41	8,22	9,27	10,4	11,8	13,3	14,9	17,2	19,2	l/s	
	Pressure drops	46	57	33	41	52	47	29	35	45	kPa	
A7W45	Heating capacity	169	191	215	240	273	308	345	395	439	kW	
	Power input	56,8	64,0	72,3	81,2	92,7	104	116	132	147	kW	
	COP	2,98	2,98	2,97	2,96	2,94	2,96	2,97	2,99	2,99	W/W	
	Water flow rate	8,03	9,03	10,2	11,4	12,9	14,6	16,3	18,7	20,8	l/s	
Pressure drops	54	68	40	49	62	56	34	42	53	kPa		
IP	Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	148	164	185	206	234	265	298	343	382	kW	
	Power input	58,3	65,2	73,6	86,4	94,7	107	123	136	152	kW	
	EER	2,54	2,52	2,51	2,38	2,47	2,48	2,42	2,52	2,51	W/W	
	ESEER	3,72	3,69	3,69	3,51	3,64	3,63	3,55	3,73	3,70	W/W	
	Water flow rate	7,12	7,88	8,89	9,94	11,3	12,8	14,3	16,5	18,4	l/s	
	Pressure drops	42	52	31	37	47	43	26	33	42	kPa	
A7W45	Heating capacity	162	183	206	230	262	296	331	379	422	kW	
	Power input	53,5	60,3	68,2	76,6	87,3	99	110	125	140	kW	
	COP	3,03	3,03	3,02	3,00	3,00	2,99	3,01	3,03	3,01	W/W	
	Water flow rate	7,69	8,65	9,75	10,9	12,4	14,0	15,7	17,9	20,0	l/s	
Pressure drops	50	63	37	45	57	52	32	38	49	kPa		
IP	eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4		
A35W7	Cooling capacity	145	161	181	203	229	259	291	335	374	kW	
	Power input	59,0	66,1	74,6	84,4	95,8	109	122	137	153	kW	
	EER	2,46	2,44	2,43	2,41	2,39	2,38	2,39	2,45	2,44	W/W	
	ESEER	3,79	3,75	3,75	3,71	3,70	3,69	3,69	3,79	3,77	W/W	
	Water flow rate	6,98	7,74	8,70	9,75	11,0	12,5	14,0	16,1	18,0	l/s	
	Pressure drops	41	50	29	36	45	41	25	31	40	kPa	
A7W45	Heating capacity	161	181	204	228	259	293	328	374	417	kW	
	Power input	51,8	58,5	66,2	74,5	84,6	95,6	106	121	135	kW	
	COP	3,11	3,09	3,08	3,06	3,06	3,06	3,09	3,09	3,09	W/W	
	Water flow rate	7,64	8,60	9,65	10,8	12,3	13,9	15,5	17,7	19,7	l/s	
Pressure drops	49	62	36	44	56	51	31	37	48	kPa		

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Sound power level	91	92	92	92	93	94	94	95	95	dB(A)
Sound pressure level at 1 meter	72	73	73	73	74	75	74	75	75	dB(A)
Sound pressure level at 5 meters	64	65	65	65	66	67	67	68	68	dB(A)
Sound pressure level at 10 meters	59	60	60	60	61	62	62	63	63	dB(A)
Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Sound power level	85	86	86	86	87	88	88	89	89	dB(A)
Sound pressure level at 1 meter	66	67	67	67	68	69	68	69	69	dB(A)
Sound pressure level at 5 meters	58	59	59	59	60	61	61	62	62	dB(A)
Sound pressure level at 10 meters	53	54	54	54	55	56	56	57	57	dB(A)
eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Sound power level	82	83	83	83	84	85	85	86	86	dB(A)
Sound pressure level at 1 meter	63	64	64	64	65	66	65	66	66	dB(A)
Sound pressure level at 5 meters	55	56	56	56	57	58	58	59	59	dB(A)
Livello di pressione sonora a 10 metri	50	51	51	51	52	53	53	54	54	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Power supply	400 - 3 - 50									V-ph-Hz
Compressor type	scroll									-
N° compressors / N° refrigerant circuits	4 / 2									n°
Plant side heat exchanger type	shell and tube									-
Source side heat exchanger type	finned coil									-
Fans type	axial									-
N° fans	4			6			8			n°
Water volume plant side heat exchanger	35.6	35.6	61.5	57.8	57.8	52.8	93.9	87.5	80.2	l
Hydraulic fittings plant side heat exchanger	3" GAS		4" VIC			5" VIC				-

Electrical data

Standard unit	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
FLA - Full load current at maximum tolerated conditions	140	151	177	193	217	243	269	314	335	A
FLI - Full load power input at maximum tolerated conditions	76	87	107	118	133	148	163	186	200	kW
MIC - Maximum instantaneous current of the unit	283	340	347	355	379	469	495	510	558	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	213	250	263	271	295	354	380	404	438	A
Unit with high head modulating pump	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
FLA - Full load current at maximum tolerated conditions	149	160	187	203	227	256	282	327	357	A
FLI - Full load power input at maximum tolerated conditions	81	91	113	124	139	156	171	194	212	kW
MIC - Maximum instantaneous current of the unit	292	348	357	365	389	482	508	524	580	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	222	258	273	281	305	368	394	417	460	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-10	40*	(°C)
Water outlet temperature	IR, IP	5	15	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional plate heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR		Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
A35W7 - W45	Cooling capacity		167	185	207	237	264	300	336	382	425	kW
	Total power input		55,0	61,2	69,3	78,5	88,7	101	112	127	143	kW
	EER		3,04	3,01	2,99	3,02	2,98	2,97	3,00	3,01	2,98	W/W
	HRE		3,90	3,89	3,87	3,91	3,85	3,85	3,90	3,88	3,86	W/W
	Water flow rate		8,05	8,89	10,0	11,4	12,8	14,5	16,2	18,4	20,5	l/s
	Water pressure drop		54	66	39	49	61	56	34	40	52	kPa
	Heating recovery capacity		47,2	53,4	61,2	70,3	76,6	88,7	99,9	110,8	126,6	kW
	Water flow rate recovery		2,25	2,55	2,93	3,36	3,66	4,24	4,77	5,29	6,05	l/s
	Water pressure drop recovery		5	7	8	10	13	16	16	21	25	kPa
	IP		Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4
A35W7 - W45	Cooling capacity		160	177	200	224	253	286	322	371	413	kW
	Total power input		54,1	60,4	67,9	76,6	87,8	99	111	126	140	kW
	EER		2,96	2,94	2,94	2,92	2,89	2,88	2,91	2,95	2,96	W/W
	HRE		3,82	3,81	3,83	3,82	3,75	3,76	3,81	3,83	3,85	W/W
	Water flow rate		7,70	8,55	9,64	10,8	12,2	13,8	15,5	17,9	19,9	l/s
	Water pressure drop		50	61	36	44	55	50	31	38	49	kPa
	Heating recovery capacity		46,5	52,7	60,1	68,8	76,1	87,5	98,9	109,8	123,7	kW
	Water flow rate recovery		2,22	2,52	2,87	3,29	3,64	4,18	4,73	5,25	5,91	l/s
	Water pressure drop recovery		5	6	8	10	13	16	16	20	24	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR		Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
A35W7 - W45	Cooling capacity		169	186	209	239	267	303	339	386	429	kW
	Total power input		47,3	53,5	61,6	70,7	77,2	89,5	100	111	127	kW
	EER		3,56	3,48	3,39	3,38	3,46	3,39	3,38	3,46	3,37	W/W
	HRE		8,08	7,91	7,75	7,71	7,87	7,72	7,71	7,87	7,69	W/W
	Water flow rate		8,13	8,98	10,1	11,5	12,9	14,6	16,4	18,6	20,7	l/s
	Water pressure drop		55	68	40	50	62	56	35	41	53	kPa
	Heating recovery capacity		214	237	268	306	340	388	434	492	550	kW
	Water flow rate recovery		10,2	11,3	12,8	14,6	16,2	18,5	20,7	23,5	26,3	l/s
	Water pressure drop recovery		35	49	41	45	50	48	52	47	52	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

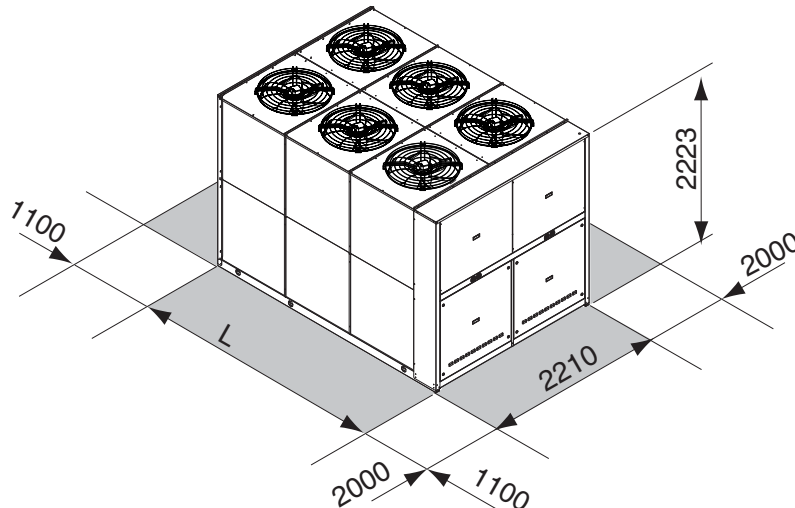
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- ATC outdoor high temperature protection function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Double set point function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
L	3164	3164	3164	3164	3164	3164	4097	4097	4097	mm
Operating maximum weight*	2167	2353	2674	2840	2909	2918	3238	3340	3397	kg

* Weight refers to the unit IP complete wuth 2 pumps module without tank.

> RHA

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of large size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, brazed plate heat exchanger, electronic expansion valve, reverse cycle valve, dehydrator

filter, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the plate heat exchanger.

The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module available in the configurations :

- storage tank arranged as buffer on the flow or as primary-secondary buffer
- 1 or 2 pumps
- standard or high head pump
- **Refrigerant circuit pressures visualization**
- high and low pressure gauges
- high and low pressure transducers

High temperature thermostat

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control) standard for AS and AX unit

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Tank antifreeze electrical heater

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Victaulic hydraulic fittings

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	348	371	436	489	554	619	kW
	Power input	123	131	152	174	193	219	kW
	EER	2,83	2,83	2,87	2,81	2,87	2,83	W/W
	ESEER	3,90	3,90	3,93	3,90	3,94	3,91	W/W
	Water flow rate	16,8	17,9	21,0	23,6	26,7	29,9	l/s
	Pressure drops	47	54	48	60	45	56	kPa
IR	Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	335	356	418	470	532	595	kW
	Power input	129	140	162	185	207	233	kW
	EER	2,60	2,54	2,58	2,54	2,57	2,55	W/W
	ESEER	3,78	3,74	3,77	3,74	3,76	3,75	W/W
	Water flow rate	16,1	17,2	20,1	22,6	25,6	28,7	l/s
	Pressure drops	43	50	44	55	41	52	kPa
IR	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	328	349	410	460	522	583	kW
	Power input	133	144	166	190	211	239	kW
	EER	2,47	2,42	2,47	2,42	2,47	2,44	W/W
	ESEER	3,87	3,84	3,89	3,84	3,88	3,86	W/W
	Water flow rate	15,8	16,8	19,7	22,2	25,1	28,1	l/s
	Pressure drops	42	47	42	53	40	49	kPa
IP	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	339	361	423	476	536	603	kW
	Power input	120	130	151	171	191	216	kW
	EER	2,83	2,78	2,80	2,78	2,81	2,79	W/W
	ESEER	3,85	3,83	3,84	3,84	3,85	3,85	W/W
	Water flow rate	16,3	17,4	20,4	22,9	25,8	29,0	l/s
	Pressure drops	45	51	45	57	42	53	kPa
A7W45	Heating capacity	373	397	460	521	580	664	kW
	Power input	123	132	152	174	192	223	kW
	COP	3,03	3,01	3,03	2,99	3,02	2,98	W/W
	Water flow rate	17,7	18,8	21,8	24,7	27,5	31,4	l/s
Pressure drops	53	59	51	66	48	62	kPa	
IP	Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	325	346	406	457	515	579	kW
	Power input	128	138	161	183	204	231	kW
	EER	2,54	2,51	2,52	2,50	2,52	2,51	W/W
	ESEER	3,70	3,69	3,69	3,67	3,67	3,69	W/W
	Water flow rate	15,6	16,7	19,5	22,0	24,7	27,9	l/s
	Pressure drops	41	47	41	52	38	49	kPa
A7W45	Heating capacity	358	380	441	500	557	638	kW
	Power input	118	125	145	166	184	213	kW
	COP	3,03	3,04	3,04	3,01	3,03	3,00	W/W
	Water flow rate	17,0	18,0	20,9	23,7	26,4	30,2	l/s
Pressure drops	48	54	47	61	44	57	kPa	
IP	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	319	340	397	447	505	568	kW
	Power input	131	140	165	187	209	236	kW
	EER	2,44	2,43	2,41	2,39	2,42	2,41	W/W
	ESEER	3,83	3,81	3,79	3,79	3,79	3,79	W/W
	Water flow rate	15,3	16,3	19,1	21,5	24,3	27,3	l/s
	Pressure drops	39	45	39	50	37	47	kPa
A7W45	Heating capacity	355	376	436	495	551	631	kW
	Power input	116	123	142	163	180	209	kW
	COP	3,06	3,06	3,07	3,04	3,06	3,02	W/W
	Water flow rate	16,8	17,8	20,7	23,4	26,1	29,9	l/s
Pressure drops	47	53	46	59	43	56	kPa	

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

_____ = Unit in **A CLASS**.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
Sound power level ^(E)	95	95	96	96	97	97	dB(A)
Sound pressure level at 1 meter	75	75	76	76	76	76	dB(A)
Sound pressure level at 5 meters	67	67	68	68	69	69	dB(A)
Sound pressure level at 10 meters	63	63	64	64	65	65	dB(A)
Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
Sound power level ^(E)	89	89	90	90	91	91	dB(A)
Sound pressure level at 1 meter	69	69	70	70	70	70	dB(A)
Sound pressure level at 5 meters	61	61	62	62	63	63	dB(A)
Sound pressure level at 10 meters	57	57	58	58	59	59	dB(A)
eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	560.6	630.6	
Sound power level ^(E)	86	86	87	87	88	88	dB(A)
Sound pressure level at 1 meter	66	66	67	67	67	67	dB(A)
Sound pressure level at 5 meters	58	58	59	59	60	60	dB(A)
Sound pressure level at 10 meters	54	54	55	55	56	56	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	350.5	390.6	440.6	490.6	560.6	630.6	
Power supply	400 - 3 - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	5 / 2	6 / 2					n°
Plant side heat exchanger type	stainless steel brazed plates						-
Source side heat exchanger type	finned coil						-
Fans type	axial						-
N° fans	8	10		12			n°
Tank volume	700						l
Hydraulic fittings	4" VICTAULIC						-

Electrical data

Standard unit	350.5	390.6	440.6	490.6	560.6	630.6	
FLA - Full load current at maximum tolerated conditions	287	302	355	399	451	494	A
FLI - Full load power input at maximum tolerated conditions	171	182	211	237	272	304	kW
MIC - Maximum instantaneous current of the unit	538	529	605	649	771	815	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	434	441	508	552	640	684	A
Unit with high head modulating pump	350.5	390.6	440.6	490.6	560.6	630.6	
FLA - Full load current at maximum tolerated conditions	308	323	382	426	478	521	A
FLI - Full load power input at maximum tolerated conditions	184	195	227	253	288	320	kW
MIC - Maximum instantaneous current of the unit	558	550	632	676	798	842	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	434	441	508	552	640	684	A

Operative range

Temperature	Unit type	Cooling		Heating		(°C)
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-10	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7 - W45	Cooling capacity	362	385	453	509	576	644	kW
	Total power input	120	129	150	170	189	213	kW
	EER	3,02	3	3,03	2,99	3,06	3,02	W/W
	HRE	3,75	3,72	3,76	3,71	3,79	3,75	W/W
	Water flow rate	17,5	18,6	21,8	24,6	27,8	31,0	l/s
	Water pressure drop	51	58	51	65	49	60	kPa
	Heating recovery capacity	87,7	93,4	110	123	139	156	kW
	Water flow rate recovery	4,19	4,46	5,26	5,88	6,64	7,45	l/s
	Water pressure drop recovery	24	27	25	32	31	39	kPa
IP	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7 - W45	Cooling capacity	352	376	440	494	558	626	kW
	Total power input	118	126	147	168	187	211	kW
	EER	2,99	2,97	2,98	2,94	2,98	2,97	W/W
	HRE	3,72	3,69	3,7	3,66	3,71	3,69	W/W
	Water flow rate	16,9	18,1	21,2	23,9	26,8	30,2	l/s
	Water pressure drop	48	55	49	62	45	57	kPa
	Heating recovery capacity	85,2	90,7	106	120	135	152	kW
	Water flow rate recovery	4,07	4,33	5,06	5,73	6,45	7,26	l/s
	Water pressure drop recovery	23	26	24	30	29	36	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7 - W45	Cooling capacity	362	385	453	509	576	644	kW
	Total power input	104	113	130	150	166	190	kW
	EER	3,48	3,42	3,49	3,38	3,48	3,38	W/W
	HRE	7,92	7,8	7,94	7,72	7,92	7,72	W/W
	Water flow rate	17,5	18,6	21,8	24,6	27,8	31,0	l/s
	Water pressure drop	51	58	51	65	49	60	kPa
	Heating recovery capacity	461	493	577	652	734	824	kW
	Water flow rate recovery	22	23,6	27,6	31,2	35,1	39,4	l/s
	Water pressure drop recovery	52	60	51	66	54	68	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

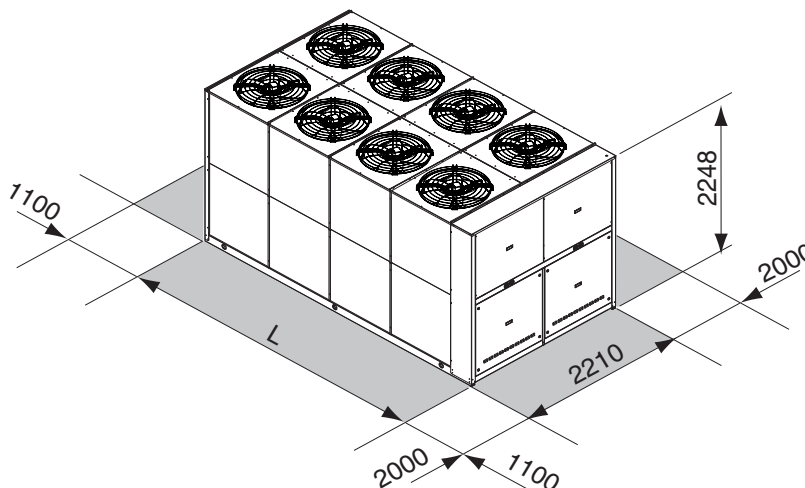
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- ATC outdoor high temperature protection function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Double set point function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	350.5	390.6	440.6	490.6	560.6	630.6	
L	5030	5030	5030	5030	5963	5963	mm
Operating maximum weight*	4849	5058	5120	5199	5489	5568	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RHA HE

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of large size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, brazed plate heat exchanger, electronic expansion valve, reverse cycle valve, dehydrator filter, axial fans with safety protection gril-

les, finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the plate heat exchanger.

The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

[Storing and pumping module](#) available in the configurations :

- storage tank arranged as buffer on the flow or as primary-secondary buffer
- 1 or 2 pumps
- standard or high head pump

[Refrigerant circuit pressures visualization](#)

- high and low pressure gauges
- high and low pressure transducers

[High temperature thermostat](#)

[Compressor starting](#)

- standard (contactors)
- soft starter

[Fans control](#)

- on-off control
- modulating control (condensation / evaporation control) standard for AS and AX unit

[Compressor power factor correction](#)

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- fuses
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Accessories

[Rubber vibration dampers](#)

[Spring vibration dampers](#)

[Coil protection grilles](#)

[Tank antifreeze electrical heater](#)

[Remote control](#)

[Modbus serial interface on RS485](#)

[Programmer clock](#)

[Phase sequence and voltage controller](#)

[Water flow switch](#)

[Viciaulic hydraulic fittings](#)

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	371	398	457	512	kW
	Power input	118	127	146	163	kW
	EER	3,14	3,13	3,13	3,14	W/W
	ESEER	4,27	4,29	4,25	4,29	W/W
	Water flow rate	17,8	19,1	21,9	24,6	l/s
	Pressure drops	33	38	29	37	kPa
IR	Low noise setting up (AS)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	356	382	439	491	kW
	Power input	125	134	154	172	kW
	EER	2,85	2,85	2,85	2,85	W/W
	ESEER	4,15	4,15	4,13	4,16	W/W
	Water flow rate	17,1	18,3	21,1	23,6	l/s
	Pressure drops	31	35	27	34	kPa
IR	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	349	374	429	482	kW
	Power input	126	136	156	175	kW
	EER	2,77	2,75	2,75	2,75	W/W
	ESEER	4,33	4,33	4,29	4,31	W/W
	Water flow rate	16,8	18,0	20,6	23,1	l/s
	Pressure drops	30	34	26	32	kPa
IP	Base setting up (AB)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	365	392	448	497	kW
	Power input	117	126	144	160	kW
	EER	3,12	3,11	3,11	3,11	W/W
	ESEER	4,24	4,26	4,23	4,25	W/W
	Water flow rate	17,5	18,8	21,5	23,9	l/s
	Pressure drops	32	37	28	35	kPa
A7W45	Heating capacity	387	417	475	534	kW
	Power input	120	129	147	165	kW
	COP	3,23	3,23	3,23	3,24	W/W
	Water flow rate	18,4	19,8	22,6	25,4	l/s
Pressure drops	36	41	31	39	kPa	
IP	Low noise setting up (AS)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	350	376	430	478	kW
	Power input	124	133	152	169	kW
	EER	2,82	2,83	2,83	2,83	W/W
	ESEER	4,12	4,12	4,10	4,12	W/W
	Water flow rate	16,8	18,1	20,6	22,9	l/s
	Pressure drops	30	34	26	32	kPa
A7W45	Heating capacity	372	399	456	513	kW
	Power input	113	121	139	156	kW
	COP	3,29	3,30	3,28	3,29	W/W
	Water flow rate	17,7	19,0	21,7	24,4	l/s
Pressure drops	33	38	28	36	kPa	
IP	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	343	368	421	468	kW
	Power input	125	134	154	171	kW
	EER	2,74	2,74	2,73	2,74	W/W
	ESEER	4,29	4,29	4,26	4,29	W/W
	Water flow rate	16,5	17,7	20,2	22,5	l/s
	Pressure drops	29	33	25	31	kPa
A7W45	Heating capacity	368	395	451	507	kW
	Power input	109	118	134	151	kW
	COP	3,38	3,35	3,37	3,36	W/W
	Water flow rate	17,5	18,8	21,5	24,1	l/s
Pressure drops	32	37	28	35	kPa	

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
= Unit in **A CLASS**.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	350.5	390.6	440.6	490.6	
Sound power level ^(E)	95	95	96	96	dB(A)
Sound pressure level at 1 meter	75	75	76	76	dB(A)
Sound pressure level at 5 meters	67	67	68	68	dB(A)
Sound pressure level at 10 meters	63	63	64	64	dB(A)
Low noise setting up (AS)	350.5	390.6	440.6	490.6	
Sound power level ^(E)	89	89	90	90	dB(A)
Sound pressure level at 1 meter	69	69	70	70	dB(A)
Sound pressure level at 5 meters	61	61	62	62	dB(A)
Sound pressure level at 10 meters	57	57	58	58	dB(A)
eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	
Sound power level ^(E)	86	86	87	87	dB(A)
Sound pressure level at 1 meter	66	66	67	67	dB(A)
Sound pressure level at 5 meters	58	58	59	59	dB(A)
Sound pressure level at 10 meters	54	54	55	55	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	350.5	390.6	440.6	490.6	
Power supply	400 - 3 - 50				V-ph-Hz
Compressor type	scroll				-
N° compressors / N° refrigerant circuits	5 / 2	6 / 2			n°
Plant side heat exchanger type	stainless steel brazed plates				-
Source side heat exchanger type	finned coil				-
Fans type	axial				-
N° fans	8	10			n°
Tank volume	700				l
Hydraulic fittings	4" VICTAULIC				-

Electrical data

Standard unit	350.5	390.6	440.6	490.6	
FLA - Full load current at maximum tolerated conditions	287	302	355	399	A
FLI - Full load power input at maximum tolerated conditions	171	182	211	237	kW
MIC - Maximum instantaneous current of the unit	538	529	605	649	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	414	421	481	525	A
Unit with high head modulating pump	350.5	390.6	440.6	490.6	
FLA - Full load current at maximum tolerated conditions	308	323	382	426	A
FLI - Full load power input at maximum tolerated conditions	184	195	227	253	kW
MIC - Maximum instantaneous current of the unit	558	550	632	676	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	434	441	508	552	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-15	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	
A35W7 - W45	Cooling capacity	386	413	475	532	kW
	Total power input	115,6	123,8	142,6	159,1	kW
	EER	3,34	3,34	3,33	3,34	W/W
	HRE	4,21	4,22	4,21	4,23	W/W
	Water flow rate	18,5	19,9	22,8	25,6	l/s
	Water pressure drop	36	41	31	40	kPa
	Heating recovery capacity	101	109	125	140	kW
	Water flow rate recovery	4,82	5,20	5,96	6,71	l/s
	Water pressure drop recovery	24	27	25	32	kPa
IP	Base setting up (AB)	350.5	390.6	440.6	490.6	
A35W7 - W45	Cooling capacity	380	407	466	517	kW
	Total power input	114,5	122,7	140,5	155,9	kW
	EER	3,32	3,32	3,31	3,32	W/W
	HRE	4,12	4,12	4,11	4,12	W/W
	Water flow rate	18,2	19,6	22,4	24,8	l/s
	Water pressure drop	35	40	30	37	kPa
	Heating recovery capacity	92	98	112	125	kW
	Water flow rate recovery	4,38	4,70	5,35	5,97	l/s
	Water pressure drop recovery	20	22	20	25	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	
A35W7 - W45	Cooling capacity	386	413	475	532	kW
	Total power input	100	108	123	140	kW
	EER	3,85	3,81	3,85	3,81	W/W
	HRE	8,65	8,58	8,65	8,57	W/W
	Water flow rate	18,50	19,9	22,8	25,6	l/s
	Water pressure drop	36	41	31	40	kPa
	Heating recovery capacity	481	516	592	665	kW
	Water flow rate recovery	23,0	24,7	28,3	31,8	l/s
	Water pressure drop recovery	52	59	48	61	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

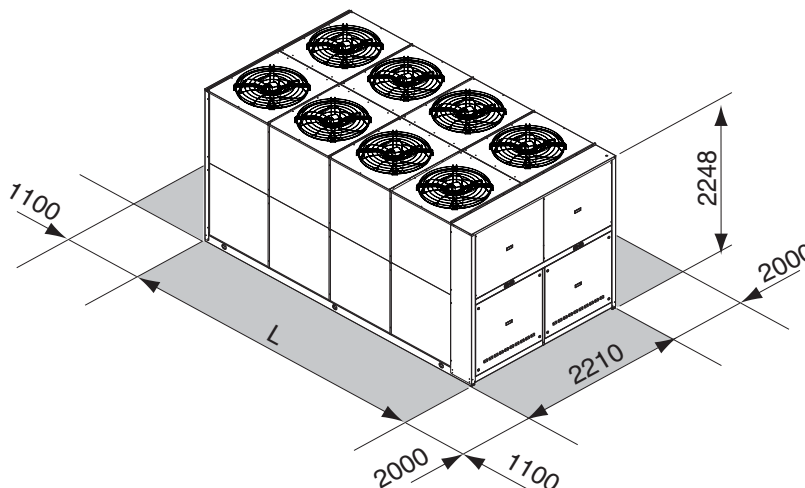
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- ATC outdoor high temperature protection function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Double set point function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	350.5	390.6	440.6	490.6	
L	5030	5030	5030	5030	mm
Operating maximum weight*	4900	5110	5220	5300	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RHA ST

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version (with plate heat exchanger)
VR	Total recovery version (with plate heat exchanger)

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of large size.

All the units are suitable for outdoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, shell and tube heat exchanger with threaded or

victaulic fittings (according to the model), electronic expansion valve, reverse cycle valve, dehydrator filter, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the heat exchanger.

The heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing module available in the configurations :

- 1 or 2 pumps
- standard or high head pump
- Refrigerant circuit pressures visualization**
- high and low pressure gauges
- high and low pressure transducers

High temperature thermostat

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control) standard for AS and AX unit

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Victaulic hydraulic fittings

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	348	371	436	489	554	619	kW
	Power input	123	131	152	174	193	219	kW
	EER	2,83	2,83	2,87	2,81	2,87	2,83	W/W
	ESEER	3,90	3,90	3,93	3,90	3,94	3,91	W/W
	Water flow rate	16,8	17,9	21,0	23,6	26,7	29,9	l/s
	Pressure drops	36	35	50	67	39	67	kPa
IR	Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	335	356	418	470	532	595	kW
	Power input	129	140	162	185	207	233	kW
	EER	2,60	2,54	2,58	2,54	2,57	2,55	W/W
	ESEER	3,78	3,74	3,77	3,74	3,76	3,75	W/W
	Water flow rate	16,1	17,2	20,1	22,6	25,6	28,7	l/s
	Pressure drops	33	32	46	62	36	62	kPa
IR	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	328	349	410	460	522	583	kW
	Power input	133	144	166	190	211	239	kW
	EER	2,47	2,42	2,47	2,42	2,47	2,44	W/W
	ESEER	3,87	3,84	3,89	3,84	3,88	3,86	W/W
	Water flow rate	15,8	16,8	19,7	22,2	25,1	28,1	l/s
	Pressure drops	32	31	44	59	35	59	kPa
IP	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	339	361	423	476	536	603	kW
	Power input	120	130	151	171	191	216	kW
	EER	2,83	2,78	2,80	2,78	2,81	2,79	W/W
	ESEER	3,85	3,83	3,84	3,84	3,85	3,85	W/W
	Water flow rate	16,3	17,4	20,4	22,9	25,8	29,0	l/s
	Pressure drops	34	33	47	63	37	63	kPa
A7W45	Heating capacity	373	397	460	521	580	664	kW
	Power input	123	132	152	174	192	223	kW
	COP	3,03	3,01	3,03	2,99	3,02	2,98	W/W
	Water flow rate	17,7	18,8	21,8	24,7	27,5	31,4	l/s
Pressure drops	40	38	54	74	41	74	kPa	
IP	Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	325	346	406	457	515	579	kW
	Power input	128	138	161	183	204	231	kW
	EER	2,54	2,51	2,52	2,50	2,52	2,51	W/W
	ESEER	3,70	3,69	3,69	3,67	3,67	3,69	W/W
	Water flow rate	15,6	16,7	19,5	22,0	24,7	27,9	l/s
	Pressure drops	31	30	44	59	33	58	kPa
A7W45	Heating capacity	358	380	441	500	557	638	kW
	Power input	118	125	145	166	184	213	kW
	COP	3,03	3,04	3,04	3,01	3,03	3,00	W/W
	Water flow rate	17,0	18,0	20,9	23,7	26,4	30,2	l/s
Pressure drops	37	35	50	68	38	69	kPa	
IP	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	319	340	397	447	505	568	kW
	Power input	131	140	165	187	209	236	kW
	EER	2,44	2,43	2,41	2,39	2,42	2,41	W/W
	ESEER	3,83	3,81	3,79	3,79	3,79	3,79	W/W
	Water flow rate	15,3	16,3	19,1	21,5	24,3	27,3	l/s
	Pressure drops	30	29	42	56	32	56	kPa
A7W45	Heating capacity	355	376	436	495	551	631	kW
	Power input	116	123	142	163	180	209	kW
	COP	3,06	3,06	3,07	3,04	3,06	3,02	W/W
	Water flow rate	16,8	17,8	20,7	23,4	26,1	29,9	l/s
Pressure drops	36	35	49	66	37	67	kPa	

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
Sound power level	95	95	96	96	97	97	dB(A)
Sound pressure level at 1 meter	75	75	76	76	76	76	dB(A)
Sound pressure level at 5 meters	67	67	68	68	69	69	dB(A)
Sound pressure level at 10 meters	63	63	64	64	65	65	dB(A)
Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
Sound power level	89	89	90	90	91	91	dB(A)
Sound pressure level at 1 meter	69	69	70	70	70	70	dB(A)
Sound pressure level at 5 meters	61	61	62	62	63	63	dB(A)
Sound pressure level at 10 meters	57	57	58	58	59	59	dB(A)
eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	560.6	630.6	
Sound power level	86	86	87	87	88	88	dB(A)
Sound pressure level at 1 meter	66	66	67	67	67	67	dB(A)
Sound pressure level at 5 meters	58	58	59	59	60	60	dB(A)
Sound pressure level at 10 meters	54	54	55	55	56	56	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	350.5	390.6	440.6	490.6	560.6	630.6	
Power supply	400 - 3 - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	5 / 2	6 / 2					n°
Plant side heat exchanger type	shell and tube						-
Source side heat exchanger type	finned coil						-
Fans type	axial						-
N° fans	8	10		12			n°
Water volume plant side heat exchanger	93.9	87.5	80.2	80.2	124.7	113.5	l
Hydraulic fittings plant side heat exchanger	5" VIC			6" VIC			-

Electrical data

Standard unit	350.5	390.6	440.6	490.6	560.6	630.6	
FLA - Full load current at maximum tolerated conditions	287	302	355	399	451	494	A
FLI - Full load power input at maximum tolerated conditions	171	182	211	237	272	304	kW
MIC - Maximum instantaneous current of the unit	538	529	605	649	771	815	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	434	441	508	552	640	684	A
Unit with high head modulating pump	350.5	390.6	440.6	490.6	560.6	630.6	
FLA - Full load current at maximum tolerated conditions	308	323	382	426	478	521	A
FLI - Full load power input at maximum tolerated conditions	184	195	227	253	288	320	kW
MIC - Maximum instantaneous current of the unit	558	550	632	676	798	842	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	434	441	508	552	640	684	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-10	40*	(°C)
Water outlet temperature	IR, IP	5	15	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional plate heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7 - W45	Cooling capacity	362	385	453	509	576	644	kW
	Total power input	120	129	150	170	189	213	kW
	EER	3,02	3	3,03	2,99	3,06	3,02	W/W
	HRE	3,75	3,72	3,76	3,71	3,79	3,75	W/W
	Water flow rate	17,5	18,6	21,8	24,6	27,8	31,0	l/s
	Water pressure drop	39	38	54	72	42	73	kPa
	Heating recovery capacity	87,7	93,4	110	123	139	156	kW
	Water flow rate recovery	4,19	4,46	5,26	5,88	6,64	7,45	l/s
	Water pressure drop recovery	24	27	25	32	31	39	kPa
	IP	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6
A35W7 - W45	Cooling capacity	352	376	440	494	558	626	kW
	Total power input	118	126	147	168	187	211	kW
	EER	2,99	2,97	2,98	2,94	2,98	2,97	W/W
	HRE	3,72	3,69	3,7	3,66	3,71	3,69	W/W
	Water flow rate	16,9	18,1	21,2	23,9	26,8	30,2	l/s
	Water pressure drop	36	36	51	69	39	69	kPa
	Heating recovery capacity	85,2	90,7	106	120	135	152	kW
	Water flow rate recovery	4,07	4,33	5,06	5,73	6,45	7,26	l/s
	Water pressure drop recovery	23	26	24	30	29	36	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7 - W45	Cooling capacity	362	385	453	509	576	644	kW
	Total power input	104	113	130	150	166	190	kW
	EER	3,48	3,42	3,49	3,38	3,48	3,38	W/W
	HRE	7,92	7,8	7,94	7,72	7,92	7,72	W/W
	Water flow rate	17,5	18,6	21,8	24,6	27,8	31,0	l/s
	Water pressure drop	39	38	55	74	43	74	kPa
	Heating recovery capacity	461	493	577	652	734	824	kW
	Water flow rate recovery	22	23,6	27,6	31,2	35,1	39,4	l/s
	Water pressure drop recovery	52	60	51	66	54	68	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

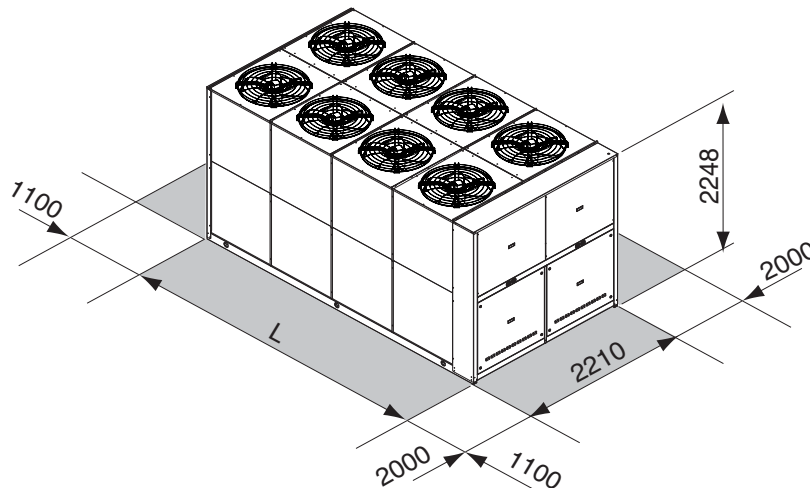
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- ATC outdoor high temperature protection function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Double set point function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	350.5	390.6	440.6	490.6	560.6	630.6	
L	5030	5030	5030	5030	5963	5963	mm
Operating maximum weight*	3853	4053	4087	4166	4477	4560	kg

* Weight refers to the unit IP complete with 2 pumps module without tank.

> RHV

AIR WATER CHILLER FOR OUTDOOR INSTALLATION



Available range

Unit type

IR	Chiller
BR	Chiller Brine

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This range of air-water chillers are designed to meet the climate control and air conditioning needs of large capacity systems in the industrial and commercial sectors. Suitable for outdoor installation, as standard the units are equipped with 2 TWIN-SCREW semihermetic compressors mounted on rubber vibration dampers, able to modulate the capacity of the unit from minimum 12.5 (not for all configurations) to 100%, plant side exchanger shell and tube type complete with Victaulic water connections, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, optimised for R134a with high efficiency grooved tubes, protected by means of a water differential pressure switch and from the winter freeze y means of an antifreeze heater,

source side exchanger finned coils with large heat exchange surface, made with copper pipes and louvered aluminium fins, 2 independent refrigerant circuits, complete with electronic expansion valve which optimises unit efficiency at full and partial loads and enables maximum seasonal efficiency, maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/moisture indicator, compressor discharge and liquid shut-off valves, high and low pressure transducers, electrical panel with minimum protection IP54 containing the electrical equipment and all the components to control and command the unit complete with main supply breaker with door lock function, phase sequence control device, microprocessor controller with display (4 lines of 20 characters). In addition to the standard features the Low noise setting up (AS) is equipped with fans reduced speed and compressors positioned inside a soundproofed cabin, made with profiles and panels insulated with acoustic material. In addition to the standard features the eXtra low noise setting up (AX) is equipped with coils with larger surface in order to further reduce the fans speed and compressors positioned inside a soundproofed cabin, made with profiles and panels insulated with superior acoustic material. The range is completed with numerous accessories and options, including the possibility of having units equipped with 2 pumps pumping modules, 2 poles for Basic Version and 4 poles for Low Noise and Extra Low Noise setting up. The units are carefully built and tested, therefore installation only requires the electrical and hydraulic connections.

Options

Compressor starting

- standard (contactors)
- soft starter

Compressors power factor correction

Electrical load protection

- standard (fuses)
- thermal magnetic circuit breakers

Accessories

Integrated Pumping Modules with 2 pumps, supplied in 4 different configurations:

- Pumps 2 poles standard head
- Pumps 2 poles high head
- Pumps 2 poles extra high head
- Pumps 4 poles standard head

Condensation Control Device (standard for AS and AX), enables unit operation to outside air temperatures $\leq -10^{\circ}\text{C}$

Spring vibration dampers

Coil protection grilles

Antintrusion protection grilles

External Water Storage Tank and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.

Antifreeze electrical heaters for Storage tank

Remote controller

Serial Interface Modbus on RS 485

Programmer clock

Phase sequence and voltage controller

High and low pressure gauges

Compressor suction shut-off valve

Water flow switch

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7	Cooling capacity	329	363	412	464	507	589	660	738	795	883	980	1104	kW
	Power input	122	139	154	169	192	215	230	265	288	332	359	389	kW
	EER	2,71	2,6	2,68	2,74	2,63	2,74	2,88	2,78	2,77	2,66	2,73	2,84	W/W
	ESEER	3,34	3,23	3,33	3,44	3,31	3,46	3,54	3,51	3,51	3,42	3,48	3,69	W/W
	Water flow rate	15,9	17,5	19,8	22,4	24,4	28,4	31,8	35,5	38,3	42,6	47,2	53,2	l/s
	Pressure drops	49	57	44	56	53	53	44	45	52	60	42	56	kPa
IR	Low noise setting up (AS)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7	Cooling capacity	319	351	396	443	490	563	638	710	763	849	937	1071	kW
	Power input	120	139	154	171	191	219	239	270	296	334	367	400	kW
	EER	2,65	2,52	2,58	2,6	2,57	2,57	2,67	2,63	2,58	2,54	2,55	2,68	W/W
	ESEER	3,45	3,29	3,32	3,38	3,32	3,31	3,44	3,39	3,35	3,32	3,31	3,55	W/W
	Water flow rate	15,3	16,9	19,1	21,4	23,6	27,1	30,7	34,2	36,7	40,9	45,1	51,6	l/s
	Pressure drops	46	54	40	51	50	48	41	41	47	55	39	53	kPa
IR	eXtra low noise setting up (AX)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7	Cooling capacity	305	348	389	432	486	547	632	695	748	857	937	1067	kW
	Power input	125	141	157	176	194	230	249	277	304	337	374	412	kW
	EER	2,44	2,47	2,47	2,45	2,51	2,38	2,54	2,5	2,47	2,55	2,51	2,59	W/W
	ESEER	3,22	3,29	3,22	3,2	3,28	3,1	3,32	3,28	3,24	3,39	3,3	3,48	W/W
	Water flow rate	14,7	16,8	18,7	20,8	23,4	26,3	30,4	33,4	36	41,3	45,1	51,4	l/s
	Pressure drops	42	53	39	48	49	46	40	40	46	56	39	52	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

_____ = Unit in A CLASS.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

Acoustic performances

Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Sound power level ^(E)	98	98	98	98	100	100	100	101	101	102	102	103	dB(A)
Sound pressure level at 1 meter	79	79	79	79	80	80	80	80	80	81	81	82	dB(A)
Sound pressure level at 5 meters	71	71	71	71	72	72	72	73	73	74	73	74	dB(A)
Sound pressure level at 10 meters	66	66	66	66	67	67	67	69	69	69	69	70	dB(A)
Low noise setting up (AS)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Sound power level ^(E)	93	93	93	93	94	94	94	96	96	97	97	98	dB(A)
Sound pressure level at 1 meter	73	73	73	73	74	74	74	75	75	75	75	76	dB(A)
Sound pressure level at 5 meters	65	65	65	65	67	66	66	67	67	68	68	69	dB(A)
Sound pressure level at 10 meters	61	61	61	61	62	62	62	63	63	64	64	65	dB(A)
eXtra low noise setting up (AX)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Sound power level ^(E)	87	87	87	87	88	88	90	91	91	92	92	93	dB(A)
Sound pressure level at 1 meter	67	67	67	67	68	68	69	69	69	70	70	71	dB(A)
Sound pressure level at 5 meters	59	59	59	59	61	60	62	63	63	63	63	65	dB(A)
Sound pressure level at 10 meters	55	55	55	55	56	56	57	58	58	59	59	60	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Power supply	400 - 3 - 50												V-ph-Hz
Compressor type	twin-screw												-
N° compressors / N° refrigerant circuits	2 / 2												n°
Part load	12.5 / 100% stepless												-
Plant side heat exchanger type	shell & tube												-
Source side heat exchanger type	finned coil												-
Fans type	axial												n°
N° fans (AB / AS)	8	8	8	8	10	10	10	12	12	14	14	16	l
N° fans (AX)	8	8	8	8	10	10	12	14	14	16	16	20	
Hydraulic fittings (victaulic)	DN100	DN100	DN125	DN125	DN125	DN150	DN150	DN150	DN150	DN200	DN200	DN200	-

Electrical data

Standard unit		330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
FLA - Full load current at maximum tolerated conditions	AB	274	304	332	360	409	469	469	557	594	684	746	755	A
	AS	274	304	332	360	409	469	469	557	594	684	746	755	
	AX	258	288	316	344	389	449	454	537	574	661	723	732	
FLI - Full load power input at maximum tolerated conditions	AB	164	184	200	216	242	282	282	339	364	412	452	456	kW
	AS	164	184	200	216	242	282	282	339	364	412	452	456	
	AX	157	177	193	209	233	273	275	330	355	402	442	446	
MIC - Maximum instantaneous current of the unit	AB	504	592	689	717	838	921	921	751	788	958	1053	1062	A
	AS	504	592	689	717	838	921	921	751	788	958	1053	1062	
	AX	488	576	673	701	818	901	906	731	768	935	1030	1039	

Operative range

Cooling

Temperature	Unit type	min	max	
Outdoor air inlet temperature	IR, BR	-10*	50**	(°C)
Water outlet temperature	IR	5	15	(°C)
Water outlet temperature	BR	-8	5	(°C)
Water outlet temperature (VD)	IR, BR	35	55	(°C)
Water outlet temperature (VR)	IR, BR	35	55	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

USER INTERFACING

The controller on the unit is designed to ensure energy-saving and efficiency. It enables the setting of:

- Double Set Point
- Demand Limit
- ATC function to avoid the block of the unit with high outdoor air temperature
- Dinamic set point
- Noise emission control
- Remote stand by



VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

DESUPERHEATERS VERSION VD

Allows the production of cold water as in the standard version and, simultaneously, of hot water at temperatures from 35 to 50 ° C. This is achieved by inserting, between the compressor and finned coil, a heat exchanger water-gas cooler which allows for heat recovery from 15 to 20% of thermal power.

TOTAL RECOVERY VERSION VR

Allows the production of cold water and simultaneously of hot water at temperatures from 35 to 50 ° C by using a heat exchanger, water-gas cooler which allows the total recovery of thermal power. The inclusion and exclusion of the total heat recovery, is done by a valve placed on the discharge of the compressors on each circuit.

Desupeheater Version (VD) - NET NOMINAL performances

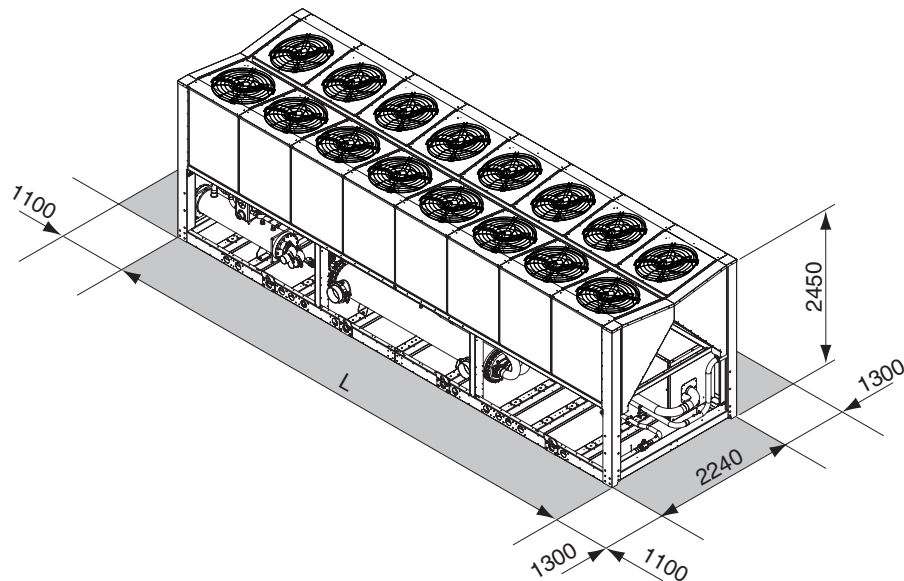
IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7 - W45	Cooling capacity	342	377	429	482	526	612	687	767	827	918	1018	1148	kW
	Total power input	118	136	149	165	187	209	223	257	279	323	349	378	kW
	EER	2,9	2,78	2,87	2,93	2,81	2,94	3,08	2,99	2,96	2,85	2,92	3,03	W/W
	HRE	3,69	3,58	3,69	3,75	3,63	3,76	3,91	3,81	3,78	3,67	3,76	3,86	W/W
	Water flow rate	16,5	18,2	20,6	23,3	25,4	29,5	33	36,9	39,9	44,3	49	55,4	l/s
	Water pressure drop	53	62	47	60	58	57	47	48	56	65	46	61	kPa
	Heating recovery capacity	93	109	122	135	152	171	185	212	231	266	292	313	kW
	Water flow rate recovery	4,5	5,2	5,8	6,4	7,2	8,2	8,8	10,1	11,1	12,7	14	15	l/s
	Water pressure drop recovery	10	13	17	10	13	12	14	18	15	12	15	17	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7 - W45	Cooling capacity	325	359	413	468	519	593	653	742	799	897	989	1122	kW
	Total power input	109	126	139	153	169	193	212	238	263	297	330	352	kW
	EER	3	2,84	2,97	3,05	3,08	3,07	3,09	3,11	3,04	3,02	3	3,18	W/W
	HRE	6,95	6,64	6,9	7,06	7,11	7,09	7,13	7,17	7,04	6,99	6,95	7,32	W/W
	Water flow rate	15,7	17,3	19,9	22,6	25	28,6	31,4	35,7	38,5	43,3	47,6	54,1	l/s
	Water pressure drop	48	56	44	56	56	54	43	45	52	62	43	58	kPa
	Heating recovery capacity	429	479	545	614	680	777	855	968	1049	1180	1303	1457	kW
	Water flow rate recovery	20,5	22,9	26	29,3	32,5	37,1	40,8	46,3	50,1	56,4	62,2	69,6	l/s
	Water pressure drop recovery	27	33	43	45	47	43	47	44	52	47	48	50	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input
A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



		330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
L	AB	4070	4070	4070	4070	5005	5005	5005	5950	5950	6900	6900	7810	mm
	AS	4070	4070	4070	4070	5005	5005	5005	5950	5950	6900	6900	7810	mm
	AX	4070	4070	4070	4070	5005	5005	5950	6900	6900	7810	7810	10000	mm
Operating maximum weight*		3734	3800	4192	4534	4731	5059	5318	6567	6715	7377	8032	9091	kg

* Weight refers to the unit IR with tank and pumping module 2 pumps.

> RHV HE

AIR WATER CHILLER FOR OUTDOOR INSTALLATION



Available range

Unit type

IR	Chiller
BR	Chiller Brine

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This range of air-water chillers are designed to meet the climate control and air conditioning needs of large capacity systems in the industrial and commercial sectors. Suitable for outdoor installation, as standard the units are equipped with 2 TWIN-SCREW semihermetic compressors mounted on rubber vibration dampers, able to modulate the capacity of the unit from minimum 12.5 (not for all configurations) to 100%, plant side exchanger shell and tube type complete with Victaulic water connections, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, optimised for R134a with high efficiency grooved tubes, protected by means of a water differential pressure switch and from the winter freeze by means of an antifreeze

heater, source side exchanger finned coils with large heat exchange surface, made with copper pipes and louvered aluminium fins, 2 independent refrigerant circuits, complete with electronic expansion valve which optimises unit efficiency at full and partial loads and enables maximum seasonal efficiency, maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/moisture indicator, compressor discharge and liquid shut-off valves, high and low pressure transducers, electrical panel with minimum protection IP54 containing the electrical equipment and all the components to control and command the unit complete with main supply breaker with door lock function, phase sequence control device, microprocessor controller with display (4 lines of 20 characters). In addition to the standard features the Low noise setting up (AS) is equipped with fans reduced speed and compressors positioned inside a soundproofed cabin, made with profiles and panels insulated with acoustic material. In addition to the standard features the eXtra low noise setting up (AX) is equipped with coils with larger surface in order to further reduce the fans speed and compressors positioned inside a soundproofed cabin, made with profiles and panels insulated with superior acoustic material. The range is completed with numerous accessories and options, including the possibility of having units equipped with pumping modules with pumps 2 poles for Basic Version and 4 poles for Low Noise and Extra Low Noise setting up. The units are carefully built and tested, therefore installation only requires the electrical and hydraulic connections.

Options

Compressor starting

- standard (contactors)
- soft starter

Compressors power factor correction

Electrical load protection

- standard (fuses)
- thermal magnetic circuit breakers

Accessories

Integrated Pumping Modules with 2 pumps, supplied in 4 different configurations:

- Pumps 2 poles standard head
- Pumps 2 poles high head
- Pumps 2 poles extra high head
- Pumps 4 poles standard head

Condensation Control Device (standard for AS and AX), enables unit operation to outside air temperatures $\leq -10^{\circ}\text{C}$

Spring vibration dampers

Coil protection grilles

Antintrusion protection grilles

External Water Storage Tank and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.

Antifreeze electrical heaters for Storage tank

Remote controller

Serial Interface Modbus on RS 485

Programmer clock

Phase sequence and voltage controller

High and low pressure gauges

Compressor suction shut-off valve

Water flow switch

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7	Cooling capacity	356	395	451	502	557	638	686	796	858	970	1079	1172	kW
	Power input	118	130	147	163	177	206	220	257	278	318	349	368	kW
	EER	3,02	3,04	3,07	3,08	3,14	3,1	3,12	3,09	3,09	3,05	3,09	3,19	W/W
	ESEER	3,61	3,63	3,65	3,69	3,72	3,74	3,77	3,74	3,74	3,7	3,76	3,87	W/W
	Water flow rate	17,2	19	21,7	24,2	26,8	30,7	33,1	38,4	41,3	46,7	52,1	56,5	l/s
	Pressure drops	51	45	40	48	39	49	52	57	50	51	64	53	kPa
	IR	Low noise setting up (AS)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2
A35W7	Cooling capacity	347	386	438	485	544	618	675	774	832	941	1044	1152	kW
	Power input	115	128	145	163	175	208	227	259	283	318	350	374	kW
	EER	3,03	3,03	3,03	2,99	3,1	2,98	2,98	2,99	2,94	2,96	2,98	3,08	W/W
	ESEER	3,81	3,8	3,79	3,68	3,86	3,84	3,85	3,86	3,76	3,82	3,87	3,98	W/W
	Water flow rate	16,7	18,6	21,1	23,4	26,1	29,8	32,5	37,3	40	45,3	50,4	55,5	l/s
	Pressure drops	49	43	38	45	37	46	51	54	47	48	60	51	kPa
	IR	eXtra low noise setting up (AX)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2
A35W7	Cooling capacity	335	376	422	463	529	590	650	741	799	913	1022	1121	kW
	Power input	117	130	149	169	182	218	238	269	294	323	362	394	kW
	EER	2,85	2,88	2,82	2,74	2,91	2,71	2,73	2,76	2,72	2,83	2,82	2,85	W/W
	ESEER	3,69	3,71	3,66	3,64	3,76	3,62	3,64	3,69	3,66	3,76	3,74	3,78	W/W
	Water flow rate	16,1	18,1	20,3	22,3	25,4	28,4	31,3	35,7	38,5	44	49,3	54	l/s
	Pressure drops	45	41	35	41	35	42	47	49	43	45	57	48	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

_____ = Unit in **A CLASS**.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

Acoustic performances

Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Sound power level ^(E)	97	97	97	97	99	99	99	100	100	101	101	102	dB(A)
Sound pressure level at 1 meter	77	77	77	77	79	78	78	79	79	80	79	80	dB(A)
Sound pressure level at 5 meters	69	69	69	69	71	71	71	72	72	73	72	73	dB(A)
Sound pressure level at 10 meters	65	65	65	65	67	67	67	67	67	68	68	69	dB(A)
Low noise setting up (AS)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Sound power level ^(E)	92	92	92	92	93	93	93	95	95	96	96	97	dB(A)
Sound pressure level at 1 meter	72	72	72	72	73	72	72	74	74	75	74	75	dB(A)
Sound pressure level at 5 meters	64	64	64	64	65	65	65	67	67	68	67	68	dB(A)
Sound pressure level at 10 meters	60	60	60	60	61	61	61	62	62	63	63	64	dB(A)
eXtra low noise setting up (AX)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Sound power level ^(E)	87	87	88	88	90	90	90	91	91	92	92	93	dB(A)
Sound pressure level at 1 meter	67	67	68	68	70	69	69	70	70	71	70	71	dB(A)
Sound pressure level at 5 meters	59	59	60	60	62	62	62	63	63	64	63	64	dB(A)
Sound pressure level at 10 meters	55	55	56	56	58	58	58	58	58	59	59	60	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Power supply	400 - 3 - 50												V-ph-Hz
Compressor type	twin-screw												-
N° compressors / N° refrigerant circuits	2 / 2												n°
Part load	12.5 / 100% stepless												-
Plant side heat exchanger type	shell & tube												-
Source side heat exchanger type	finned coil												-
Fans type	axial												n°
N° fans	8		10		12		14		16		20		l
Hydraulic fittings (victaulic)	DN150		DN200										-

Electrical data

Standard unit	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
FLA - Full load current at maximum tolerated conditions	274	304	341	369	409	478	478	565	602	693	772	772	A
FLI - Full load power input at maximum tolerated conditions	164	184	204	220	242	286	286	343	368	416	464	464	kW
MIC - Maximum instantaneous current of the unit	504	592	698	726	838	930	930	759	796	967	1079	1079	A

Operative range

Cooling

Temperature	Unit type	min	max	
Outdoor air inlet temperature	IR, BR	-10*	52**	(°C)
Water outlet temperature	IR	5	15	(°C)
Water outlet temperature	BR	-8	5	(°C)
Water outlet temperature (VD)	IR, BR	35	50	(°C)
Water outlet temperature (VR)	IR, BR	35	50	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

USER INTERFACING

The controller on the unit is designed to ensure energy-saving and efficiency.

It enables the setting of:

- Double Set Point
- Demand Limit
- ATC function to avoid the block of the unit with high outdoor air temperature
- Dinamic set point
- Noise emission control
- Remote stand by



VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

DESUPERHEATERS VERSION VD

Allows the production of cold water as in the standard version and, simultaneously, of hot water at temperatures from 35 to 50 ° C. This is achieved by inserting, between the compressor and finned coil, a heat exchanger water-gas cooler which allows for heat recovery from 15 to 20% of thermal power.

TOTAL RECOVERY VERSION VR

Allows the production of cold water and simultaneously of hot water at temperatures from 35 to 50 ° C by using a heat exchanger, water-gas cooler which allows the total recovery of thermal power. The inclusion and exclusion of the total heat recovery, is done by a valve placed on the discharge of the compressors on each circuit.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7 - W45	Cooling capacity	370	411	469	522	578	663	714	827	892	1008	1122	1218	kW
	Total power input	115	127	143	159	173	202	214	251	272	311	341	359	kW
	EER	3,21	3,23	3,27	3,27	3,34	3,29	3,33	3,29	3,28	3,24	3,28	3,39	W/W
	HRE	4,01	4,05	4,08	4,09	4,18	4,11	4,15	4,11	4,12	4,08	4,1	4,22	W/W
	Water flow rate	17,8	19,8	22,6	25,1	27,8	31,9	34,4	39,9	43	48,6	54,2	58,7	l/s
	Water pressure drop	55	49	43	52	42	53	56	62	54	55	69	57	kPa
	Heating recovery capacity	93	104	116	130	144	165	177	207	227	259	278	297	kW
	Water flow rate recovery	4,4	5	5,5	6,2	6,9	7,9	8,5	9,9	10,8	12,4	13,3	14,2	l/s
	Water pressure drop recovery	10	12	15	9	11	11	13	18	15	11	14	15	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7 - W45	Cooling capacity	354	390	447	499	552	635	684	794	865	992	1082	1169	kW
	Total power input	107	121	133	147	161	187	200	233	251	283	313	333	kW
	EER	3,31	3,23	3,37	3,4	3,42	3,4	3,43	3,4	3,44	3,5	3,45	3,51	W/W
	HRE	7,58	7,41	7,69	7,76	7,79	7,74	7,8	7,76	7,84	7,95	7,86	7,97	W/W
	Water flow rate	17,1	18,8	21,5	24	26,5	30,6	33	38,3	41,7	47,8	52,2	56,3	l/s
	Water pressure drop	51	44	39	47	38	49	52	57	51	53	64	53	kPa
	Heating recovery capacity	456	505	574	639	705	813	874	1016	1104	1261	1380	1486	kW
	Water flow rate recovery	21,8	24,1	27,4	30,5	33,7	38,8	41,8	48,5	52,7	60,3	65,9	71	l/s
	Water pressure drop recovery	30	37	48	49	51	47	49	49	58	54	54	52	kPa

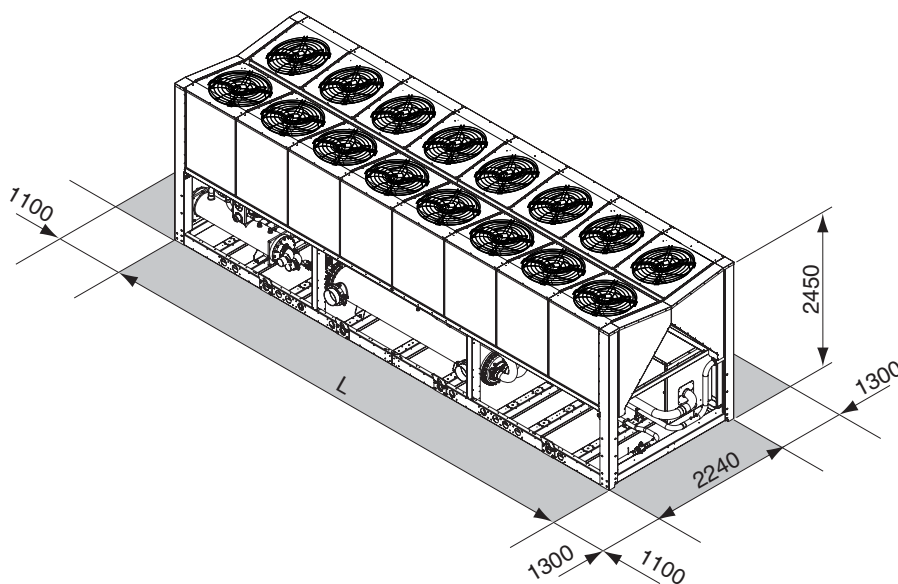
Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2		
L (AB-AS-AX)	4070		5005			5950		6900		7810		10000		mm
Operating maximum weight*	3950	4116	4971	5303	5546	5687	6004	7345	7378	8589	9494	10220	kg	

* Weight refers to the unit IR with tank and pumping module 2 pumps.

> RMP²

AIR-WATER CHILLERS AND HEAT PUMPS FOR INDOOR INSTALLATION



Efficiency capacity in heating mode - Heat pump low temperature - Medium temperature level

Acoustic setting up	19.1	22.1	26.1	30.1	35.1	40.1
AB	A	A	A	A	A	A
AS	A	A	A	A	A	A

NOTA: Declared according to European regulation 811/2013. The values are referred to units without options and accessories.

Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Versions

VB	Base Version
VP	Pump version
VA	Tank version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of small and medium size.

All the units are suitable for indoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressor mounted on damper supports, brazed plate heat

exchanger, thermostatic expansion valve, reverse cycle valve, centrifugal fans (plug fan), finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by high and low pressure switches and differential pressure switch on the plate heat exchanger.

The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units are equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors.

All the units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module

- not present (VB - base version)
- standard, high head or modulating pump (VP - pump version)
- tank and standard, high head or modulating pump (VA - tank version)

Tank electrical heater

- not present
- antifreeze
- integrative

Compressor starting

- standard (contactors)
- soft starter

Electrical loads protection

- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers

Coil protection grille

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Manometer

Oil crankcase electrical heater (only for IR/BR unit, standard for IP/BP unit)

Pressure transducer

Coil protection kit for shipment

Outdoor air sensor

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,7	22,2	25,7	30,2	34,6	40,4	kW
	Power input	6,84	7,67	8,80	10,80	12,1	14,0	kW
	EER	2,88	2,89	2,92	2,80	2,86	2,88	W/W
	ESEER	3,23	3,24	3,28	3,13	3,20	3,23	W/W
	Water flow rate	3412	3848	4459	5233	5998	6988	l/h
	Pressure drops	32	41	37	40	39	37	kPa
IR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	18,9	21,3	24,7	29,0	33,3	38,8	kW
	Power input	7,34	8,25	9,43	11,57	13,1	15,1	kW
	EER	2,58	2,58	2,62	2,51	2,55	2,57	W/W
	ESEER	2,89	2,89	2,94	2,81	2,85	2,88	W/W
	Water flow rate	3275	3691	4286	5030	5763	6710	l/h
	Pressure drops	30	38	34	37	36	34	kPa
IP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,3	21,8	25,2	29,6	34,0	39,6	kW
	Power input	6,76	7,58	8,68	10,66	12,00	13,90	kW
	EER	2,85	2,87	2,91	2,78	2,83	2,85	W/W
	ESEER	3,20	3,22	3,26	3,11	3,17	3,19	W/W
	Water flow rate	3344	3778	4373	5132	5881	6850	l/h
	Pressure drops	31	40	35	38	38	36	kPa
A7W45	Heating capacity	20,8	23,4	27,2	32,2	37,0	41,8	kW
	Power input	6,53	7,35	8,52	10,54	11,82	13,28	kW
	COP	3,18	3,18	3,19	3,06	3,13	3,15	W/W
	Water flow rate	3543	3990	4648	5504	6312	7138	l/h
	Pressure drops	35	44	40	44	43	39	kPa
IP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	18,5	20,9	24,3	28,5	32,6	38,0	kW
	Power input	7,26	8,18	9,34	11,46	13,00	14,92	kW
	EER	2,55	2,55	2,60	2,48	2,51	2,55	W/W
	ESEER	2,86	2,86	2,91	2,78	2,81	2,85	W/W
	Water flow rate	3207	3622	4200	4928	5645	6572	l/h
	Pressure drops	28	36	32	35	35	33	kPa
A7W45	Heating capacity	19,7	22,3	25,9	30,8	35,2	39,8	kW
	Power input	6,32	7,05	8,21	10,16	11,40	12,80	kW
	COP	3,12	3,16	3,16	3,03	3,09	3,11	W/W
	Water flow rate	3357	3801	4424	5248	6009	6799	l/h
	Pressure drops	31	40	36	40	39	35	kPa

The values are referred to units without options and accessories.
 Data declared according to **EN 14511**:
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C
A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C
A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C
A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level ^(E)	76	76	77	80	81	81	dB(A)
Sound pressure level at 1 meter	60	60	61	64	65	65	dB(A)
Sound pressure level at 5 meters	50	50	51	54	55	55	dB(A)
Sound pressure level at 10 meters	45	45	46	49	49	50	dB(A)
Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level ^(E)	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	58	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	47	48	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3+N - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	1 / 1						n°
Plant side heat exchanger type	stainless steel brazed plates						-
Source side heat exchanger type	finned coil						-
Fans type	centrifugal (plug fan)						-
N° fans	1						n°
Tank volume	85						l
Hydraulic fittings	1"1/4 GAS						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	18,7	20,5	22,0	24,4	26,8	30,8	A
FLI - Full load power input at maximum tolerated conditions	11,3	12,8	14,1	15,5	17,0	19,3	kW
MIC - Maximum instantaneous current of the unit	118	128	141	158	162	193	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	61	67	74	85	87	106	A
Unit with standard modulating pump	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	20,2	22,0	23,5	26,0	28,4	32,4	A
FLI - Full load power input at maximum tolerated conditions	11,9	13,4	14,7	16,3	17,8	20,1	kW
MIC - Maximum instantaneous current of the unit	120	130	143	160	164	195	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	62	68	76	86	89	107	A
Unit with high head modulating pump	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	20,4	22,2	23,7	27,4	29,8	33,8	A
FLI - Full load power input at maximum tolerated conditions	12,2	13,6	15,0	17,1	18,6	20,9	kW
MIC - Maximum instantaneous current of the unit	120	130	143	161	165	196	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	62	68	76	88	90	109	A

Operating range

Temperatura	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	48	-15	42	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)

* with fans modulating control option (condensation / evaporation control)

Aeraulic performances

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Available static head	150	150	150	150	150	150	Pa

CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

The main functions available are :

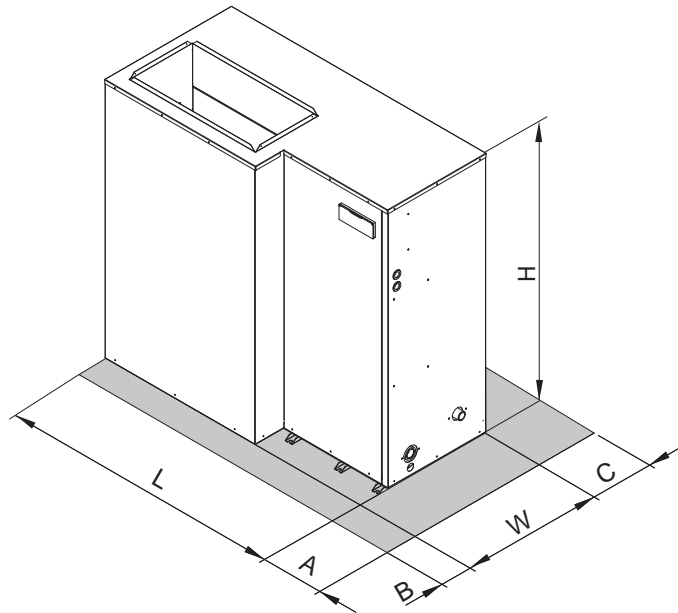
- water temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode, automatic set point adjustment according to outdoor air temperature (if present "outdoor air sensor" accessory)
- dynamic defrost cycle management according to outdoor air temperature (if present "outdoor air sensor" accessory)
- alarm memory management and diagnostic
- fans management by means of continuous rotational speed

control

- pump management
- integrative electrical heaters management in heating mode
- compressor and pump operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output



DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L		1494			1704		mm
W		744			744		mm
H		1453			1453		mm
A		400			400		mm
B		450			450		mm
C		200			200		mm
Maximum weight operation (VA Tank version)	384	387	406	408	434	436	kg

> RMP² HE

AIR-WATER CHILLERS AND HEAT PUMPS FOR INDOOR INSTALLATION



Efficiency capacity in heating mode - Heat pump low temperature - Medium temperature level

Acoustic setting up	19.1	22.1	26.1	30.1	35.1	40.1
AB	A+	A+	A+	A	A+	A+
AS	A+	A+	A+	A	A+	A+

NOTA: Declared according to European regulation 811/2013. The values are referred to units without options and accessories.

Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Versions

VB	Base Version
VP	Pump version
VA	Tank version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of small and medium size.

All the units are suitable for indoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressor mounted on damper supports, brazed plate heat exchanger, thermostatic expansion valve, reverse cycle valve, centrifugal fans (plug

fan), finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by high and low pressure switches and differential pressure switch on the plate heat exchanger.

The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units are equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors.

All the units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module

- not present (VB - base version)
- standard, high head or modulating pump (VP - pump version)
- tank and standard, high head or modulating pump (VA - tank version)

Integrative electrical heaters

- not present
- standard in the tank

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Electrical loads protection

- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers

Coil protection grille

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Manometer

Oil crankcase electrical heater (only for IR/BR unit, standard for IP/BP unit)

Pressure transducer

Coil protection kit for shipment

Outdoor air sensor

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	20,3	22,7	26,4	31,5	35,5	41,4	kW
	Power input	6,49	7,25	8,36	10,09	11,3	13,0	kW
	EER	3,12	3,13	3,16	3,12	3,14	3,17	W/W
	ESEER	3,50	3,51	3,54	3,49	3,52	3,55	W/W
	Water flow rate	3512	3929	4566	5442	6140	7150	l/h
	Pressure drops	27	25	24	28	29	27	kPa
IR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,5	21,8	25,4	30,3	34,2	39,9	kW
	Power input	6,98	7,80	9,00	10,85	12,1	13,9	kW
	EER	2,79	2,80	2,82	2,79	2,81	2,87	W/W
	ESEER	3,13	3,13	3,16	3,13	3,15	3,22	W/W
	Water flow rate	3372	3771	4391	5235	5905	6890	l/h
	Pressure drops	25	23	22	26	27	25	kPa
IP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,9	22,3	25,9	30,9	34,8	40,5	kW
	Power input	6,42	7,17	8,25	9,96	11,20	12,95	kW
	EER	3,10	3,11	3,14	3,10	3,11	3,13	W/W
	ESEER	3,47	3,49	3,51	3,47	3,48	3,51	W/W
	Water flow rate	3442	3859	4478	5337	6020	7008	l/h
	Pressure drops	26	24	23	27	28	26	kPa
A7W45	Heating capacity	21,1	24,0	27,8	32,3	37,0	42,7	kW
	Power input	6,42	7,14	8,25	10,01	11,21	12,83	kW
	COP	3,29	3,36	3,37	3,22	3,29	3,33	W/W
	Water flow rate	3612	4096	4763	5517	6320	7310	l/h
	Pressure drops	29	27	26	29	31	28	kPa
IP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,1	21,4	24,9	29,7	33,5	39,0	kW
	Power input	6,91	7,74	8,91	10,75	12,06	13,74	kW
	EER	2,76	2,77	2,79	2,76	2,77	2,84	W/W
	ESEER	3,09	3,10	3,13	3,09	3,11	3,18	W/W
	Water flow rate	3302	3700	4303	5129	5785	6748	l/h
	Pressure drops	24	22	21	25	26	24	kPa
A7W45	Heating capacity	20,1	22,9	26,6	31,0	35,2	40,8	kW
	Power input	6,23	6,90	8,00	9,70	10,87	12,42	kW
	COP	3,22	3,32	3,32	3,20	3,24	3,28	W/W
	Water flow rate	3422	3902	4533	5261	6016	6963	l/h
	Pressure drops	26	25	23	26	28	26	kPa

The values are referred to units without options and accessories.
 Data declared according to **EN 14511**:
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
 = Unit in **A CLASS**.
A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C
A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C
A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C
A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level ^(E)	76	76	77	80	81	81	dB(A)
Sound pressure level at 1 meter	60	60	61	64	65	65	dB(A)
Sound pressure level at 5 meters	50	50	51	54	55	55	dB(A)
Sound pressure level at 10 meters	45	45	46	49	49	50	dB(A)
Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level ^(E)	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	58	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	47	48	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3+N - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	1 / 1						n°
Plant side heat exchanger type	stainless steel brazed plates						-
Source side heat exchanger type	finned coil						-
Fans type	centrifugal (plug fan)						-
N° fans	1						n°
Tank volume	85						l
Hydraulic fittings	1"1/4 GAS						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	18,7	20,5	22,0	24,4	26,8	30,8	A
FLI - Full load power input at maximum tolerated conditions	11,3	12,8	14,1	15,5	17,0	19,3	kW
MIC - Maximum instantaneous current of the unit	118	128	141	158	162	193	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	61	67	74	85	87	106	A
Unit with standard modulating pump	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	20,2	22,0	23,5	26,0	28,4	32,4	A
FLI - Full load power input at maximum tolerated conditions	11,9	13,4	14,7	16,3	17,8	20,1	kW
MIC - Maximum instantaneous current of the unit	120	130	143	160	164	195	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	62	68	76	86	89	107	A
Unit with high head modulating pump	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	20,4	22,2	23,7	27,4	29,8	33,8	A
FLI - Full load power input at maximum tolerated conditions	12,2	13,6	15,0	17,1	18,6	20,9	kW
MIC - Maximum instantaneous current of the unit	120	130	143	161	165	196	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	62	68	76	88	90	109	A

Operating range

Temperatura	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	50	-15	42	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)

* with fans modulating control option (condensation / evaporation control)

Aeraulic performances

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Available static head	150	150	150	150	150	150	Pa

CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

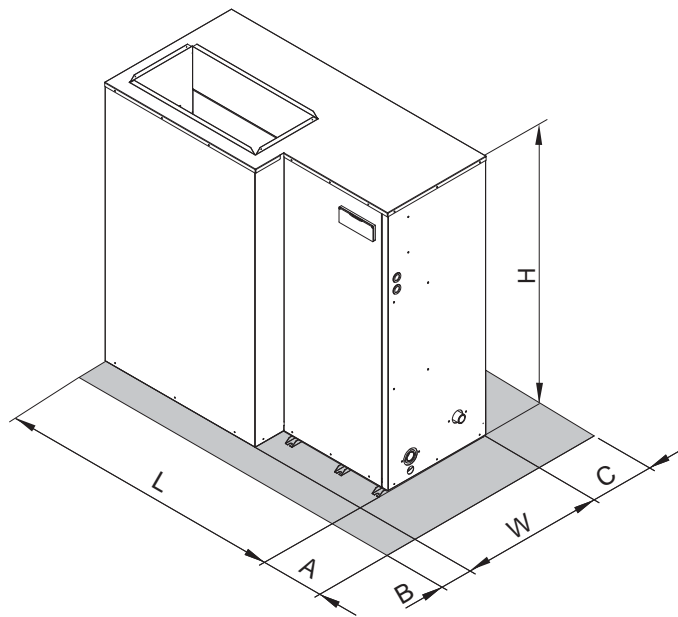
The main functions available are :

- water temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode, automatic set point adjustment according to outdoor air temperature (if present "outdoor air sensor" accessory)
- dynamic defrost cycle management according to outdoor air temperature (if present "outdoor air sensor" accessory)
- alarm memory management and diagnostic

- fans management by means of continuous rotational speed control
- pump management
- integrative electrical heaters management in heating mode
- compressor and pump operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output



DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L		1494			1704		mm
W		744			744		mm
H		1453			1453		mm
A		400			400		mm
B		450			450		mm
C		200			200		mm
Maximum weight operation (VA Tank version)	399	402	426	433	459	461	kg

> RGC

AIR-WATER CHILLERS AND HEAT PUMPS FOR INDOOR INSTALLATION



Efficiency capacity in heating mode - Heat pump low temperature - Medium temperature level

Acoustic setting up	40.2	50.2	60.2	70.2	80.2
AB	A+	A+	A+	A+	A+
AS	A+	A+	A+	A+	A+

NOTA: Declared according to European regulation 811/2013. The values are referred to units without options and accessories.

Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for indoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, brazed plate heat exchanger, thermostatic expansion valve (standard for IR) or electronic expansion valve (standard for IP / option

for IR), reverse cycle valve, dehydrator filter, double inlet centrifugal fans with forward curved blades, finned coil made of copper pipes and aluminium louvered fins with subcooling section. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the plate heat exchanger. The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module available in the configurations :

- Storage tank arranged as buffer on the flow or as primary-secondary buffer
- 1 or 2 pumps
- standard or high head pump
- modulating pump

Expansion valve

- thermostatic
- electronic (standard for IP)

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

(standard for IP)

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Tank antifreeze electrical heater

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for IP)

High and low pressure gauges

High temperature thermostat

Outdoor air sensor

Water flow switch

Victaulic hydraulic fittings

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7	Cooling capacity	45,0	53,0	58,1	68,2	78,1	90,3	101	111	125	142	157	179	198	kW
	Power input	15,7	18,8	20,8	24,1	28,0	32,5	35,9	39,9	45,1	51,5	57,1	64,6	71,6	kW
	EER	2,87	2,82	2,79	2,83	2,79	2,78	2,81	2,78	2,77	2,76	2,75	2,77	2,77	W/W
	ESEER	3,88	3,85	3,80	3,86	3,79	3,88	3,81	3,88	3,77	3,84	3,72	3,75	3,77	W/W
	Water flow rate	2,16	2,56	2,80	3,29	3,76	4,35	4,87	5,35	6,02	6,83	7,55	8,60	9,56	l/s
	Pressure drops	40	56	55	51	50	48	46	44	48	47	48	48	50	kPa
IR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7	Cooling capacity	45,0	53,0	58,1	68,2	78,1	90,3	101	111	125	142	157	179	198	kW
	Power input	15,7	18,8	20,8	24,1	28,0	32,5	35,9	39,9	45,1	51,5	57,1	64,6	71,6	kW
	EER	2,87	2,82	2,79	2,83	2,79	2,78	2,81	2,78	2,77	2,76	2,75	2,77	2,77	W/W
	ESEER	3,88	3,85	3,80	3,86	3,79	3,88	3,81	3,88	3,77	3,84	3,72	3,75	3,77	W/W
	Water flow rate	2,16	2,56	2,80	3,29	3,76	4,35	4,87	5,35	6,02	6,83	7,55	8,60	9,56	l/s
	Pressure drops	40	56	55	51	50	48	46	44	48	47	48	48	50	kPa
IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7	Cooling capacity	43,5	52,4	57,0	66,7	73,6	88,5	98	109	121	137	153	177	196	kW
	Power input	15,5	19,0	20,7	24,1	27,0	32,3	35,7	39,8	44,5	50,3	56,3	63,5	71,2	kW
	EER	2,81	2,76	2,75	2,77	2,73	2,74	2,75	2,74	2,72	2,72	2,72	2,79	2,75	W/W
	ESEER	3,79	3,77	3,75	3,75	3,69	3,82	3,73	3,82	3,69	3,79	3,68	3,77	3,74	W/W
	Water flow rate	2,09	2,53	2,75	3,21	3,54	4,26	4,73	5,26	5,83	6,59	7,36	8,50	9,46	l/s
	Pressure drops	37	55	53	49	44	46	43	43	45	44	46	47	49	kPa
A7W45	Heating capacity	48,1	58,1	63,2	74,5	83,0	99,6	110	125	136	154	173	197	216	kW
	Power input	15,6	19,1	20,9	24,4	27,6	33,5	35,9	41,1	44,9	51,8	56,9	65,1	71,7	kW
	COP	3,08	3,04	3,02	3,05	3,01	2,97	3,06	3,04	3,03	2,97	3,04	3,03	3,01	W/W
	Water flow rate	2,28	2,75	2,99	3,53	3,93	4,72	5,21	5,92	6,45	7,31	8,17	9,32	10,2	l/s
	Pressure drops	45	65	63	59	55	57	53	54	55	54	56	56	57	kPa
IP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7	Cooling capacity	43,5	52,4	57,0	66,7	73,6	88,5	98	109	121	137	153	177	196	kW
	Power input	15,5	19,0	20,7	24,1	27,0	32,3	35,7	39,8	44,5	50,3	56,3	63,5	71,2	kW
	EER	2,81	2,76	2,75	2,77	2,73	2,74	2,75	2,74	2,72	2,72	2,72	2,79	2,75	W/W
	ESEER	3,79	3,77	3,75	3,75	3,69	3,82	3,73	3,82	3,69	3,79	3,68	3,77	3,74	W/W
	Water flow rate	2,09	2,53	2,75	3,21	3,54	4,26	4,73	5,26	5,83	6,59	7,36	8,50	9,46	l/s
	Pressure drops	37	55	53	49	44	46	43	43	45	44	46	47	49	kPa
A7W45	Heating capacity	48,1	58,1	63,2	74,5	83,0	99,6	110	125	136	154	173	197	216	kW
	Power input	15,6	19,1	20,9	24,4	27,6	33,5	35,9	41,1	44,9	51,8	56,9	65,1	71,7	kW
	COP	3,08	3,04	3,02	3,05	3,01	2,97	3,06	3,04	3,03	2,97	3,04	3,03	3,01	W/W
	Water flow rate	2,28	2,75	2,99	3,53	3,93	4,72	5,21	5,92	6,45	7,31	8,17	9,32	10,2	l/s
	Pressure drops	45	65	63	59	55	57	53	54	55	54	56	56	57	kPa

The values are referred to units without options and accessories.

Data declared according to EN 14511:

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

= Unit in A CLASS.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level ^(E)	88	88	89	89	89	91	91	91	96	97	97	98	98	dB(A)
Sound pressure level at 1 meter	70	70	71	71	71	73	73	73	78	79	79	80	80	dB(A)
Sound pressure level at 5 meters	61	61	62	62	62	65	65	65	69	70	70	71	71	dB(A)
Sound pressure level at 10 meters	56	56	57	57	57	59	59	59	64	65	65	66	66	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level ^(E)	85	85	86	86	86	88	88	88	93	94	94	95	95	dB(A)
Sound pressure level at 1 meter	67	67	68	68	68	70	70	70	75	76	76	77	77	dB(A)
Sound pressure level at 5 meters	58	58	59	59	59	62	62	62	66	67	67	68	68	dB(A)
Sound pressure level at 10 meters	53	53	54	54	54	56	56	56	61	62	62	63	63	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Power supply	400 - 3 - 50													V-ph-Hz
Compressor type	scroll													-
N° compressors / N° refrigerant circuits	2 / 1													n°
Plant side heat exchanger type	stainless steel brazed plates													-
Source side heat exchanger type	finned coil													-
Fans type	centrifugal													-
N° fans	1			2			3			4			n°	
Tank volume	200			400			460						l	
Hydraulic fittings	2" VICTAULIC						2" 1/2 VICTAULIC						-	

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	43,2	48,8	56,7	62,1	73,0	80,5	95,0	103	117	145	158	188	199	A
FLI - Full load power input at maximum tolerated conditions	25,2	28,0	33,0	35,6	40,8	47,3	58,3	63,8	72,8	88,7	96,3	113	120	kW
MIC - Maximum instantaneous current of the unit	137	147	152	177	216	269	264	272	278	370	383	384	420	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	92,4	99,4	105	121	147	179	180	188	194	222	268	277	301	A
Unit with high head modulating pump	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	49,3	54,9	62,8	68,2	79,1	86,6	101	112	126	153	166	198	209	A
FLI - Full load power input at maximum tolerated conditions	28,7	31,5	36,5	39,1	44,3	50,8	61,8	68,4	77,3	93,2	101	119	126	kW
MIC - Maximum instantaneous current of the unit	143	153	158	183	222	275	270	281	287	378	392	394	430	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	98,5	105	111	127	153	185	186	197	203	231	277	287	311	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-10	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

Aeraulic performance

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Available static head	150	150	150	150	150	150	150	150	150	150	150	150	150	Pa

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7 - W45	Cooling capacity	46,8	55,1	60,3	71	81,1	93,8	105	115	130	148	163	185	206	kW
	Total power input	15,3	18,3	20,3	23,4	27,3	31,8	35,1	38,9	44	50,3	55,8	63	69,9	kW
	EER	3,05	3	2,98	3,03	2,97	2,95	2,99	2,96	2,95	2,94	2,92	2,94	2,95	W/W
	HRE	3,93	3,86	3,84	3,88	3,83	3,8	3,86	3,85	3,83	3,81	3,8	3,82	3,83	W/W
	Water flow rate	2,25	2,66	2,91	3,42	3,91	4,52	5,06	5,54	6,26	7,12	7,84	8,93	9,94	l/s
	Water pressure drop	43	60	59	55	54	52	50	47	52	51	52	52	54	kPa
	Heating recovery capacity	13,5	15,7	17,6	20	23,6	27,1	30,4	34,4	38,4	44	49,3	55,4	61,3	kW
	Water flow rate recovery	0,65	0,75	0,84	0,96	1,13	1,29	1,45	1,64	1,83	2,1	2,36	2,65	2,93	l/s
	Water pressure drop recovery	6	9	11	14	19	15	18	11	14	18	22	18	21	kPa
	IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2
A35W7 - W45	Cooling capacity	45,3	54,5	59,3	69,3	76,5	92,1	102	113	126	143	159	183	204	kW
	Total power input	15,1	18,5	20,1	23,5	26,4	31,5	34,9	38,7	43,4	49,1	54,9	62,1	69,5	kW
	EER	3	2,94	2,94	2,95	2,9	2,92	2,93	2,92	2,9	2,91	2,89	2,95	2,94	W/W
	HRE	3,86	3,76	3,79	3,78	3,77	3,75	3,77	3,78	3,76	3,77	3,75	3,8	3,77	W/W
	Water flow rate	2,18	2,63	2,86	3,34	3,68	4,43	4,92	5,45	6,07	6,88	7,64	8,84	9,84	l/s
	Water pressure drop	41	59	57	53	48	50	47	46	49	48	49	51	53	kPa
	Heating recovery capacity	13	15,2	17	19,4	22,9	26,2	29,2	33,2	37,1	42,4	47,5	52,4	58,1	kW
	Water flow rate recovery	0,62	0,73	0,81	0,93	1,09	1,25	1,4	1,59	1,77	2,03	2,27	2,5	2,78	l/s
	Water pressure drop recovery	6	8	10	13	18	14	17	10	13	17	21	16	19	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7 - W45	Cooling capacity	46,8	55,1	60,3	71	81,1	93,8	105	115	130	148	163	185	206	kW
	Total power input	13,9	16,9	18,4	21,4	25,3	27,9	31,1	35	40	44,4	49,9	55,3	62,1	kW
	EER	3,36	3,25	3,28	3,31	3,2	3,36	3,38	3,29	3,25	3,33	3,26	3,35	3,32	W/W
	HRE	7,67	7,46	7,52	7,58	7,35	7,67	7,71	7,52	7,45	7,61	7,47	7,65	7,59	W/W
	Water flow rate	2,25	2,66	2,91	3,42	3,91	4,52	5,06	5,54	6,26	7,12	7,84	8,93	9,94	l/s
	Water pressure drop	43	60	59	55	54	52	50	47	52	51	52	52	54	kPa
	Heating recovery capacity	60	71,2	77,8	91,4	105	120	135	148	168	190	210	238	265	kW
	Water flow rate recovery	2,87	3,4	3,72	4,37	5,02	5,73	6,45	7,07	8,03	9,08	10	11,4	12,7	l/s
	Water pressure drop recovery	35	49	41	45	50	48	52	47	52	51	52	55	55	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

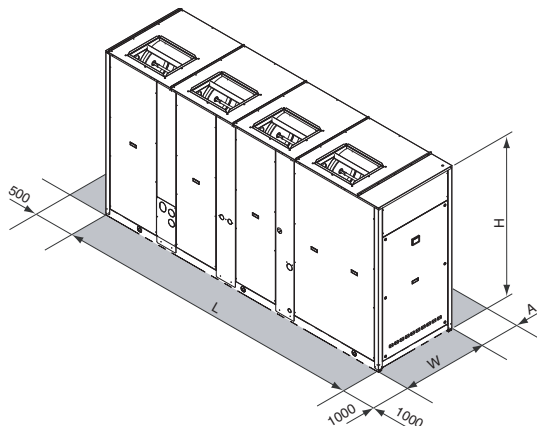
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heatingg



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
L			2480				3322			3322		4080		mm
W			954				1104			1104		1104		mm
H			1760				1760			2160		2160		mm
A				1600						2000				mm
Operating maximum weight*	1078	1082	1102	1143	1168	1684	1765	1825	2000	2042	2094	2423	2467	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RGC HE

AIR-WATER CHILLERS AND HEAT PUMPS
FOR INDOOR INSTALLATION



Efficiency capacity in heating mode - Heat pump low temperature - Medium temperature level

Acoustic setting up	40.2	50.2	60.2	70.2	80.2
AB	A+	A+	A+	A+	A+
AS	A+	A+	A+	A+	A+

NOTA: Declared according to European regulation 811/2013. The values are referred to units without options and accessories.

Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for indoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, brazed plate heat exchanger, thermostatic expansion valve (standard for IR) or electronic expansion valve (standard for IP / option for IR), re-

verse cycle valve, dehydrator filter, double inlet centrifugal fans with forward curved blades, finned coil made of copper pipes and aluminium louvered fins with sub-cooling section. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the plate heat exchanger. The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Storing and pumping module available in the configurations :

- Storage tank arranged as buffer on the flow or as primary-secondary buffer
- 1 or 2 pumps
- standard or high head pump
- modulating pump

Expansion valve

- thermostatic
- electronic (standard for IP)

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

(standard for IP)

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Tank antifreeze electrical heater

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for IP)

High and low pressure gauges

High temperature thermostat

Outdoor air sensor

Water flow switch

Victaulic hydraulic fittings

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	47,2	55,9	63,1	70,5	83,4	94,9	106	120	133	153	173	197	kW
	Power input	14,9	17,2	19,8	22,1	27,2	31,2	34,6	38,6	42,7	50,0	55,5	64,6	kW
	EER	3,17	3,25	3,19	3,19	3,07	3,04	3,06	3,11	3,11	3,06	3,12	3,05	W/W
	ESEER	4,26	4,39	4,29	4,34	4,12	4,22	4,15	4,32	4,21	4,26	4,22	4,11	W/W
	Water flow rate	2,26	2,69	3,03	3,39	4,00	4,56	5,11	5,78	6,40	7,36	8,31	9,46	l/s
	Pressure drops	24	34	33	41	31	32	34	33	35	35	38	39	kPa
IR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	47,2	55,9	63,1	70,5	83,4	94,9	106	120	133	153	173	197	kW
	Power input	14,9	17,2	19,8	22,1	27,2	31,2	34,6	38,6	42,7	50,0	55,5	64,6	kW
	EER	3,17	3,25	3,19	3,19	3,07	3,04	3,06	3,11	3,11	3,06	3,12	3,05	W/W
	ESEER	4,26	4,39	4,29	4,34	4,12	4,22	4,15	4,32	4,21	4,26	4,22	4,11	W/W
	Water flow rate	2,26	2,69	3,03	3,39	4,00	4,56	5,11	5,78	6,40	7,36	8,31	9,46	l/s
	Pressure drops	24	34	33	41	31	32	34	33	35	35	38	39	kPa
IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	45,3	53,6	60,7	67,8	81,3	92,4	103	115	128	147	166	191	kW
	Power input	14,6	17,1	19,4	21,7	26,7	30,2	33,8	37,8	41,8	48,5	54,3	62,8	kW
	EER	3,10	3,13	3,13	3,12	3,04	3,06	3,05	3,04	3,06	3,03	3,06	3,04	W/W
	ESEER	4,17	4,24	4,22	4,23	4,10	4,23	4,11	4,23	4,14	4,21	4,12	4,10	W/W
	Water flow rate	2,17	2,58	2,91	3,26	3,90	4,43	4,97	5,54	6,16	7,07	7,98	9,17	l/s
	Pressure drops	22	31	30	38	29	30	32	30	32	32	35	37	kPa
A7W45	Heating capacity	49,4	58,3	66,0	74,1	88,4	100	113	126	141	161	181	207	kW
	Power input	15,5	18,1	20,8	23,4	27,9	31,6	35,5	39,7	44,3	51,0	57,1	65,6	kW
	COP	3,19	3,22	3,17	3,17	3,17	3,16	3,18	3,17	3,18	3,16	3,17	3,16	W/W
	Water flow rate	2,35	2,77	3,13	3,52	4,20	4,77	5,35	5,97	6,69	7,64	8,60	9,84	l/s
	Pressure drops	26	36	35	44	34	35	37	35	38	38	41	42	kPa
IP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	45,3	53,6	60,7	67,8	81,3	92,4	103	115	128	147	166	191	kW
	Power input	14,6	17,1	19,4	21,7	26,7	30,2	33,8	37,8	41,8	48,5	54,3	62,8	kW
	EER	3,10	3,13	3,13	3,12	3,04	3,06	3,05	3,04	3,06	3,03	3,06	3,04	W/W
	ESEER	4,17	4,24	4,22	4,23	4,10	4,23	4,11	4,23	4,14	4,21	4,12	4,10	W/W
	Water flow rate	2,17	2,58	2,91	3,26	3,90	4,43	4,97	5,54	6,16	7,07	7,98	9,17	l/s
	Pressure drops	22	31	30	38	29	30	32	30	32	32	35	37	kPa
A7W45	Heating capacity	49,4	58,3	66,0	74,1	88,4	100	113	126	141	161	181	207	kW
	Power input	15,5	18,1	20,8	23,4	27,9	31,6	35,5	39,7	44,3	51,0	57,1	65,6	kW
	COP	3,19	3,22	3,17	3,17	3,17	3,16	3,18	3,17	3,18	3,16	3,17	3,16	W/W
	Water flow rate	2,35	2,77	3,13	3,52	4,20	4,77	5,35	5,97	6,69	7,64	8,60	9,84	l/s
	Pressure drops	26	36	35	44	34	35	37	35	38	38	41	42	kPa

The values are referred to units without options and accessories.

Data declared according to **EN 14511**:

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

_____ = Unit in **A CLASS**.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level ^(E)	88	88	89	89	91	91	91	96	96	97	97	98	dB(A)
Sound pressure level at 1 meter	70	70	71	71	73	73	73	78	78	79	79	80	dB(A)
Sound pressure level at 5 meters	61	61	62	62	65	65	65	69	69	70	70	71	dB(A)
Sound pressure level at 10 meters	56	56	57	57	59	59	59	64	64	65	65	66	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level ^(E)	85	85	86	86	88	88	88	93	93	94	94	95	dB(A)
Sound pressure level at 1 meter	67	67	68	68	70	70	70	75	75	76	76	77	dB(A)
Sound pressure level at 5 meters	58	58	59	59	62	62	62	66	66	67	67	68	dB(A)
Sound pressure level at 10 meters	53	53	54	54	56	56	56	61	61	62	62	63	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Power supply	400 - 3 - 50												V-ph-Hz
Compressor type	scroll												-
N° compressors / N° refrigerant circuits	2 / 1												n°
Plant side heat exchanger type	stainless steel brazed plates												-
Source side heat exchanger type	finned coil												-
Fans type	centrifugal												-
N° fans	1			2			3			4			n°
Tank volume	200				400				460				l
Hydraulic fittings	2" VICTAULIC						2" 1/2 VICTAULIC						-

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
FLA - Full load current at maximum tolerated conditions	43,2	48,8	56,7	62,1	74,9	80,5	95,0	109	117	145	169	188	A
FLI - Full load power input at maximum tolerated conditions	25,2	28,0	33,0	35,6	41,9	47,3	58,3	67,3	72,8	88,7	103	113	kW
MIC - Maximum instantaneous current of the unit	137	147	152	177	218	269	264	278	278	370	394	384	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	92,4	99,4	105	121	148	179	180	194	194	222	279	277	A
Unit with high head modulating pump	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
FLA - Full load current at maximum tolerated conditions	49,3	54,9	62,8	68,2	81,0	86,6	101	118	126	153	179	198	A
FLI - Full load power input at maximum tolerated conditions	28,7	31,5	36,5	39,1	45,4	50,8	61,8	71,8	77,3	93,2	109	119	kW
MIC - Maximum instantaneous current of the unit	143	153	158	183	224	275	270	287	287	378	405	394	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	98,5	105	111	127	155	185	186	203	203	231	290	287	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	52**	-15	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	5	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

Aeraulic performance

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Available static head	150	150	150	150	150	150	150	150	150	150	150	150	150	Pa

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7 - W45	Cooling capacity	49,1	58,1	65,5	73,3	86,7	98,6	110	125	138	159	180	205	kW
	Total power input	14,5	16,7	19,4	21,5	26,6	30,5	33,8	37,7	41,6	48,8	54,1	63,1	kW
	EER	3,38	3,47	3,38	3,41	3,26	3,24	3,27	3,32	3,32	3,26	3,32	3,24	W/W
	HRE	4,36	4,48	4,36	4,4	4,21	4,18	4,22	4,28	4,29	4,21	4,29	4,19	W/W
	Water flow rate	2,36	2,79	3,15	3,53	4,17	4,74	5,3	6,02	6,64	7,64	8,65	9,84	l/s
	Water pressure drop	26	37	36	44	34	35	37	36	38	38	41	42	kPa
	Heating recovery capacity	14,2	16,9	19	21,3	25,1	28,6	32,1	36,2	40,3	46,3	52,3	59,4	kW
	Water flow rate recovery	0,68	0,81	0,91	1,02	1,2	1,37	1,53	1,73	1,93	2,21	2,5	2,84	l/s
	Water pressure drop recovery	7	10	13	16	21	16	20	12	15	20	25	20	kPa
	IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2
A35W7 - W45	Cooling capacity	47,1	55,8	63,1	70,4	84,6	96	107	120	133	153	173	199	kW
	Total power input	14,2	16,6	18,9	21,2	26	29,5	33	36,8	40,7	47,3	53,1	61,4	kW
	EER	3,32	3,36	3,33	3,33	3,25	3,25	3,25	3,27	3,27	3,24	3,26	3,24	W/W
	HRE	4,28	4,34	4,3	4,3	4,19	4,2	4,2	4,21	4,22	4,18	4,2	4,17	W/W
	Water flow rate	2,26	2,68	3,03	3,39	4,06	4,61	5,16	5,78	6,4	7,36	8,31	9,56	l/s
	Water pressure drop	24	34	33	41	32	33	35	33	35	35	38	40	kPa
	Heating recovery capacity	13,6	16,2	18,3	20,5	24,5	27,9	31,1	34,7	38,6	44,4	50,1	57,5	kW
	Water flow rate recovery	0,65	0,77	0,87	0,98	1,17	1,33	1,49	1,66	1,84	2,12	2,39	2,75	l/s
	Water pressure drop recovery	7	9	12	14	20	16	19	11	14	18	23	19	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7 - W45	Cooling capacity	49,1	58,1	65,5	73,3	86,7	98,6	110	125	138	159	180	205	kW
	Total power input	13,2	15,4	17,4	19,5	22,8	26,6	29,9	33,7	37,7	43	48,2	55,4	kW
	EER	3,72	3,76	3,77	3,75	3,81	3,72	3,7	3,71	3,66	3,7	3,73	3,7	W/W
	HRE	8,39	8,47	8,49	8,46	8,55	8,39	8,35	8,37	8,27	8,36	8,42	8,34	W/W
	Water flow rate	2,36	2,79	3,15	3,53	4,17	4,74	5,3	6,02	6,64	7,64	8,65	9,84	l/s
	Water pressure drop	26	37	36	44	34	35	37	36	38	38	41	42	kPa
	Heating recovery capacity	61,7	72,7	82,1	91,9	108	124	139	157	174	200	226	257	kW
	Water flow rate recovery	2,95	3,47	3,92	4,39	5,16	5,92	6,64	7,5	8,31	9,56	10,8	12,3	l/s
	Water pressure drop recovery	34	47	42	41	48	47	52	49	51	50	54	53	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

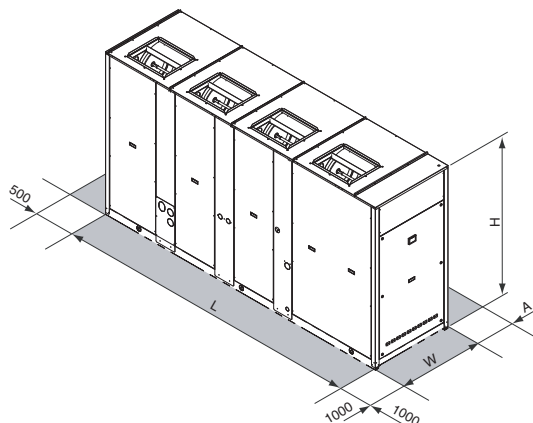
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2		
L		2480				3322			3322		4080			mm
W		954				1104			1104		1104			mm
H		1760				1760			2160		2160			mm
A		1600							2000					mm
Operating maximum weight*	1121	1125	1146	1189	1670	1751	1836	2051	2080	2124	2478	2520	kg	

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RGW

WATER-WATER CHILLERS AND HEAT PUMPS FOR INDOOR INSTALLATION



Unit with closing panels

Available range

Unit type

IR	Chiller
IW	Heat pump (reversible on the water side)
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BW	Heat pump Brine (reversible on the water side)
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
----	--------------

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Unit description

This series of water-water chillers and heat pumps satisfies the cooling and heating requirements of commercial and industrial plants of medium size.

All the units are suitable for indoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit is equipped with 2 scroll compressors, mounted on rubber vibration-damper supports, plant side heat exchanger brazed plate-type in stainless steel (AISI 316), complete with thermal insulation shell and differential pressure switch, source side exchanger brazed plate-type in stainless steel (AISI 316), complete with thermal insulation (IW, IP, BW, BP only) and differential pressure switch. (IP, BP only), thermostatic

expansion valve or electronic expansion valve (standard for IP, BP), 4-way valve, dehydrator filter, refrigerant circuit protected by refrigerant safety valve, low and high pressure switches, electrical panel for power and control complete with main breaker power supply with door lock function microprocessor controller with keyboard-display, and phase sequence controller (standard). When developing the range special attention has been paid to the choice of heat exchangers in order to obtain high efficiencies at full and partial loads to maximise the seasonal efficiency rating (ESEER) and therefore reduce consumption and running costs. The units can be chosen in Basic setting up (AB) (unit without closing panels), Low noise setting up (AS), featuring closing panels coated with acoustic material, Extra Low noise setting up (AX) featuring closing panels coated with superior acoustic material and soundproofing jackets on the compressors.

A wide range of accessories completes the commercial offer. These include pumping modules with 1 or 2 pumps available with standard or high head with a maximum of 4 pumps: 2 on plant side and 2 on source side.

The electronic controller can manage the various condensation control systems of the numerous applications required, enabling the control of 2-way or 3-way modulating valves (also offered as accessories) or the control of pumps under INVERTER. The units can therefore be combined with liquid coolers (dry-coolers), cooling towers, geothermal boreholes or use for water cooling city or well water. All the units are carefully built in compliance with the current regulations and individually tested. Installation therefore only requires the electrical and hydraulic connection.

Options

Pumping Modules

Available on various configurations:

- 1 or 2 pumps plant side
- 1 or 2 pumps source side
- pumps standard, high and extra high pressure head

Expansion valve

- thermostatic
- electronic (standard for IP, BP)

Suitable for outdoor installation

Accessories

Rubber vibration dampers

Remote controller

Serial Interface Modbus-RS 485

Programmer clock

Phase sequence and voltage controller

Low temperature kit

High and low pressure gauges

High temperature thermostat

Compressors shut-off valves

(for IR, BR, IW, BW only)

Outdoor air sensor

Water flow switch

Victaulic hydraulic fittings

Victaulic bends

Victaulic water shut-off valves

Victaulic water filter

2-way valve for cond./evap control

3-way valve for cond./evap control

Compressors start-up with soft starter

Compressors power factor correction

Electrical load protection with thermal magnetic circuit breakers

Technical data

Unit	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Power supply	400 - 3 - 50											V-ph-Hz
Compressor type	scroll											-
N° compressors / N° refrigerant circuits	2 / 1											n°
Plant side heat exchanger type	stainless steel brazed plates											-
Source side heat exchanger type	stainless steel brazed plates											-
IN/OUT Plant side hydraulic fittings	2" 1/2 VICTAULIC											"
IN/OUT Source side hydraulic fittings	2" 1/2 VICTAULIC											"

Electrical data

Standard unit	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
FLA - Full load current at maximum tolerated conditions	45	51	62	68	74	82	90	105	120	142	164	A
FLI - Full load power input at maximum tolerated conditions	26	29	34	40	45	50	55	63	72	83	93	kW
MIC - Maximum instantaneous current of the unit	141	166	204	256	262	309	317	355	370	454	476	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	93	110	135	166	172	200	208	231	246	296	318	A
Unit with high head modulating pump	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
FLA - Full load current at maximum tolerated conditions	60	66	77	83	89	103	111	129	144	169	191	A
FLI - Full load power input at maximum tolerated conditions	35	38	42	48	54	62	67	77	86	98	109	kW
MIC - Maximum instantaneous current of the unit	155	180	219	271	277	330	338	379	394	481	503	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	108	124	149	181	187	221	229	255	270	323	345	A

Operating range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Water inlet temperature source side	IR, IW, IP, BR, BP	20 (5*)	50	10	25 (40*)	(°C)
Water outlet temperature plant side	IR, IW, IP	5	20	25	55	(°C)
Water outlet temperature plant side	BR, BP	-12	5	25	55	(°C)

* with condensation / evaporation control devices

CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

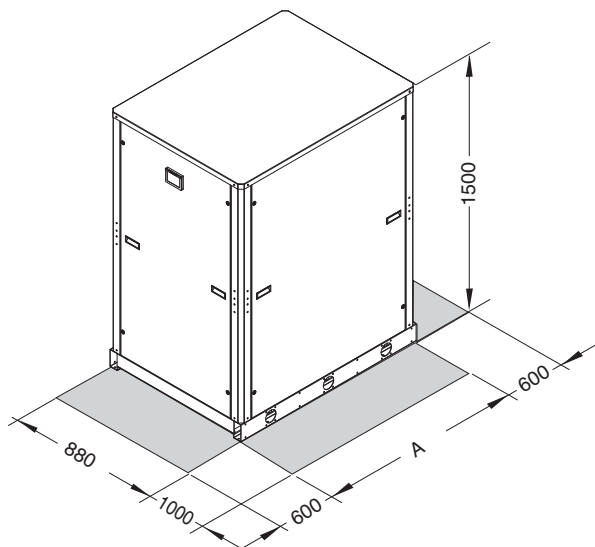
- Adaptive function
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Condensation / evaporation control
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT

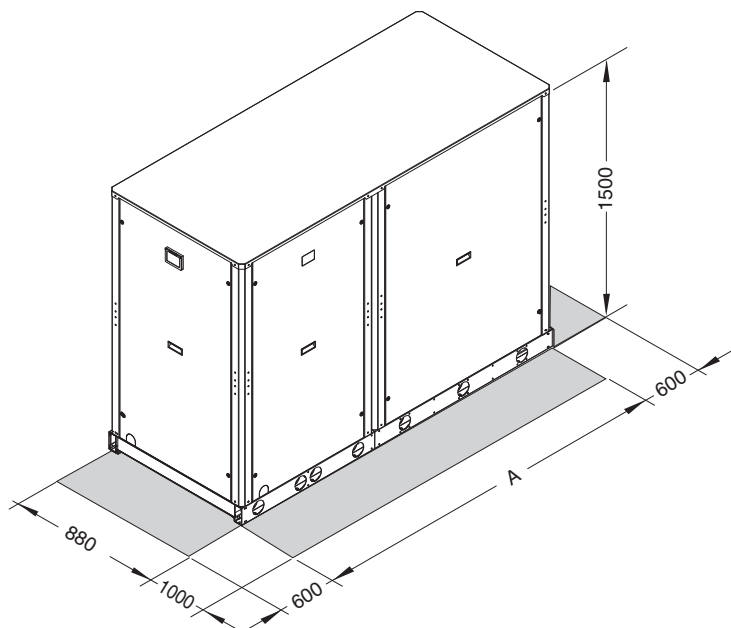
(reference drawing: unit with closing panel)

STANDARD UNIT



		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
STANDARD UNIT	A	880			1175								mm
	Operating maximum weight	404	416	427	548	635	668	696	741	771	812	844	kg

STANDARD UNIT+ PUMPING MODULE MP



		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
STANDARD UNIT+ PUMPING MODULE MP	A (2+2 extra high head pumps)	2055			2350								mm
	Operating maximum weight (2+2 extra high head pumps)	809	817	828	1059	1146	1225	1253	1321	1351	1415	1447	kg

> RVW

WATER-WATER CHILLERS FOR INDOOR INSTALLATION



Available range

Unit type

- IR Chiller
- IW Heat pump
(reversible on the water side)
- BR Chiller Brine
- BW Heat pump Brine
(reversible on the water side)

Version

- VB Base version
- VD Desuperheater version
- VR Total recovery version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up

Condenser Options

- T cooling tower water
- P well water
- S sea water

Unit description

This range of water-water chillers are designed to meet the climate control and air conditioning needs of large capacity systems in the industrial and commercial sectors. All the units are suitable for indoor installation and can be applied to fan coil plants and radiant floor plants.

Suitable for indoor installation, as standard the units are equipped with 1 or 2 TWIN-SCREW semihermetic compressors mounted on rubber vibration dampers able to modulate the capacity from minimum 25 (not for all configurations) to 100%, plant side exchanger shell and tube type complete with Victaulic water connections, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, optimised for R134a with high efficiency grooved tubes, protected by means of a water differential pressure switch, source side exchanger shell and tube type optimised for R134a with high efficiency grooved tubes complete with

Victaulic water connections, fitted inside a shell of thermal insulation material to prevent heat exchange (IW, BW only)

1 or 2 independent refrigerant circuits, complete with electronic expansion valve which optimises unit efficiency at full and partial loads and enables maximum seasonal efficiency, maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/moisture indicator, compressor discharge and liquid shut-off valves, high and low pressure transducers, electrical panel with minimum protection IP54 containing the electrical equipment and all the components to control and command the unit complete with main supply breaker with door lock function, phase sequence control device, microprocessor controller with display (4 lines of 20 characters).

When developing the range special attention has been paid to the choice of heat exchangers in order to obtain high efficiencies at full loads and partial loads to maximise the seasonal efficiency rating (ESEER) and therefore reduce consumption and running costs

The units can be selected as Base setting up (AB) or as Low noise setting up (AS) that provides that compressor are positioned inside a soundproofed cabin, made with profiles and panels insulated with acoustic material.

The range is completed with numerous accessories and options.

The electronic controller can manage the various condensation control systems of the numerous applications required, enabling the control of 2-way or 3-way modulating valves or the control of pumps under INVERTER. The units can therefore be combined with liquid coolers (dry-coolers), cooling towers, geothermal boreholes or use for water cooling city or well water (condenser option P) or sea water (condenser option S). All the units are carefully built in compliance with the current regulations and individually tested. Installation therefore only requires the electrical and hydraulic connection.

Options

Compressor starting

- standard (contactors)
- soft starter

Compressors power factor correction

Electrical load protection

- standard (fuses)
- thermal magnetic circuit breakers

Evaporator flow switch (mounted)

Evaporator insulation higher thickness

Evaporator electrical heater for winter antifreeze

High and low pressure gauges

Compressor suction shut-off valve

Accessories

Rubber vibration dampers

External Water Storage Tank and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.

Antifreeze electrical heaters for Storage tank

Remote controller

Serial Interface Modbus on RS 485

Programmer clock

Phase sequence and voltage controller

Water flow switch

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7	Cooling capacity	280	315	353	409	474	532	587	698	812	927	1056	1159	kW
	Power input	62,6	70,4	79,4	91,1	108	120	133	159	182	215	244	263	kW
	EER	4,47	4,48	4,45	4,49	4,40	4,42	4,41	4,38	4,45	4,30	4,33	4,41	W/W
	ESEER	4,83	4,77	4,78	4,83	4,84	4,79	4,84	4,82	4,90	4,83	4,86	4,87	W/W
	Water flow rate plant side	13,5	15,1	17,0	19,7	22,8	25,6	28,3	33,6	39,1	44,7	50,9	55,8	l/s
	Pressure drops plant side	46	37	46	44	55	43	54	52	45	57	59	45	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Pressure drops source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa
IW		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7	Cooling capacity	280	315	353	409	474	532	587	698	812	927	1056	1159	kW
	Power input	62,6	70,4	79,4	91,1	108	120	133	159	182	215	244	263	kW
	EER	4,47	4,48	4,45	4,49	4,40	4,42	4,41	4,38	4,45	4,30	4,33	4,41	W/W
	ESEER	4,83	4,77	4,78	4,83	4,84	4,79	4,84	4,82	4,90	4,83	4,86	4,87	W/W
	Water flow rate plant side	13,5	15,1	17,0	19,7	22,8	25,6	28,3	33,6	39,1	44,7	50,9	55,8	l/s
	Pressure drops plant side	46	37	46	44	55	43	54	52	45	57	59	45	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Pressure drops source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa
W10W45	Heating capacity	311	350	395	455	534	592	659	783	908	1055	1184	1304	kW
	Power input	72,8	82,7	93,4	104	128	139	155	186	213	256	279	311	kW
	COP	4,28	4,23	4,24	4,36	4,16	4,26	4,25	4,20	4,27	4,12	4,25	4,19	W/W
	Water flow rate plant side	14,8	16,7	18,8	21,7	25,4	28,2	31,4	37,3	43,2	50,2	56,4	62,1	l/s
	Pressure drops plant side	24	21	22	23	32	22	21	22	23	33	22	21	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Pressure drops source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio) = Unit in **A CLASS**.
W30W7 = source : water in 30°C out 35°C / plant : water in 12°C out 7°C
W10W45 = source : water in 10°C / plant : water in 40°C out 45°C

Acoustic performances

Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level ^(E)	97	97	97	98	98	98	98	99	100	100	100	100	dB(A)
Sound pressure level at 1 meter	79	79	79	80	80	80	80	80	81	81	81	81	dB(A)
Sound pressure level at 5 meters	70	70	70	72	72	72	71	72	73	73	73	73	dB(A)
Sound pressure level at 10 meters	65	65	65	67	67	67	66	67	68	68	68	68	dB(A)
Low noise setting up (AS)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level ^(E)	92	93	92	93	93	94	94	94	95	95	96	96	dB(A)
Sound pressure level at 1 meter	74	75	74	75	75	76	76	75	76	76	77	77	dB(A)
Sound pressure level at 5 meters	65	66	65	66	66	67	67	67	68	68	69	69	dB(A)
Sound pressure level at 10 meters	60	61	60	61	61	62	62	62	63	63	64	64	dB(A)

(E): EUROVENT certified data
 The acoustic performances are referred to units operating in cooling mode at nominal conditions W30/W7. Unit placed in free field on reflecting surface (directional factor equal to 2).
 The sound power level is measured according to ISO 9614 standard.
 The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

TECHNICAL DATA	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Power supply	400 - 3 - 50												V-ph-Hz
Compressor type	twin-screw												-
N° compressors / N° refrigerant circuits	1 / 1						2 / 2						n°
Part load	25 / 100% continuous						12.5 / 100% continuous						-
Plant side heat exchanger type / N°	shell and tube / 1						shell and tube / 2						-
Source side heat exchanger type / N°	shell and tube / 1						shell and tube / 2						-
IN/OUT Plant hydraulic fittings (victaulic)	DN125	DN125	DN125	DN150	DN150	DN150	DN200	DN150	DN200	DN200	DN200	DN200	-
IN/OUT Source hydraulic fittings (victaulic)	DN100	DN100	DN100	DN100	DN100	DN125	DN125	DN100	DN100	DN100	DN125	DN125	-

Electrical data

Standard unit	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
FLA - Full load current at maximum tolerated conditions	162	181	211	232	270	309	340	422	464	540	618	680	A
FLI - Full load power input at maximum tolerated conditions	99	110	129	144	169	190	209	257	287	339	380	418	kW
MIC - Maximum instantaneous current of the unit	520	612	665	436	465	586	650	876	668	735	895	990	A

Operative range

Temperature	Tipo Unità	Cooling		Heating		
		min	max	min	max	
Water inlet temperature source side	IR, IW, BR	20 (5*)	50	10	25 (40*)	(°C)
Water outlet temperature plant side	IR, IW	5	15	25	55	(°C)
Water outlet temperature plant side	BR	-8	5	25	55	(°C)
Water outlet temperature Desuperheater (VD)	IR, BR	35	50	-	-	(°C)
Water outlet temperature total Recovery (VR)	IR, BR	25	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Double Set Point
- Demand Limit
- Dinamic set point
- Integrative heating
- Condensation / evaporation control
- Remote stand by
- Remote cooling-heating



VD and VR versions

These units allow to recover the heating power through an additional heat exchanger.

DESUPERHEATERS VERSION VD

Allows the production of cold water as in the base version and, simultaneously, of hot water at temperatures from 35 to 50 °C. This is achieved by inserting, between the compressor and condenser, a heat exchanger water-gas cooler which allows for heat recovery from 15 to 20% of thermal power.

TOTAL RECOVERY VERSION VR

Allows the production of cold water and simultaneously of hot water at temperatures from 25 to 55 °C. This is achieved using a suitable heat exchanger that has a double water circuit: one for condensation and a second for heat recovery. The management to the two hydraulic circuits is in charge of the user.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7 - W45	Cooling capacity	291	328	367	425	493	553	610	725	844	963	1097	1204	kW
	Total power input	61	69	77	89	105	118	130	156	178	210	238	257	kW
	EER	4,76	4,77	4,74	4,78	4,68	4,71	4,70	4,66	4,74	4,58	4,61	4,69	W/W
	HRE	5,65	5,67	5,63	5,68	5,56	5,60	5,59	5,55	5,64	5,45	5,49	5,59	W/W
	Water flow rate plant side	14,0	15,8	17,7	20,5	23,8	26,6	29,4	35,0	40,6	46,5	53,0	58,0	l/s
	Water pressure drop plant side	50	40	50	48	59	47	58	56	49	62	64	49	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Water pressure drop source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa
	Heating recovery capacity	54,4	61,7	69,1	79,2	92,2	105	115	138	158	184	210	229	kW
	Water flow rate recovery	2,60	2,95	3,30	3,79	4,40	5,02	5,50	6,60	7,57	8,81	10,0	11,0	l/s
	Water pressure drop recovery	6	8	7	10	9	7	9	7	10	9	7	9	kPa

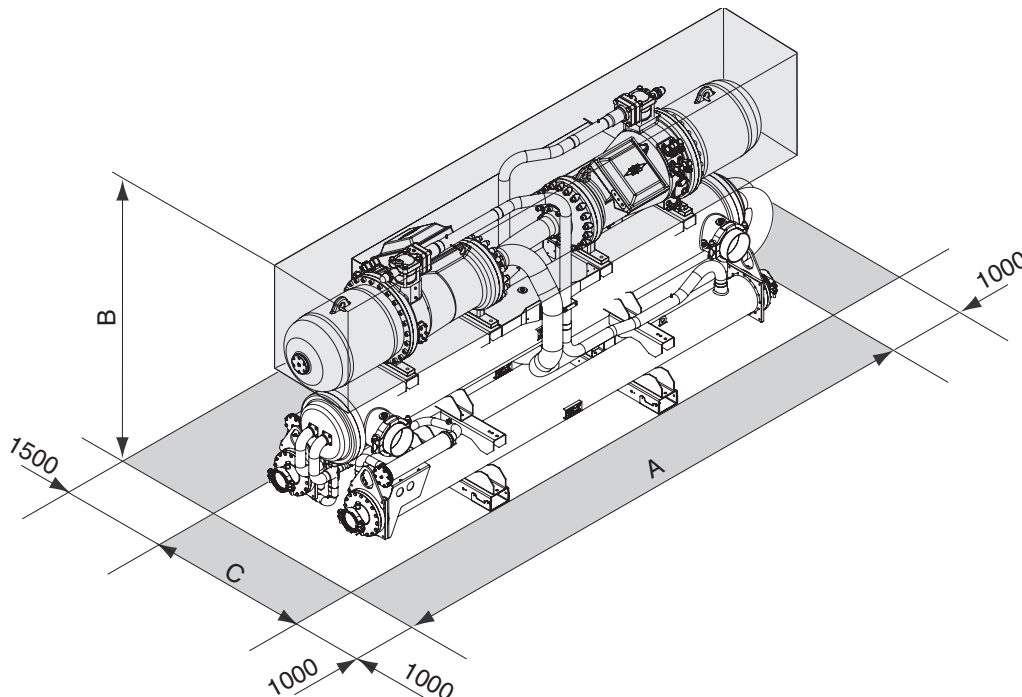
Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7 - W45	Cooling capacity	250	281	317	364	426	475	527	625	724	833	943	1039	kW
	Total power input	72	82	92	104	126	138	155	186	210	251	278	308	kW
	EER	3,47	3,45	3,44	3,49	3,39	3,44	3,40	3,37	3,44	3,32	3,39	3,38	W/W
	HRE	7,90	7,86	7,83	7,93	7,74	7,83	7,74	7,68	7,84	7,58	7,73	7,71	W/W
	Water flow rate plant side	12,0	13,5	15,2	17,5	20,5	22,8	25,3	30,0	34,8	40,1	45,4	49,9	l/s
	Water pressure drop plant side	36	29	37	35	44	34	43	42	36	46	47	36	kPa
	Heating recovery capacity	318	359	404	464	546	607	674	801	925	1072	1208	1332	kW
	Water flow rate recovery	15,2	17,2	19,3	22,2	26,1	29,0	32,2	38,3	44,2	51,2	57,7	63,6	l/s
	Water pressure drop recovery	25	22	23	24	34	24	22	23	24	34	24	22	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input
W30W7 - W45 = source : water in 30°C d.b. out 35°C / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



Modello	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
A	4084	4084	4084	4084	4084	4114	4114	4320	4463	4463	4463	4463	mm
B	1878	1878	1878	1904	1904	2002	2089	1932	1993	1993	2090	2090	mm
C	1043	1043	1043	1118	1118	1118	1118	1218	1218	1218	1256	1256	mm
Operating maximum weight	1929	1947	1984	2585	2618	2785	3134	3747	5042	5059	5512	5682	kg

> CXA

CONDENSING UNITS FOR OUTDOOR INSTALLATION

Available range

Unit type

- SR Condensing unit
SP Reversible condensing unit
(reversible on the refrigerant side)

Versions

- VB Base Version

Acoustic setting up

- AB Base setting up



Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of small and medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

It is possible for example to connect direct expansion coils placed inside air handling units or remote plate heat exchangers placed inside technical rooms. In both cases the lack of outdoor hydraulic pipes eliminates the freezing problems and avoids brine solutions to be used.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with rotary or scroll compres-

sor (according to the model) mounted on damper supports, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins and shut off valves on the liquid line and on the gas line. The reversible units are moreover supplied with reverse cycle valve, thermostatic expansion valve (working in heating mode) and liquid receiver.

The circuit is protected by high and low pressure switches.

All the units are equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All three-phase power supply units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Accessories

Rubber vibration dampers

Coil protection grille

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Remote plate heat exchanger

Liquid line

TECHNICAL DATA	6.1	7.1	9.1	11.1	14.1	17.1	
Power supply	230 - 1 - 50	230 - 1 - 50	230 - 1 - 50 400 - 3N - 50	230 - 1 - 50 400 - 3N - 50	400 - 3N - 50	400 - 3N - 50	V-ph-Hz
Compressor type	rotativo	rotativo	scroll	scroll	scroll	scroll	-
N° compressors / N° refrigerant circuits	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	n°
Source side heat exchanger type	finned coil	finned coil	finned coil	finned coil	finned coil	finned coil	-
Fans type	axial	axial	axial	axial	axial	axial	-
N° fans	1	1	1	1	1	1	n°
Liquid line connection	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"	-
Gas line connection	5/8"	5/8"	7/8"	7/8"	7/8"	7/8"	-

OPERATING LIMITS	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	5	48	-15	42	°C
Evaporating temperature (dew point)	SR, SP	1	20	-	-	°C
Condensing temperature (dew point)	SP	-	-	35	60	°C

NOMINAL performances

SR	Base acoustic setting up (AB)	6.1	7.1	9.1	11.1	14.1	17.1	
A35E5	Cooling capacity	6,73	8,05	10,2	11,8	15,0	18,8	kW
	Power input	2,14	2,82	3,69	4,11	5,09	6,59	kW
	EER	3,15	2,85	2,76	2,86	2,95	2,85	-
SP	Base acoustic setting up (AB)	6.1	7.1	9.1	11.1	14.1	17.1	
A35E5	Cooling capacity	6,50	7,71	10,0	11,6	14,8	18,6	kW
	Power input	2,15	2,83	3,70	4,11	5,10	6,59	kW
	EER	3,03	2,72	2,70	2,81	2,90	2,82	-
A7C50	Heating capacity	6,68	7,81	9,89	10,9	14,6	17,8	kW
	Power input	2,32	2,82	3,78	4,19	5,07	6,58	kW
	COP	2,88	2,77	2,62	2,60	2,88	2,71	-
A7C45	Heating capacity	7,38	8,63	10,9	12,1	16,1	19,6	kW
	Power input	2,04	2,49	3,33	3,69	4,47	5,80	kW
	COP	3,62	3,47	3,27	3,28	3,60	3,38	-

The values are referred to units without options and accessories.

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C - subcooling 5°C
A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - superheating 5°C - subcooling 5°C
A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : temperatura di condensazione (dew point) 45°C - superheating 5°C - subcooling 5°C

Acoustic performances

Base acoustic setting up (AB)	6.1	7.1	9.1	11.1	14.1	17.1	
Sound power level	69	69	72	72	74	74	dB(A)
Sound pressure level at 1 metre	55	55	57	57	59	59	dB(A)
Sound pressure level at 5 metres	44	44	46	46	48	48	dB(A)
Sound pressure level at 10 metres	38	38	41	41	43	43	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 3744 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

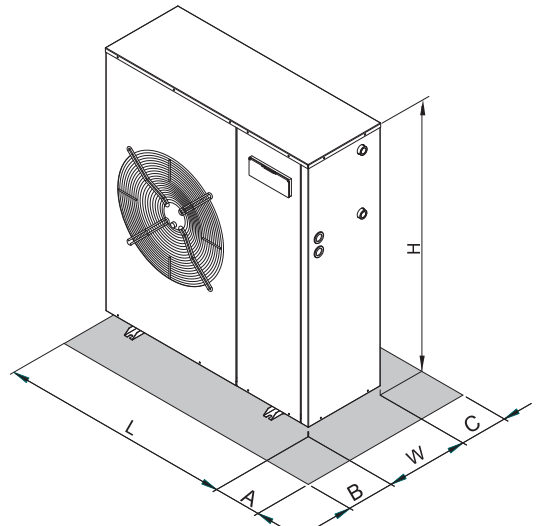
CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

- compressor and pump or fan operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output

The main functions available are :

- water or air temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic
- fans management by means of continuous rotational speed control
- pump or fan management on the plant side
- integrative electrical heaters management in heating mode (2 step logic)



DIMENSIONS AND MINIMUM OPERATING AREA

	6.1	7.1	9.1	11.1	14.1	17.1	
L	994	994	994	994	994	994	mm
W	356	356	356	356	356	356	mm
H	903	903	1153	1153	1453	1453	mm
A	400	400	400	400	400	400	mm
B	600	600	600	600	600	600	mm
C	200	200	200	200	200	200	mm

> CMA² - CMA² HE

CONDENSING UNITS
FOR OUTDOOR INSTALLATION



FUNZIONE
ADAPTIVE



Available range

Unit type

- SR Condensing unit
- SP Reversible condensing unit (reversible on the refrigerant side)

Versions

- VB Base Version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of small and medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

It is possible for example to connect direct expansion coils placed inside air handling units or remote plate heat exchangers placed inside technical rooms. In both cases the lack of outdoor hydraulic pipes eliminates the freezing problems and avoids brine solutions to be used.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is

equipped with scroll compressor mounted on damper supports, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins and shut off valves on the liquid line and on the gas line. The reversible units are moreover supplied with reverse cycle valve, thermostatic expansion valve (working in heating mode) and liquid receiver.

The circuit is protected by high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All the units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Electrical loads protection

- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers

Coil protection grille

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Remote plate heat exchanger

Liquid line

NET NOMINAL performances - CMA²

SR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,4	24,2	28,0	32,9	37,7	43,8	kW
	Power input	6,75	7,53	8,67	10,66	11,99	13,85	kW
	EER	3,17	3,21	3,23	3,08	3,14	3,17	W/W
SR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,5	23,2	26,9	31,6	36,2	42,1	kW
	Power input	7,26	8,14	9,34	11,45	12,97	14,92	kW
	EER	2,83	2,85	2,88	2,76	2,79	2,82	W/W
SP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,9	23,5	27,2	32,0	36,7	42,8	kW
	Power input	6,82	7,65	8,76	10,78	12,12	14,00	kW
	EER	3,06	3,07	3,11	2,97	3,02	3,06	W/W
A7C50	Heating capacity	20,0	22,5	26,1	30,9	35,5	40,1	kW
	Power input	6,87	7,71	8,95	11,07	12,42	13,97	kW
	COP	2,91	2,92	2,92	2,79	2,86	2,87	W/W
A7C45	Heating capacity	22,0	24,8	28,8	34,1	39,1	44,2	kW
	Power input	6,05	6,79	7,88	9,76	10,88	12,25	kW
	COP	3,64	3,66	3,66	3,50	3,60	3,61	W/W
SP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,0	22,6	26,2	30,7	35,2	41,0	kW
	Power input	7,32	8,23	9,41	11,54	13,09	15,05	kW
	EER	2,73	2,74	2,79	2,66	2,69	2,72	W/W
A7C50	Heating capacity	18,9	21,4	24,9	29,6	33,8	38,2	kW
	Power input	6,63	7,41	8,61	10,66	12,02	13,40	kW
	COP	2,85	2,89	2,89	2,77	2,81	2,85	W/W
A7C45	Heating capacity	20,9	23,6	27,5	32,6	37,3	42,2	kW
	Power input	5,84	6,52	7,59	9,39	10,58	11,88	kW
	COP	3,58	3,62	3,62	3,47	3,52	3,55	W/W

NET NOMINAL performances - CMA² HE

SR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	22,3	24,9	29,0	34,9	39,6	46,2	kW
	Power input	6,12	6,83	7,83	9,52	10,84	12,46	kW
	EER	3,63	3,65	3,70	3,66	3,65	3,71	W/W
SR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,4	23,9	27,9	33,6	38,1	44,6	kW
	Power input	6,62	7,38	8,47	10,29	11,61	13,21	kW
	EER	3,24	3,23	3,29	3,26	3,29	3,38	W/W
SP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,8	23,8	27,8	33,6	39	44,1	kW
	Power input	6,07	7,03	8,16	10,1	11,7	13,2	kW
	EER	3,60	3,39	3,4	3,34	3,33	3,33	W/W
A7C50	Heating capacity	20,5	23,2	27,0	31,8	36,5	42,4	kW
	Power input	6,46	7,13	8,21	10,01	11,40	12,91	kW
	COP	3,18	3,26	3,29	3,17	3,20	3,29	W/W
A7C45	Heating capacity	22,7	25,6	29,8	35,1	40,2	46,8	kW
	Power input	5,69	6,28	7,23	8,78	10,04	11,44	kW
	COP	3,98	4,08	4,12	3,99	4,01	4,09	W/W
SP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,9	23,8	27,8	33,6	39	44,1	kW
	Power input	6,55	7,03	8,16	10,1	11,7	13,2	kW
	EER	3,20	3,39	3,4	3,34	3,33	3,33	W/W
A7C50	Heating capacity	19,5	22,1	25,9	30,4	34,6	40,4	kW
	Power input	6,24	6,91	7,95	9,64	10,98	12,51	kW
	COP	3,12	3,19	3,25	3,15	3,16	3,23	W/W
A7C45	Heating capacity	21,5	24,3	28,5	33,6	38,3	44,6	kW
	Power input	5,50	6,09	7,00	8,50	9,71	11,03	kW
	COP	3,91	3,99	4,08	3,96	3,95	4,05	W/W

The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C

A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C

A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level	77	77	78	81	82	82	dB(A)
Sound pressure level at 1 meter	61	62	62	65	66	66	dB(A)
Sound pressure level at 5 meters	51	51	52	55	55	56	dB(A)
Sound pressure level at 10 meters	46	46	47	50	50	50	dB(A)
Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	59	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	48	48	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3N - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	1 / 1						n°
Source side heat exchanger type	finned coil						-
Fans type	axial						-
N° fans	1						n°
Tank volume	5/8"						-
Hydraulic fittings	1" 1/8						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	18,8	20,8	22,9	25,9	29,9	34,0	A
FLI - Full load power input at maximum tolerated conditions	10,8	12,1	13,4	15,8	18,4	21,0	kW
MIC - Maximum instantaneous current of the unit	98	114	121	129	144	178	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	55	64	68	73	82	102	A

Operating range

Temperature	Unit type	Cooling		Heating		°C
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	-10*	48 (STD) 50 (HE)	-15	42	°C
Evaporating temperature (dew point)	SR, SP	0	15	-	-	°C
Condensing temperature (dew point)	SP	-	-	30	60	°C

* with fans modulating control option (condensation / evaporation control)

CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

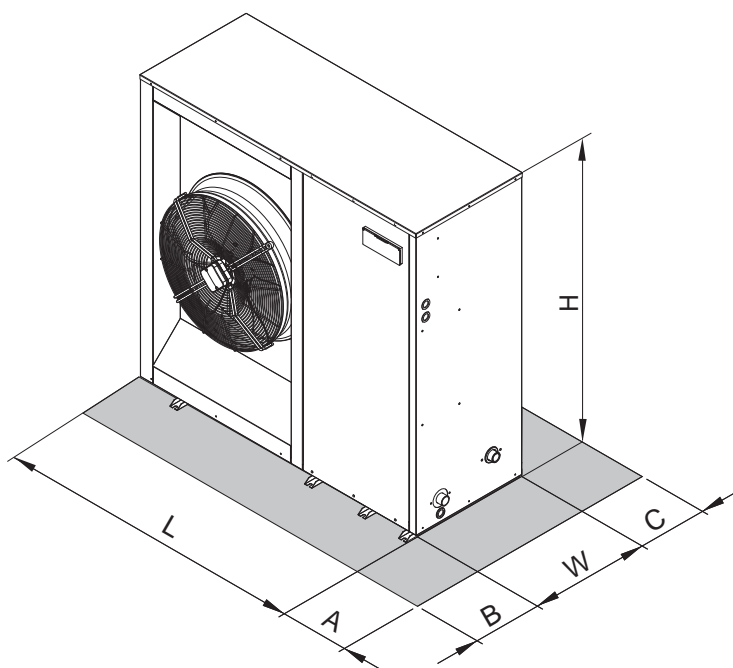
The main functions available are :

- water or air temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic

- fans management by means of continuous rotational speed control
- pump or fan management on the plant side
- integrative electrical heaters management in heating mode (2 step logic)
- compressor and pump or fan operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output



DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L	1494	1494	1494	1704	1704	1704	mm
W	576	576	576	576	576	576	mm
H	1453	1453	1453	1453	1453	1453	mm
A	400	400	400	400	400	400	mm
B	600	600	600	600	600	600	mm
C	200	200	200	200	200	200	mm
CMA unit - maximum weight operation	221	224	239	257	277	279	kg
CMA HE unit - maximum weight operation	236	239	259	279	302	304	kg

> CMP² - CMP² HE

CONDENSING UNITS
FOR INDOOR INSTALLATION



ADAPTIVE
FUNCTION



Available range

Unit type

- SR Condensing unit
SP Reversible condensing unit
(reversible on the refrigerant side)

Versions

- VB Base Version

Acoustic setting up

- AB Base setting up
AS Low noise setting up

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of small and medium size.

All the units are suitable for indoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

It is possible for example to connect direct expansion coils placed inside air handling units or remote plate heat exchangers placed inside technical rooms. In both cases the lack of outdoor hydraulic pipes eliminates the freezing problems and avoids brine solutions to be used.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is

equipped with scroll compressor mounted on damper supports, centrifugal fans (plug fan), finned coil made of copper pipes and aluminium louvered fins and shut off valves on the liquid line and on the gas line. The reversible units are moreover supplied with reverse cycle valve, thermostatic expansion valve (working in heating mode) and liquid receiver.

The circuit is protected by high and low pressure switches.

All the units are equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All the units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Electrical loads protection

- fuses
 - thermal magnetic circuit breakers
- Compressor power factor correction

Accessories

Rubber vibration dampers

Coil protection grille

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Remote plate heat exchanger

Liquid line

NET NOMINAL performances - CMP²

SR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,4	24,2	28,0	32,9	37,7	43,8	kW
	Power input	6,75	7,53	8,67	10,66	11,99	13,85	kW
	EER	3,17	3,21	3,23	3,08	3,14	3,17	W/W
SR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,5	23,2	26,9	31,6	36,2	42,1	kW
	Power input	7,26	8,14	9,34	11,45	12,97	14,92	kW
	EER	2,83	2,85	2,88	2,76	2,79	2,82	W/W
SP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,9	23,5	27,2	32,0	36,7	42,8	kW
	Power input	6,82	7,65	8,76	10,78	12,12	14,00	kW
	EER	3,06	3,07	3,11	2,97	3,02	3,06	W/W
A7C50	Heating capacity	20,0	22,5	26,1	30,9	35,5	40,1	kW
	Power input	6,87	7,71	8,95	11,07	12,42	13,97	kW
	COP	2,91	2,92	2,92	2,79	2,86	2,87	W/W
A7C45	Heating capacity	22,0	24,8	28,8	34,1	39,1	44,2	kW
	Power input	6,05	6,79	7,88	9,76	10,88	12,25	kW
	COP	3,64	3,66	3,66	3,50	3,60	3,61	W/W
SP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,0	22,6	26,2	30,7	35,2	41,0	kW
	Power input	7,32	8,23	9,41	11,54	13,09	15,05	kW
	EER	2,73	2,74	2,79	2,66	2,69	2,72	W/W
A7C50	Heating capacity	18,9	21,4	24,9	29,6	33,8	38,2	kW
	Power input	6,63	7,41	8,61	10,66	12,02	13,40	kW
	COP	2,85	2,89	2,89	2,77	2,81	2,85	W/W
A7C45	Heating capacity	20,9	23,6	27,5	32,6	37,3	42,2	kW
	Power input	5,84	6,52	7,59	9,39	10,58	11,88	kW
	COP	3,58	3,62	3,62	3,47	3,52	3,55	W/W

NET NOMINAL performances - CMP² HE

SR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	22,3	24,9	29,0	34,9	39,6	46,2	kW
	Power input	6,12	6,83	7,83	9,52	10,84	12,46	kW
	EER	3,63	3,65	3,70	3,66	3,65	3,71	W/W
SR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,4	23,9	27,9	33,6	38,1	44,6	kW
	Power input	6,62	7,38	8,47	10,29	11,61	13,21	kW
	EER	3,24	3,23	3,29	3,26	3,29	3,38	W/W
SP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,8	23,8	27,8	33,6	39	44,1	kW
	Power input	6,07	7,03	8,16	10,1	11,7	13,2	kW
	EER	3,60	3,39	3,4	3,34	3,33	3,33	W/W
A7C50	Heating capacity	20,5	23,2	27,0	31,8	36,5	42,4	kW
	Power input	6,46	7,13	8,21	10,01	11,40	12,91	kW
	COP	3,18	3,26	3,29	3,17	3,20	3,29	W/W
A7C45	Heating capacity	22,7	25,6	29,8	35,1	40,2	46,8	kW
	Power input	5,69	6,28	7,23	8,78	10,04	11,44	kW
	COP	3,98	4,08	4,12	3,99	4,01	4,09	W/W
SP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,9	23,8	27,8	33,6	39	44,1	kW
	Power input	6,55	7,03	8,16	10,1	11,7	13,2	kW
	EER	3,20	3,39	3,4	3,34	3,33	3,33	W/W
A7C50	Heating capacity	19,5	22,1	25,9	30,4	34,6	40,4	kW
	Power input	6,24	6,91	7,95	9,64	10,98	12,51	kW
	COP	3,12	3,19	3,25	3,15	3,16	3,23	W/W
A7C45	Heating capacity	21,5	24,3	28,5	33,6	38,3	44,6	kW
	Power input	5,50	6,09	7,00	8,50	9,71	11,03	kW
	COP	3,91	3,99	4,08	3,96	3,95	4,05	W/W

The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C

A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C

A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level	76	76	77	80	81	81	dB(A)
Sound pressure level at 1 meter	60	60	61	64	65	65	dB(A)
Sound pressure level at 5 meters	50	50	51	54	55	55	dB(A)
Sound pressure level at 10 meters	45	45	46	49	49	50	dB(A)
Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	58	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	47	48	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3N - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	1 / 1						n°
Source side heat exchanger type	finned coil						-
Fans type	centrifugal (plug fan)						-
N° fans	1						n°
Tank volume	5/8"						-
Hydraulic fittings	1" 1/8						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	28,9	30,9	33,0	28,0	32,0	36,1	A
FLI - Full load power input at maximum tolerated conditions	13,0	14,3	15,6	16,8	19,4	22,0	kW
MIC - Maximum instantaneous current of the unit	108	124	131	131	146	180	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	65	74	78	75	84	104	A

Operating range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	-10	48 (STD) 50 (HE)	-15	42	°C
Evaporating temperature (dew point)	SR, SP	0	15	-	-	°C
Condensing temperature (dew point)	SP	-	-	30	60	°C

CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

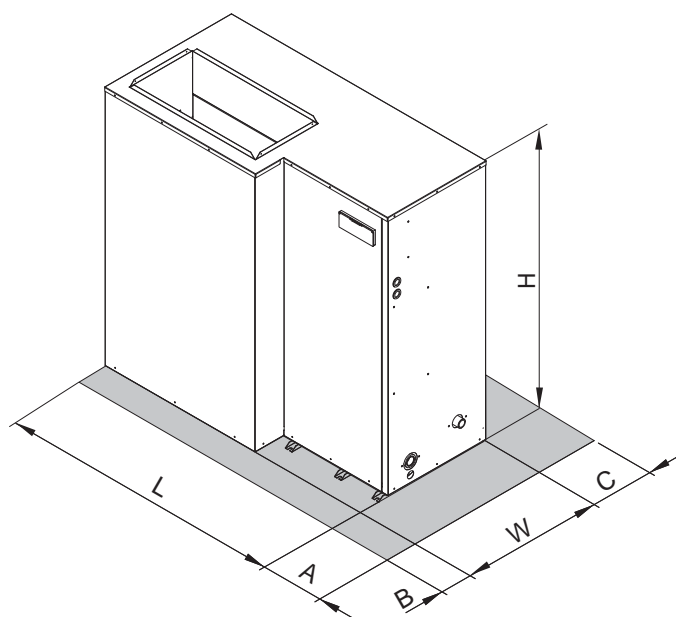
The main functions available are :

- water or air temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic

- fans management by means of continuous rotational speed control
- pump or fan management on the plant side
- integrative electrical heaters management in heating mode (2 step logic)
- compressor and pump or fan operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output



DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L	1494	1494	1494	1704	1704	1704	mm
W	744	744	744	744	744	744	mm
H	1453	1453	1453	1453	1453	1453	mm
A	400	400	400	400	400	400	mm
B	450	450	450	450	450	450	mm
C	200	200	200	200	200	200	mm
CMP unit - maximum weight operation	256	259	274	278	298	300	kg
CMP HE unit - maximum weight operation	271	274	294	303	323	325	kg

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CONDENSING UNITS FOR OUTDOOR INSTALLATION



ADAPTIVE
FUNCTION



Available range

Unit type

- SR Condensing unit
- SP Heat pump condensing unit (reversible on the refrigerant side)

Version

- VB Base version
- VD Desuperheater version
- VR Total recovery version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up
- AX eXtra low noise setting up

Source temperature level

- M Medium temperature level
- A High temperature level

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, thermostatic expansion valve (only for SP), reverse cycle valve, axial fans with safety protec-

tion grilles, finned coil made of copper pipes and aluminium louvered fins with sub-cooling section. The circuit is protected by a safety gas valve, high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for SP)

High and low pressure gauges

High temperature thermostat

Coil shut off valves

Outdoor air sensor

Remote plate heat exchanger

Liquid line

NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	48,9	57,8	63,3	74,3	85,0	98,3	110	121	136	154	171	194	216	kW
	Power input	15,5	18,4	20,5	23,7	27,6	32,1	35,5	39,4	44,5	50,8	56,3	63,7	70,6	kW
	EER	3,15	3,14	3,09	3,14	3,08	3,06	3,10	3,07	3,06	3,03	3,04	3,05	3,06	W/W
SR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	47,4	56,1	61,3	72,0	82,4	95,3	106	118	132	150	165	189	210	kW
	Power input	16,1	19,2	21,3	24,6	28,8	33,4	36,9	41,0	46,3	52,8	58,6	66,2	73,4	kW
	EER	2,94	2,92	2,88	2,93	2,86	2,85	2,87	2,88	2,85	2,84	2,82	2,85	2,86	W/W
SR	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	46,3	54,8	59,9	70,4	80,5	93,1	104	114	129	146	162	184	204	kW
	Power input	16,2	19,6	21,9	25,1	29,6	32,5	38,0	42,2	47,7	53,8	59,8	68,1	75,5	kW
	EER	2,86	2,80	2,74	2,80	2,72	2,86	2,74	2,70	2,70	2,71	2,71	2,70	2,70	W/W
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	47,3	57,1	62,1	72,6	80,0	96,3	107	119	132	149	166	192	214	kW
	Power input	15,3	18,6	20,4	23,8	26,7	31,9	35,3	39,3	43,9	49,7	55,6	62,7	70,3	kW
	EER	3,09	3,07	3,04	3,05	3,00	3,02	3,03	3,03	3,01	3,00	2,99	3,06	3,04	W/W
A7C50	Heating capacity	47,8	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
	Power input	15,3	18,5	20,3	23,7	26,9	32,6	35,0	40,0	43,7	50,5	55,4	63,4	69,8	kW
	COP	3,12	3,11	3,08	3,11	3,06	3,03	3,11	3,10	3,09	3,03	3,09	3,08	3,07	W/W
A7C45	Heating capacity	49,4	58,4	63,9	75,0	85,9	99,3	111	122	137	156	173	196	218	kW
	Power input	14,6	17,6	19,3	22,6	25,6	31,0	33,3	38,1	41,6	48,1	52,7	60,4	66,4	kW
	COP	3,39	3,31	3,31	3,33	3,35	3,20	3,33	3,21	3,30	3,24	3,27	3,25	3,28	W/W
SP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	45,4	54,9	59,6	69,7	76,8	92,4	103	114	126	143	160	185	205	kW
	Power input	15,9	19,8	21,6	25,2	28,3	33,8	37,4	41,6	46,6	52,7	59,0	66,4	74,5	kW
	EER	2,86	2,77	2,76	2,77	2,71	2,73	2,75	2,74	2,70	2,71	2,71	2,79	2,75	W/W
A7C50	Heating capacity	46,6	56,0	61,1	71,9	80,2	96,2	106	121	132	149	167	190	209	kW
	Power input	14,6	17,7	19,4	22,6	25,7	31,1	33,4	38,2	41,7	48,2	52,9	60,5	66,7	kW
	COP	3,19	3,16	3,15	3,18	3,12	3,09	3,17	3,17	3,17	3,09	3,16	3,14	3,13	W/W
A7C45	Heating capacity	47,9	56,7	61,9	72,7	83,2	96,3	107	119	133	152	167	191	212	kW
	Power input	13,9	16,9	18,5	21,5	24,5	29,6	31,8	36,4	39,7	45,9	50,4	57,6	63,5	kW
	COP	3,44	3,36	3,35	3,38	3,40	3,25	3,37	3,28	3,36	3,30	3,31	3,31	3,34	W/W
SP	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	44,5	53,7	58,4	68,3	75,3	90,5	101	111	124	140	157	180	201	kW
	Power input	17,0	20,9	22,8	26,6	29,9	35,7	39,5	44,0	49,2	55,6	62,3	70,3	78,7	kW
	EER	2,62	2,57	2,56	2,57	2,52	2,54	2,56	2,52	2,52	2,52	2,52	2,56	2,55	W/W
A7C50	Heating capacity	44,9	54,0	58,9	69,4	77,4	92,8	103	117	127	144	161	183	201	kW
	Power input	13,9	16,8	18,5	21,6	24,5	29,7	31,9	36,4	39,8	46,0	50,4	57,7	63,5	kW
	COP	3,23	3,21	3,18	3,21	3,16	3,12	3,23	3,21	3,19	3,13	3,19	3,17	3,17	W/W
A7C45	Heating capacity	46,8	55,3	60,5	71,1	81,3	94,0	105	115	130	147	164	186	206	kW
	Power input	13,2	16,0	17,6	20,6	23,3	28,3	30,4	34,7	37,9	43,8	48,0	54,9	60,5	kW
	COP	3,53	3,46	3,44	3,46	3,49	3,33	3,46	3,32	3,44	3,37	3,41	3,38	3,41	W/W

The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C
A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C
A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	82	82	83	84	84	85	85	85	86	87	87	88	88	dB(A)
Sound pressure level at 1 meter	64	64	65	66	66	67	67	67	68	69	69	69	69	dB(A)
Sound pressure level at 5 meters	55	55	56	57	57	58	58	58	59	60	60	61	61	dB(A)
Sound pressure level at 10 meters	50	50	51	52	52	53	53	53	54	55	55	56	56	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	79	79	80	81	81	82	82	82	83	84	84	85	85	dB(A)
Sound pressure level at 1 meter	61	61	62	63	63	64	64	64	65	66	66	66	66	dB(A)
Sound pressure level at 5 meters	52	52	53	54	54	55	55	55	56	57	57	58	58	dB(A)
Sound pressure level at 10 meters	47	47	48	49	49	50	50	50	51	52	52	53	53	dB(A)
eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	77	77	78	79	79	80	80	80	81	82	82	83	83	dB(A)
Sound pressure level at 1 meter	59	59	60	61	61	62	62	62	63	64	64	64	64	dB(A)
Sound pressure level at 5 meters	50	50	51	52	52	53	53	53	54	55	55	56	56	dB(A)
Sound pressure level at 10 meters	45	45	46	47	47	48	48	48	49	50	50	51	51	dB(A)

The values are referred to units without options and accessories.

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2		
Power supply	400 - 3+N - 50					400 - 3 - 50								V-ph-Hz	
Compressor type														scroll	-
N° compressors / N° refrigerant circuits														2 / 1	n°
Source side heat exchanger type														finned coil	-
Fans type														axial	-
N° fans	2		3			2			3		4			n°	
Liquid line connection	7/8"					1 1/8"					1 3/8"			-	
Gas line connection	1 5/8"					2 1/8"								-	

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	40,2	45,7	53,3	58,7	69,6	75,5	90,0	97,9	106	123	136	159	170	A
FLI - Full load power input at maximum tolerated conditions	21,6	24,4	28,4	31,0	36,2	44,0	55,0	60,5	66,0	75,7	83,3	95,4	103	kW
MIC - Maximum instantaneous current of the unit	134	143	149	173	213	264	259	267	267	348	361	355	391	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	89,3	96,3	101	117	143	174	175	183	183	200	246	248	272	A

Operative range

Temperature	Unit type	Cooling		Heating		°C
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	-10*	45	-7	40*	°C
Evaporating temperature (dew point)	SR, SP	1	15	-	-	°C
Condensing temperature (dew point)	SP	-	-	30	60	°C
Water outlet temperature (VD)	SR, SP	30	70	30	70	(°C)

* with fans modulating control option (condensation / evaporation control)

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger. The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat. **The Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	50,9	60,1	65,8	77,3	88,4	102	115	126	142	161	177	202	225	kW
	Total power input	15,1	17,9	19,8	23,0	26,8	31,1	34,4	38,2	43,1	49,3	54,7	61,8	68,4	kW
	EER	3,37	3,36	3,32	3,36	3,30	3,28	3,34	3,30	3,29	3,27	3,24	3,27	3,29	W/W
	Heating recovery capacity	14,8	17,4	19,1	22,4	25,6	29,6	33,2	36,5	41,0	46,6	51,5	58,6	65,1	kW
	Water flow rate recovery	0,70	0,83	0,91	1,07	1,22	1,42	1,59	1,74	1,96	2,23	2,46	2,80	3,11	l/s
	Water pressure drop recovery	7	11	13	17	22	18	22	12	16	20	24	20	24	kPa

SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	49,2	59,4	64,6	75,5	83,2	100	111	124	137	155	173	200	222	kW
	Total power input	14,9	18,1	19,8	23,1	25,9	30,9	34,2	38,1	42,6	48,2	54,0	60,8	68,1	kW
	EER	3,30	3,28	3,26	3,27	3,21	3,24	3,25	3,25	3,22	3,22	3,20	3,29	3,26	W/W
	Heating recovery capacity	14,3	17,2	18,7	21,9	24,1	29,1	32,2	35,8	39,7	45,0	50,2	58,0	64,5	kW
	Water flow rate recovery	0,68	0,82	0,89	1,05	1,15	1,39	1,54	1,71	1,90	2,15	2,40	2,77	3,08	l/s
	Water pressure drop recovery	7	11	12	17	20	17	20	12	15	19	23	20	23	kPa

Total Recovery Version (VR) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	50,9	60,1	65,8	77,3	88,4	102	115	126	142	161	177	202	225	kW
	Total power input	14,9	17,7	19,6	22,7	26,5	30,8	34,1	37,8	42,7	48,8	54,1	61,2	67,7	kW
	EER	3,42	3,40	3,36	3,41	3,34	3,31	3,37	3,33	3,33	3,30	3,27	3,30	3,32	W/W
	Heating recovery capacity	65,0	76,9	84,5	98,9	114	131	147	162	182	207	229	260	289	kW
	Water flow rate recovery	3,11	3,67	4,04	4,73	5,43	6,28	7,02	7,73	8,70	9,89	10,9	12,4	13,8	l/s
	Water pressure drop recovery	41	57	48	53	59	58	62	56	61	61	62	65	65	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

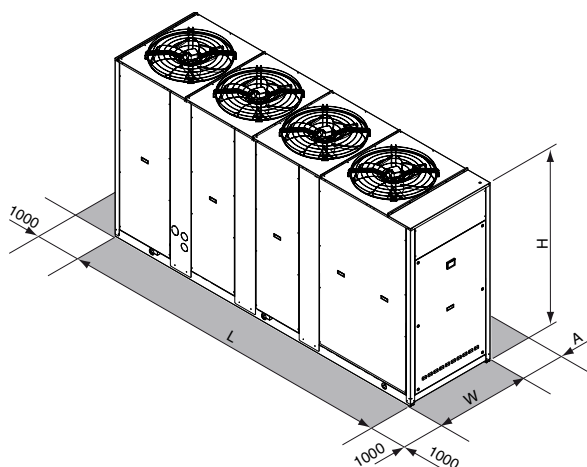
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
L			2480				3322			3322		4080		mm
W			954				1104			1104		1104		mm
H			1930				1793			2193		2193		mm
A				1600							2000			mm
Operating maximum weight	635	639	639	680	705	953	1034	1065	1181	1240	1292	1435	1481	kg

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CONDENSING UNITS FOR OUTDOOR INSTALLATION



Available range

Unit type

- SR Condensing unit
- SP Heat pump condensing unit
(reversible on the refrigerant side)

Version

- VB Base version
- VD Desuperheater version
- VR Total recovery version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up
- AX eXtra low noise setting up

Source temperature level

- M Medium temperature level
- A High temperature level

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, thermostatic expansion valve (only for SP), reverse cycle valve, axial fans with safety protec-

tion grilles, finned coil made of copper pipes and aluminium louvered fins with sub-cooling section. The circuit is protected by a safety gas valve, high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for SP)

High and low pressure gauges

High temperature thermostat

Coil shut off valves

Outdoor air sensor

Remote plate heat exchanger

Liquid line

NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	51,2	60,7	68,5	76,7	90,5	103,0	116	131	145	166	188	214	kW
	Power input	14,8	17,0	19,7	21,8	27,0	30,9	34,3	38,3	42,3	49,5	54,8	63,9	kW
	EER	3,46	3,57	3,48	3,52	3,35	3,33	3,38	3,42	3,43	3,35	3,43	3,35	W/W
SR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	48,8	57,9	65,2	73,1	86,3	98,2	110	124	138	159	179	204	kW
	Power input	15,4	17,7	20,5	22,7	27,5	31,8	35,4	39,6	43,9	51,0	56,8	65,7	kW
	EER	3,17	3,27	3,18	3,22	3,14	3,09	3,11	3,13	3,14	3,12	3,15	3,11	W/W
SR	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	48,0	56,8	64,2	71,8	84,8	96,6	108	122	136	156	176	200	kW
	Power input	15,6	18,0	20,7	23,0	27,8	32,2	35,8	40,2	44,7	51,5	57,4	66,4	kW
	EER	3,08	3,16	3,10	3,12	3,05	3,00	3,02	3,03	3,04	3,03	3,07	3,01	W/W
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	49,1	58,2	65,9	73,7	88,2	100,2	112	125	139	160	180	207	kW
	Power input	14,5	16,9	19,3	21,5	26,5	30,0	33,6	37,5	41,4	48,1	53,8	62,2	kW
	EER	3,39	3,44	3,41	3,43	3,33	3,34	3,33	3,33	3,36	3,33	3,35	3,33	W/W
A7C50	Heating capacity	49,2	58,0	65,6	73,6	87,9	99,8	112	125	140	160	180	206	kW
	Power input	15,3	17,8	20,4	22,9	27,4	31,0	34,8	39,0	43,5	50,0	55,9	64,2	kW
	COP	3,22	3,26	3,22	3,21	3,21	3,22	3,22	3,21	3,22	3,20	3,22	3,21	W/W
A7C45	Heating capacity	51,7	61,3	69,2	77,5	91,4	104,0	117	132	146	168	190	216	kW
	Power input	14,6	16,9	19,4	21,8	26,1	29,5	33,1	37,1	41,4	47,6	53,2	61,1	kW
	COP	3,55	3,62	3,56	3,55	3,50	3,53	3,54	3,56	3,54	3,52	3,57	3,54	W/W
SP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	46,8	55,4	62,7	70,2	84,0	95,5	107	119	133	152	172	198	kW
	Power input	15,1	17,6	20,0	22,4	27,0	30,8	34,6	38,8	43,0	49,5	55,7	63,9	kW
	EER	3,10	3,15	3,14	3,13	3,11	3,10	3,09	3,07	3,09	3,07	3,09	3,10	W/W
A7C50	Heating capacity	47,9	56,5	63,9	71,7	85,6	97,2	109	122	136	156	175	201	kW
	Power input	14,7	17,2	19,7	22,2	26,0	29,6	33,4	37,5	42,0	47,9	53,7	61,4	kW
	COP	3,26	3,28	3,24	3,23	3,29	3,28	3,26	3,25	3,24	3,26	3,26	3,27	W/W
A7C45	Heating capacity	49,3	58,5	65,9	73,8	87,2	99,2	111	125	139	161	181	206	kW
	Power input	14,0	16,4	18,8	21,1	24,8	28,2	31,8	35,7	40,0	45,6	51,1	58,5	kW
	COP	3,52	3,57	3,51	3,49	3,52	3,52	3,49	3,51	3,49	3,52	3,54	3,52	W/W
SP	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	46,0	54,5	61,7	69,0	82,6	93,9	105	118	131	150	168	194	kW
	Power input	15,3	17,9	20,3	22,7	27,3	31,2	35,1	39,4	43,7	50,0	56,3	64,6	kW
	EER	3,01	3,04	3,04	3,04	3,03	3,01	2,99	2,99	3,00	3,00	2,98	3,00	W/W
A7C50	Heating capacity	47,4	55,8	63,1	70,8	84,6	96,0	108	120	135	154	173	198	kW
	Power input	14,5	16,9	19,3	21,7	25,5	29,0	32,7	36,8	41,2	46,8	52,6	60,1	kW
	COP	3,27	3,30	3,27	3,26	3,32	3,31	3,30	3,26	3,28	3,29	3,29	3,29	W/W
A7C45	Heating capacity	48,5	57,4	64,8	72,5	85,6	97,6	109	123	137	158	178	202	kW
	Power input	13,8	16,1	18,4	20,7	24,3	27,6	31,1	35,0	39,2	44,6	50,1	57,2	kW
	COP	3,51	3,57	3,53	3,51	3,53	3,53	3,50	3,52	3,50	3,54	3,55	3,53	W/W

The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C
A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C
A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level	82	82	83	84	85	85	85	85	86	87	87	88	dB(A)
Sound pressure level at 1 meter	64	64	65	66	67	67	67	67	68	69	69	69	dB(A)
Sound pressure level at 5 meters	55	55	56	57	58	58	58	58	59	60	60	61	dB(A)
Sound pressure level at 10 meters	50	50	51	52	53	53	53	53	54	55	55	56	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level	79	79	80	81	82	82	82	82	83	84	84	85	dB(A)
Sound pressure level at 1 meter	61	61	62	63	64	64	64	64	65	66	66	66	dB(A)
Sound pressure level at 5 meters	52	52	53	54	55	55	55	55	56	57	57	58	dB(A)
Sound pressure level at 10 meters	47	47	48	49	50	50	50	50	51	52	52	53	dB(A)
eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level	77	77	78	79	80	80	80	80	81	82	82	83	dB(A)
Sound pressure level at 1 meter	59	59	60	61	62	62	62	62	63	64	64	64	dB(A)
Sound pressure level at 5 meters	50	50	51	52	53	53	53	53	54	55	55	56	dB(A)
Sound pressure level at 10 meters	45	45	46	47	48	48	48	48	49	50	50	51	dB(A)

The values are referred to units without options and accessories.

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Power supply	400 - 3+N - 50				400 - 3 - 50								V-ph-Hz
Compressor type	scroll												-
N° compressors / N° refrigerant circuits	2 / 1												n°
Source side heat exchanger type	finned coil												-
Fans type	axial												-
N° fans	2	3		2				3		4			n°
Liquid line connection	7/8"				1 1/8"				1 3/8"				-
Gas line connection	1 5/8"				2 1/8"								-

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
FLA - Full load current at maximum tolerated conditions	40,2	45,7	53,3	58,7	69,6	75,5	90,0	97,9	106	123	136	159	A
FLI - Full load power input at maximum tolerated conditions	21,6	24,4	28,4	31,0	36,2	44,0	55,0	60,5	66,0	75,7	83,3	95,4	kW
MIC - Maximum instantaneous current of the unit	134	143	149	173	213	264	259	267	267	348	361	355	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	89,3	96,3	101	117	143	174	175	183	183	200	246	248	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	-10*	45	-7	40*	°C
Evaporating temperature (dew point)	SR, SP	1	15	-	-	°C
Condensing temperature (dew point)	SP	-	-	30	60	°C
Water outlet temperature (VD)	SR, SP	30	70	30	70	(°C)

* with fans modulating control option (condensation / evaporation control)

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger. The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat. **The Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desuperheater Version (VD) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5 - W45	Cooling capacity	53,2	63,1	71,2	79,7	94,1	107	120	136	151	173	195	222	kW
	Total power input	14,4	16,5	19,1	21,1	26,2	30,0	33,2	37,2	41,1	48,0	53,2	62,0	kW
	EER	3,69	3,82	3,73	3,78	3,59	3,57	3,61	3,66	3,67	3,60	3,67	3,58	W/W
	Heating recovery capacity	15,4	18,3	20,7	23,1	27,3	31,1	34,9	39,4	43,6	50,2	56,7	64,5	kW
	Water flow rate recovery	0,74	0,87	0,99	1,10	1,30	1,48	1,67	1,88	2,09	2,40	2,71	3,08	l/s
	Water pressure drop recovery	8	12	15	18	25	20	24	14	18	24	29	24	kPa
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5 - W45	Cooling capacity	51,1	60,5	68,5	76,6	91,8	104	117	130	145	166	188	216	kW
	Total power input	14,1	16,4	18,7	20,8	25,7	29,1	32,6	36,4	40,2	46,6	52,2	60,3	kW
	EER	3,62	3,69	3,66	3,68	3,57	3,57	3,59	3,57	3,61	3,56	3,60	3,58	W/W
	Heating recovery capacity	14,8	17,6	19,9	22,2	26,6	30,2	33,9	37,8	42,0	48,2	54,4	62,5	kW
	Water flow rate recovery	0,71	0,84	0,95	1,06	1,27	1,44	1,62	1,81	2,01	2,30	2,60	2,99	l/s
	Water pressure drop recovery	7	11	14	17	24	19	22	13	17	22	27	23	kPa

Total Recovery Version (VR) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5 - W45	Cooling capacity	53,2	63,1	71,2	79,7	94,1	107	120	136	151	173	195	222	kW
	Total power input	14,2	16,4	18,9	20,9	25,9	29,7	32,9	36,8	40,6	47,5	52,6	61,4	kW
	EER	3,75	3,85	3,77	3,81	3,63	3,60	3,65	3,70	3,72	3,64	3,71	3,62	W/W
	Heating recovery capacity	66,8	78,7	89,1	99,6	119	135	151	171	189	218	245	281	kW
	Water flow rate recovery	3,19	3,76	4,26	4,76	5,68	6,47	7,23	8,16	9,03	10,42	11,7	13,4	l/s
	Water pressure drop recovery	43	60	54	53	64	61	65	63	66	67	71	76	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input
A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

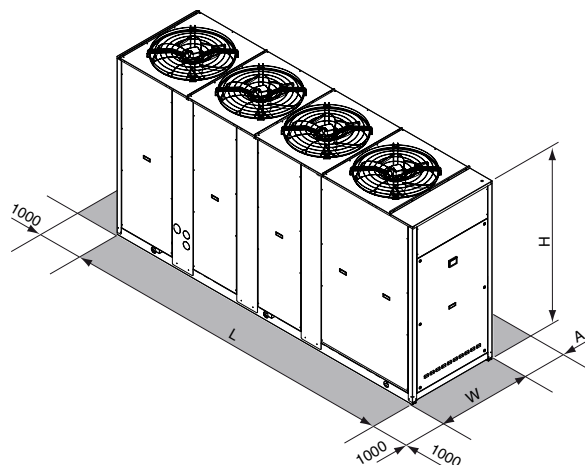
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
L		2480				3322			3322		4080		mm
W		954				1104			1104		1104		mm
H		1930				1793			2193		2193		mm
A		1600							2000				mm
Operating maximum weight	635	639	639	680	705	953	1034	1065	1181	1240	1292	1435	kg



Available range

Unit type

- SR Condensing unit
- SP Heat pump condensing unit (reversible on the refrigerant side)

Version

- VB Base version
- VD Desuperheater version
- VR Total recovery version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up

Source temperature level

- M Medium temperature level
- A High temperature level

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on

damper supports, thermostatic expansion valve (only for SP), reverse cycle valve, double inlet centrifugal fans with forward curved blades, finned coil made of copper pipes and aluminium louvered fins with subcooling section. The circuit is protected by a safety gas valve, high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control INVERTER (condensation / evaporation control)

Compressor power factor correction Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

(standard for SP)

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for SP)

High and low pressure gauges

High temperature thermostat

Coil shut off valves

Outdoor air sensor

Remote plate heat exchanger

Liquid line

NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	48,9	57,8	63,3	74,3	85,0	98,3	110	121	136	154	171	194	216	kW
	Power input	15,5	18,4	20,5	23,7	27,6	32,1	35,5	39,4	44,5	50,8	56,3	63,7	70,6	kW
	EER	3,15	3,14	3,09	3,14	3,08	3,06	3,10	3,07	3,06	3,03	3,04	3,05	3,06	W/W
SR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	48,9	57,8	63,3	74,3	85,0	98,3	110	121	136	154	171	194	216	kW
	Power input	15,5	18,4	20,5	23,7	27,6	32,1	35,5	39,4	44,5	50,8	56,3	63,7	70,6	kW
	EER	3,15	3,14	3,09	3,14	3,08	3,06	3,10	3,07	3,06	3,03	3,04	3,05	3,06	W/W
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	47,3	57,1	62,1	72,6	80,0	96,3	107	119	132	149	166	192	214	kW
	Power input	15,3	18,6	20,4	23,8	26,7	31,9	35,3	39,3	43,9	49,7	55,6	62,7	70,3	kW
	EER	3,09	3,07	3,04	3,05	3,00	3,02	3,03	3,03	3,01	3,00	2,99	3,06	3,04	W/W
A7C50	Heating capacity	47,8	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
	Power input	15,3	18,5	20,3	23,7	26,9	32,6	35,0	40,0	43,7	50,5	55,4	63,4	69,8	kW
	COP	3,12	3,11	3,08	3,11	3,06	3,03	3,11	3,10	3,09	3,03	3,09	3,08	3,07	W/W
A7C45	Heating capacity	52,6	63,3	68,9	81,2	90,5	109	120	136	149	168	188	215	235	kW
	Power input	13,5	16,3	17,9	20,9	23,7	28,7	30,8	35,2	38,5	44,4	48,8	55,8	61,4	kW
	COP	3,90	3,88	3,85	3,89	3,82	3,80	3,90	3,86	3,87	3,78	3,85	3,85	3,83	W/W
SP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	47,3	57,1	62,1	72,6	80,0	96,3	107	119	132	149	166	192	214	kW
	Power input	15,3	18,6	20,4	23,8	26,7	31,9	35,3	39,3	43,9	49,7	55,6	62,7	70,3	kW
	EER	3,09	3,07	3,04	3,05	3,00	3,02	3,03	3,03	3,01	3,00	2,99	3,06	3,04	W/W
A7C50	Heating capacity	47,8	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
	Power input	15,3	18,5	20,3	23,7	26,9	32,6	35,0	40,0	43,7	50,5	55,4	63,4	69,8	kW
	COP	3,12	3,11	3,08	3,11	3,06	3,03	3,11	3,10	3,09	3,03	3,09	3,08	3,07	W/W
A7C45	Heating capacity	52,6	63,3	68,9	81,2	90,5	109	120	136	149	168	188	215	235	kW
	Power input	13,5	16,3	17,9	20,9	23,7	28,7	30,8	35,2	38,5	44,4	48,8	55,8	61,4	kW
	COP	3,90	3,88	3,85	3,89	3,82	3,80	3,90	3,86	3,87	3,78	3,85	3,85	3,83	W/W

The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C
A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C
A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	88	88	89	89	89	91	91	91	96	97	97	98	98	dB(A)
Sound pressure level at 1 meter	70	70	71	71	71	73	73	73	78	79	79	80	80	dB(A)
Sound pressure level at 5 meters	61	61	62	62	62	65	65	65	69	70	70	71	71	dB(A)
Sound pressure level at 10 meters	56	56	57	57	57	59	59	59	64	65	65	66	66	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	85	85	86	86	86	88	88	88	93	94	94	95	95	dB(A)
Sound pressure level at 1 meter	67	67	68	68	68	70	70	70	75	76	76	77	77	dB(A)
Sound pressure level at 5 meters	58	58	59	59	59	62	62	62	66	67	67	68	68	dB(A)
Sound pressure level at 10 meters	53	53	54	54	54	56	56	56	61	62	62	63	63	dB(A)

The values are referred to units without options and accessories.

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Power supply	400 - 3 - 50													V-ph-Hz
Compressor type	scroll													-
N° compressors / N° refrigerant circuits	2 / 1													n°
Source side heat exchanger type	finned coil													-
Fans type	centrifugal													-
N° fans	1			2			3			4			n°	
Liquid line connection	7/8"			1 1/8"			1 3/8"			-			-	
Gas line connection	1 5/8"			2 1/8"			-			-			-	

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	43,2	48,8	56,7	62,1	73,0	80,5	95,0	103	117	145	158	188	199	A
FLI - Full load power input at maximum tolerated conditions	25,2	28,0	33,0	35,6	40,8	47,3	58,3	63,8	72,8	88,7	96,3	113	120	kW
MIC - Maximum instantaneous current of the unit	137	147	152	177	216	269	264	272	278	370	383	384	420	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	92,4	99,4	105	121	147	179	180	188	194	222	268	277	301	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	-10*	48	-10	40*	°C
Evaporating temperature (dew point)	SR, SP	1	20	-	-	°C
Condensing temperature (dew point)	SP	-	-	35	60	°C
Water outlet temperature (VD)	SR, SP	30	70	30	70	(°C)
Water outlet temperature (VR)	SR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

Aeraulic performance

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Available static head	150	150	150	150	150	150	150	150	150	150	150	150	150	Pa

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger. The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	50,9	60,1	65,8	77,3	88,4	102	115	126	142	161	177	202	225	kW
	Total power input	15,1	17,9	19,8	23,0	26,8	31,1	34,4	38,2	43,1	49,3	54,7	61,8	68,4	kW
	EER	3,37	3,36	3,32	3,36	3,30	3,28	3,34	3,30	3,29	3,27	3,24	3,27	3,29	W/W
	Heating recovery capacity	14,8	17,4	19,1	22,4	25,6	29,6	33,2	36,5	41,0	46,6	51,5	58,6	65,1	kW
	Water flow rate recovery	0,70	0,83	0,91	1,07	1,22	1,42	1,59	1,74	1,96	2,23	2,46	2,80	3,11	l/s
	Water pressure drop recovery	7	11	13	17	22	18	22	12	16	20	24	20	24	kPa
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	49,2	59,4	64,6	75,5	83,2	100	111	124	137	155	173	200	222	kW
	Total power input	14,9	18,1	19,8	23,1	25,9	30,9	34,2	38,1	42,6	48,2	54,0	60,8	68,1	kW
	EER	3,30	3,28	3,26	3,27	3,21	3,24	3,25	3,25	3,22	3,22	3,20	3,29	3,26	W/W
	Heating recovery capacity	14,3	17,2	18,7	21,9	24,1	29,1	32,2	35,8	39,7	45,0	50,2	58,0	64,5	kW
	Water flow rate recovery	0,68	0,82	0,89	1,05	1,15	1,39	1,54	1,71	1,90	2,15	2,40	2,77	3,08	l/s
	Water pressure drop recovery	7	11	12	17	20	17	20	12	15	19	23	20	23	kPa

Total Recovery Version (VR) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	50,9	60,1	65,8	77,3	88,4	102	115	126	142	161	177	202	225	kW
	Total power input	14,9	17,7	19,6	22,7	26,5	30,8	34,1	37,8	42,7	48,8	54,1	61,2	67,7	kW
	EER	3,42	3,40	3,36	3,41	3,34	3,31	3,37	3,33	3,33	3,30	3,27	3,30	3,32	W/W
	Heating recovery capacity	65,0	76,9	84,5	98,9	114	131	147	162	182	207	229	260	289	kW
	Water flow rate recovery	3,11	3,67	4,04	4,73	5,43	6,28	7,02	7,73	8,70	9,89	10,9	12,4	13,8	l/s
	Water pressure drop recovery	41	57	48	53	59	58	62	56	61	61	62	65	65	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

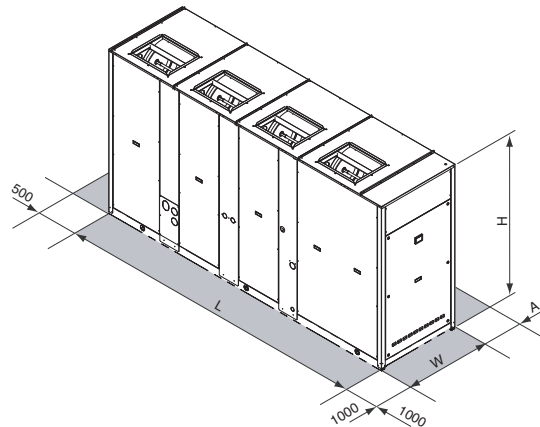
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
L			2480				3322			3322		4080		mm
W			954				1104			1104		1104		mm
H			1760				1760			2160		2160		mm
A			1600							2000				mm
Operating maximum weight	1078	1082	1102	1143	1168	1684	1765	1825	2000	2042	2094	2423	2467	kg



Available range

Unit type

- SR Condensing unit
- SP Heat pump condensing unit (reversible on the refrigerant side)

Version

- VB Base version
- VD Desuperheater version
- VR Total recovery version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up

Source temperature level

- M Medium temperature level
- A High temperature level

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on

damper supports, thermostatic expansion valve (only for SP), reverse cycle valve, double inlet centrifugal fans with forward curved blades, finned coil made of copper pipes and aluminium louvered fins with subcooling section. The circuit is protected by a safety gas valve, high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control INVERTER (condensation / evaporation control)

Compressor power factor correction Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

(standard for SP)

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for SP)

High and low pressure gauges

High temperature thermostat

Coil shut off valves

Outdoor air sensor

Remote plate heat exchanger

Liquid line

NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	48,9	57,8	63,3	74,3	85,0	98,3	110	121	136	154	171	194	216	kW
	Power input	15,5	18,4	20,5	23,7	27,6	32,1	35,5	39,4	44,5	50,8	56,3	63,7	70,6	kW
	EER	3,15	3,14	3,09	3,14	3,08	3,06	3,10	3,07	3,06	3,03	3,04	3,05	3,06	W/W
SR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	48,9	57,8	63,3	74,3	85,0	98,3	110	121	136	154	171	194	216	kW
	Power input	15,5	18,4	20,5	23,7	27,6	32,1	35,5	39,4	44,5	50,8	56,3	63,7	70,6	kW
	EER	3,15	3,14	3,09	3,14	3,08	3,06	3,10	3,07	3,06	3,03	3,04	3,05	3,06	W/W
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	47,3	57,1	62,1	72,6	80,0	96,3	107	119	132	149	166	192	214	kW
	Power input	15,3	18,6	20,4	23,8	26,7	31,9	35,3	39,3	43,9	49,7	55,6	62,7	70,3	kW
	EER	3,09	3,07	3,04	3,05	3,00	3,02	3,03	3,03	3,01	3,00	2,99	3,06	3,04	W/W
A7C50	Heating capacity	47,8	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
	Power input	15,3	18,5	20,3	23,7	26,9	32,6	35,0	40,0	43,7	50,5	55,4	63,4	69,8	kW
	COP	3,12	3,11	3,08	3,11	3,06	3,03	3,11	3,10	3,09	3,03	3,09	3,08	3,07	W/W
A7C45	Heating capacity	52,6	63,3	68,9	81,2	90,5	109	120	136	149	168	188	215	235	kW
	Power input	13,5	16,3	17,9	20,9	23,7	28,7	30,8	35,2	38,5	44,4	48,8	55,8	61,4	kW
	COP	3,90	3,88	3,85	3,89	3,82	3,80	3,90	3,86	3,87	3,78	3,85	3,85	3,83	W/W
SP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	47,3	57,1	62,1	72,6	80,0	96,3	107	119	132	149	166	192	214	kW
	Power input	15,3	18,6	20,4	23,8	26,7	31,9	35,3	39,3	43,9	49,7	55,6	62,7	70,3	kW
	EER	3,09	3,07	3,04	3,05	3,00	3,02	3,03	3,03	3,01	3,00	2,99	3,06	3,04	W/W
A7C50	Heating capacity	47,8	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
	Power input	15,3	18,5	20,3	23,7	26,9	32,6	35,0	40,0	43,7	50,5	55,4	63,4	69,8	kW
	COP	3,12	3,11	3,08	3,11	3,06	3,03	3,11	3,10	3,09	3,03	3,09	3,08	3,07	W/W
A7C45	Heating capacity	52,6	63,3	68,9	81,2	90,5	109	120	136	149	168	188	215	235	kW
	Power input	13,5	16,3	17,9	20,9	23,7	28,7	30,8	35,2	38,5	44,4	48,8	55,8	61,4	kW
	COP	3,90	3,88	3,85	3,89	3,82	3,80	3,90	3,86	3,87	3,78	3,85	3,85	3,83	W/W

The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C
A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C
A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	88	88	89	89	89	91	91	91	96	97	97	98	98	dB(A)
Sound pressure level at 1 meter	70	70	71	71	71	73	73	73	78	79	79	80	80	dB(A)
Sound pressure level at 5 meters	61	61	62	62	62	65	65	65	69	70	70	71	71	dB(A)
Sound pressure level at 10 meters	56	56	57	57	57	59	59	59	64	65	65	66	66	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	85	85	86	86	86	88	88	88	93	94	94	95	95	dB(A)
Sound pressure level at 1 meter	67	67	68	68	68	70	70	70	75	76	76	77	77	dB(A)
Sound pressure level at 5 meters	58	58	59	59	59	62	62	62	66	67	67	68	68	dB(A)
Sound pressure level at 10 meters	53	53	54	54	54	56	56	56	61	62	62	63	63	dB(A)

The values are referred to units without options and accessories.

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Power supply	400 - 3 - 50													V-ph-Hz
Compressor type	scroll													-
N° compressors / N° refrigerant circuits	2 / 1													n°
Source side heat exchanger type	finned coil													-
Fans type	centrifugal													-
N° fans	1			2			3			4			n°	
Liquid line connection	7/8"			1 1/8"			1 3/8"			-			-	
Gas line connection	1 5/8"			2 1/8"			-			-			-	

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	43,2	48,8	56,7	62,1	73,0	80,5	95,0	103	117	145	158	188	199	A
FLI - Full load power input at maximum tolerated conditions	25,2	28,0	33,0	35,6	40,8	47,3	58,3	63,8	72,8	88,7	96,3	113	120	kW
MIC - Maximum instantaneous current of the unit	137	147	152	177	216	269	264	272	278	370	383	384	420	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	92,4	99,4	105	121	147	179	180	188	194	222	268	277	301	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	-10*	48	-10	40*	°C
Evaporating temperature (dew point)	SR, SP	1	20	-	-	°C
Condensing temperature (dew point)	SP	-	-	35	60	°C
Water outlet temperature (VD)	SR, SP	30	70	30	70	(°C)
Water outlet temperature (VR)	SR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

Aeraulic performance

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Available static head	150	150	150	150	150	150	150	150	150	150	150	150	150	Pa

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger. The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	50,9	60,1	65,8	77,3	88,4	102	115	126	142	161	177	202	225	kW
	Total power input	15,1	17,9	19,8	23,0	26,8	31,1	34,4	38,2	43,1	49,3	54,7	61,8	68,4	kW
	EER	3,37	3,36	3,32	3,36	3,30	3,28	3,34	3,30	3,29	3,27	3,24	3,27	3,29	W/W
	Heating recovery capacity	14,8	17,4	19,1	22,4	25,6	29,6	33,2	36,5	41,0	46,6	51,5	58,6	65,1	kW
	Water flow rate recovery	0,70	0,83	0,91	1,07	1,22	1,42	1,59	1,74	1,96	2,23	2,46	2,80	3,11	l/s
	Water pressure drop recovery	7	11	13	17	22	18	22	12	16	20	24	20	24	kPa
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	49,2	59,4	64,6	75,5	83,2	100	111	124	137	155	173	200	222	kW
	Total power input	14,9	18,1	19,8	23,1	25,9	30,9	34,2	38,1	42,6	48,2	54,0	60,8	68,1	kW
	EER	3,30	3,28	3,26	3,27	3,21	3,24	3,25	3,25	3,22	3,22	3,20	3,29	3,26	W/W
	Heating recovery capacity	14,3	17,2	18,7	21,9	24,1	29,1	32,2	35,8	39,7	45,0	50,2	58,0	64,5	kW
	Water flow rate recovery	0,68	0,82	0,89	1,05	1,15	1,39	1,54	1,71	1,90	2,15	2,40	2,77	3,08	l/s
	Water pressure drop recovery	7	11	12	17	20	17	20	12	15	19	23	20	23	kPa

Total Recovery Version (VR) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	50,9	60,1	65,8	77,3	88,4	102	115	126	142	161	177	202	225	kW
	Total power input	14,9	17,7	19,6	22,7	26,5	30,8	34,1	37,8	42,7	48,8	54,1	61,2	67,7	kW
	EER	3,42	3,40	3,36	3,41	3,34	3,31	3,37	3,33	3,33	3,30	3,27	3,30	3,32	W/W
	Heating recovery capacity	65,0	76,9	84,5	98,9	114	131	147	162	182	207	229	260	289	kW
	Water flow rate recovery	3,11	3,67	4,04	4,73	5,43	6,28	7,02	7,73	8,70	9,89	10,9	12,4	13,8	l/s
	Water pressure drop recovery	41	57	48	53	59	58	62	56	61	61	62	65	65	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

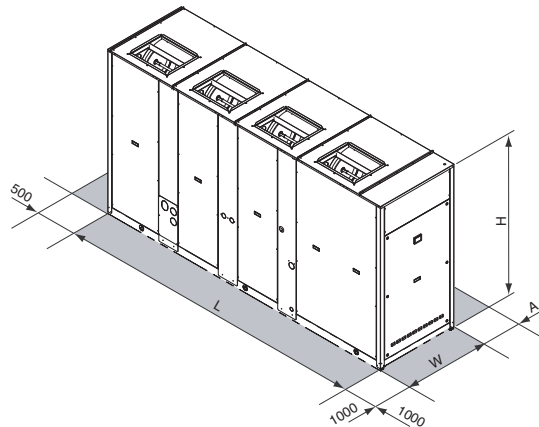
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
L			2480				3322			3322		4080		mm
W			954				1104			1104		1104		mm
H			1760				1760			2160		2160		mm
A			1600							2000				mm
Operating maximum weight	1078	1082	1102	1143	1168	1684	1765	1825	2000	2042	2094	2423	2467	kg

> EGW

CONDENSERLESS UNITS FOR INDOOR INSTALLATION



ADAPTIVE
FUNCTION



Unit with closing panels

Available range

Unit type

- IR Condenserless unit
- BR Condenserless unit Brine

Version

- VB Base version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up
- AX eXtra low noise setting up

Unit description

This series of condenserless unit satisfies the cooling and heating requirements of commercial and industrial plants of medium size.

All the units are suitable for indoor installation and can be applied to fan coil plants and radiant floor plants.

The refrigerant circuit is equipped with 2 scroll compressors, mounted on rubber vibration-damper supports, plant side heat exchanger brazed plate-type in stainless steel (AISI 316), complete with thermal insulation shell and differential pressure switch, thermostatic expansion valve or electronic expansion valve (as option), dehydrator filter, solenoid valve to shut-off the liquid line, shut-off ball valves on

the discharge and liquid lines, refrigerant circuit protected by refrigerant safety valve, low and high pressure switches, electrical panel for power and control complete with main breaker power supply with door lock function microprocessor controller with keyboard-display, and phase sequence controller (standard). The units can be chosen in Basic setting up (AB) (unit without closing panels), Low noise setting up (AS), featuring closing panels coated with acoustic material, Extra Low noise setting up (AX) featuring closing panels coated with superior acoustic material and soundproofing jackets on the compressors.

The units are suitable to be combined with remote condensers cooled by air (coil and fans) or remote condensers cooled by water (plates or shell and tube heat exchanger). The electronic controller can manage the numerous ways used on the market for the head pressure control for condensation by air and for condensation by water. A wide range of options and accessories completes the commercial offer. All the units are carefully built in compliance with the current regulations and individually tested.

The units are supplied with charge of NITROGEN in order to avoid the entrance of air inside the refrigerant circuit.

Options

Expansion valve

- thermostatic
- electronic

Suitable for outdoor installation

Accessories

- Rubber vibration dampers
- Remote controller
- Serial Interface Modbus-RS 485
- Programmer clock
- Phase sequence and voltage controller
- Low temperature kit
- High and low pressure gauges
- High temperature thermostat
- Compressors shut-off valves
- Outdoor air sensor
- Water flow switch
- Victaulic hydraulic fittings
- Victaulic bends
- Victaulic water shut-off valves
- Victaulic water filter
- 2-way valve for condensing control
- 3-way valve for condensing control
- Compressors start-up with soft starter
- Compressors power factor correction
- Electrical load protection with thermal magnetic circuit breakers
- Remote condenser cooled by air

CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Condensation control
- Remote stand by



NET NOMINAL performances - Standard plants

IR	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2		
C50W7	Cooling capacity	60,7	67,7	80,6	91,5	102,5	115,4	129,3	148,2	167,0	188,9	208,7	kW
	Power input	19,7	21,7	26,2	29,8	33,5	37,8	42,2	48,1	53,9	61,0	68,0	kW
	EER	3,07	3,12	3,08	3,07	3,06	3,05	3,06	3,08	3,10	3,10	3,07	W/W
	Water flow rate source side	2,91	3,25	3,87	4,40	4,92	5,54	6,21	7,12	8,03	9,08	10,0	l/s
	Pressure drops source side	36	28	31	31	34	32	35	35	37	37	38	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
C50W7 = condensing temperature (dew point) = 50 °C - subcooling = 5°C - plant : water in 12°C out 7°C

Acoustic performances

Base setting up (AB)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	75	76	77	77	77	78	78	79	79	80	80	dB(A)
Sound pressure level at 1 meter	59	60	61	61	61	62	62	63	63	64	64	dB(A)
Sound pressure level at 5 meters	49	50	51	51	51	52	52	53	53	54	54	dB(A)
Sound pressure level at 10 meters	44	45	46	46	46	47	47	48	48	49	49	dB(A)
Low noise setting up (AS)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	71	72	73	73	73	74	74	75	75	76	76	dB(A)
Sound pressure level at 1 meter	55	56	57	57	57	58	58	59	59	60	60	dB(A)
Sound pressure level at 5 meters	45	46	47	47	47	48	48	49	49	50	50	dB(A)
Sound pressure level at 10 meters	40	41	42	42	42	43	43	44	44	45	45	dB(A)
eXtra low noise setting up (AX)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	67	68	69	69	69	70	70	71	71	72	72	dB(A)
Sound pressure level at 1 meter	51	52	53	53	53	54	54	55	55	56	56	dB(A)
Sound pressure level at 5 meters	41	42	43	43	43	44	44	45	45	46	46	dB(A)
Sound pressure level at 10 meters	36	37	38	38	38	39	39	40	40	41	41	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions C50W7.
 Unit placed in free field on reflecting surface (directional factor equal to 2).
 The sound power level is measured according to ISO 9614 standard.
 The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Power supply	400 - 3 - 50											V-ph-Hz
Max working pressure (HP-PS)	43											bar
Compressor type	scroll											-
N° compressors / N° refrigerant circuits	2 / 1											n°
Plant side heat exchanger type	stainless steel brazed plates											-
IN/OUT Plant side hydraulic fittings	2" 1/2 VICTAULIC											"
Refrigerant liquid line fitting	28 ODS					35 ODS						mm
Refrigerant gas line fitting	42 ODS											mm

Electrical data

Standard unit	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
FLA - Full load current at maximum tolerated conditions	45	51	62	68	74	82	90	105	120	142	164	A
FLI - Full load power input at maximum tolerated conditions	26	29	34	40	45	50	55	63	72	83	93	kW
MIC - Maximum instantaneous current of the unit	141	166	204	256	262	309	317	355	370	454	476	A

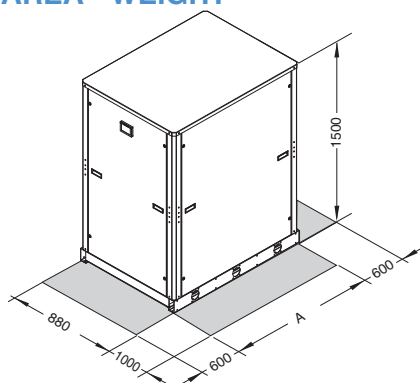
Operating range

Cooling

Temperature	Unit type	min	max	
Condensing temp (dew point)	IR, BR	30	60	(°C)
Water outlet temperature plant side	IR	5	20	(°C)
Water outlet temperature plant side	BR	-12	5	(°C)

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT

(reference drawing: unit with closing panel)



Models	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2		
A	880											1175	mm
Operating maximum weight	368	378	385	501	581	607	632	669	694	724	747	kg	

Remote condenser

This series of remote axial condensers uses copper pipes with special internal riffling and a high efficiency fin.

The fin has been specially designed to guarantee a high thermal exchange coefficient with low air pressure drops. By combining both special tubes and fins the following features can be achieved:

- Maximum capacity related to the heat exchanger's dimensions.
- Minimum refrigerant charge.
- The most strict environment standards for sound pollution can be met.

This new series of axial condensers is equipped with fans with scythe-shaped blades to reduce the sound emission. From the noise level point of view, all models can be supplied as basic version (AB), low noise version (AS) or extra low noise version (AX). To guarantee solidity, strength and the maximum resistance to atmospheric agents the bearing and the casing are manufactured with galvanized steel and oven painted with a polyurethane resin (the standard colour is RAL 7035).

Options

- Special fins (Copper, Painted Aluminium, ecc.).
- Special motors
- Vertical / Horizontal air flow
- EC fans



Accessories

All models can be equipped with several accessories as:

- Rubber Vibrations Dampers
- Modulating control of the fans with cut of phase regulator
- Modulating control of the fans with inverter regulator
- Electrical Wiring Box, allows a fast and safe electrical installation of the unit since all wires and thermal protections of the fans are connected inside a waterproof box (IP54) to a terminal block where the installer connect the electrical supply and the fans thermal switches signal.
- Electrical Panel CE this accessory (like the electrical wiring box) allows a fast and safe electrical installation and moreover simplify the standard and non standard maintenance of the unit. The accessory is in fact composed by main electrical switch, fuses and contactors of the fans, transformer to supply an alarm auxiliary relè, terminal block for remote ON-OFF (i.e. sent by the condenserless unit).

Technical data

Unit	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Power supply	400 - 3 - 50											V-ph-Hz
Fan type	axial											-
Max working pressure (PS)	45											bar
Coil exchanger type	Aluminum fins and copper tubes											-

Acoustic performances

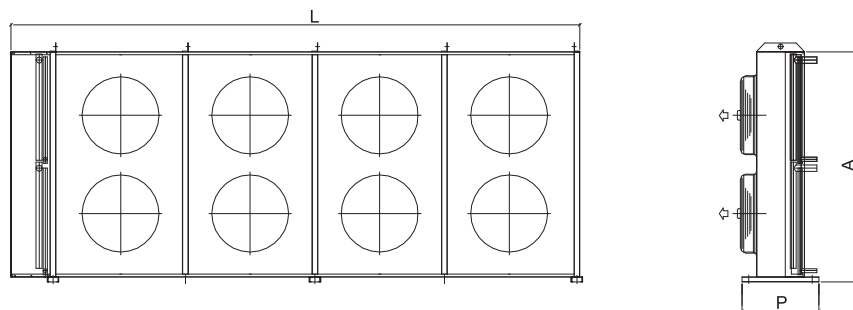
Base setting up (AB)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	80	80	82	83	83	83	83	85	85	85	85	dB(A)
Sound pressure level at 1 meter	63	63	65	66	66	66	66	68	68	68	68	dB(A)
Sound pressure level at 5 meters	53	53	55	56	56	56	56	58	58	58	58	dB(A)
Sound pressure level at 10 meters	48	48	50	51	51	51	51	53	53	53	53	dB(A)
Low noise setting up (AS)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	75	75	76	76	76	76	76	76	77	77	77	dB(A)
Sound pressure level at 1 meter	58	58	57	57	57	59	59	59	60	60	60	dB(A)
Sound pressure level at 5 meters	48	48	47	47	47	49	49	49	50	50	50	dB(A)
Sound pressure level at 10 meters	43	43	42	42	42	44	44	44	45	45	45	dB(A)
eXtra low noise setting up (AX)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	68	68	68	68	70	70	70	71	71	73	73	dB(A)
Sound pressure level at 1 meter	51	51	51	51	53	53	53	54	54	56	56	dB(A)
Sound pressure level at 5 meters	41	41	41	41	43	43	43	44	44	46	46	dB(A)
Sound pressure level at 10 meters	36	36	36	36	38	38	38	39	39	41	41	dB(A)

Base setting up (AB)		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Refrigerant connections	Gas	1x42	1x42	1x42	1x42	1x42	1x42	1x42	1x42	1x54	1x54	1x54	n° x Ø
	Liquid	1x35	1x35	1x35	1x28	1x35	1x35	1x35	1x35	1x42	1x42	1x42	n° x Ø
Fan specification	Fan	2	2	3	2	2	2	2	3	3	3	3	n°
	Diameter	630	630	630	800	800	800	800	800	800	800	800	mm
	Air flow rate	5556	5556	8917	11778	10889	10889	10222	17667	16333	15333	15333	l/s
	Power input	1,46	1,46	2,19	4,00	4,00	4,00	4,00	6,00	6,00	6,00	6,00	kW
Standard configuration	Length [L]	2630	2630	3770	3230	3230	3230	3230	4580	4580	4580	4580	mm
	Height [A]	1230	1230	1230	1370	1370	1370	1370	1370	1370	1370	1370	mm
	Depth [P]	600	600	600	800	800	800	800	800	800	800	800	mm
Configuration with support brackets	Length [L]	2630	2630	3770	3230	3230	3230	3230	4580	4580	4580	4580	mm
	Height [A]	990	990	990	1565	1565	1565	1565	1565	1565	1565	1565	mm
	Depth [P]	1230	1230	1230	1370	1370	1370	1370	1370	1370	1370	1370	mm
Weight		166	166	221	279	302	302	324	413	447	481	481	kg

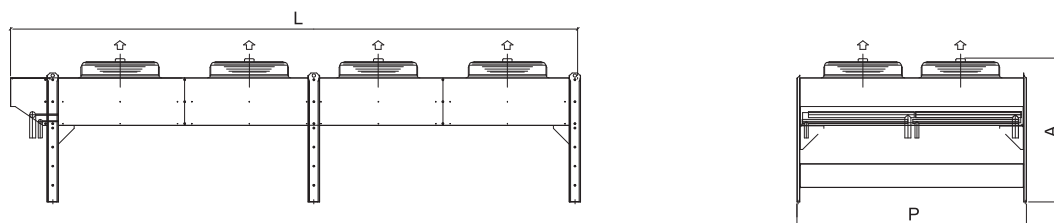
Low noise setting up (AS)		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Refrigerant connections	Gas	1x42	1x42	1x42	1x42	1x42	1x42	1x54	1x54	2x42	2x42	2x42	n° x Ø
	Liquid	1x35	1x35	1x28	1x35	1x35	1x35	1x42	1x42	2x35	2x35	2x35	n° x Ø
Fan specification	Fan	3	3	2	2	2	3	3	3	4	4	4	n°
	Diameter	630	630	800	800	800	800	800	800	800	800	800	mm
	Air flow rate	6250	6250	9389	7944	7444	14083	11917	11167	15222	14111	14111	l/s
	Power input	0,99	0,99	1,96	1,96	1,96	2,94	2,94	2,94	3,92	3,92	3,92	kW
Standard configuration	Length [L]	3770	3770	3230	3230	3230	4580	4580	4580	3230	3230	3230	mm
	Height [A]	1230	1230	1370	1370	1370	1370	1370	1370	2390	2390	2390	mm
	Depth [P]	600	600	800	800	800	800	800	800	800	800	800	mm
Configuration with support brackets	Length [L]	3770	3770	3230	3230	3230	4580	4580	4580	3230	3230	3230	mm
	Height [A]	990	990	1565	1565	1565	1565	1565	1565	1565	1565	1565	mm
	Depth [P]	1230	1230	1370	1370	1370	1370	1370	1370	2390	2390	2390	mm
Weight		221	221	279	302	324	413	447	481	502	543	543	kg

eXtra low noise setting up (AX)		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Refrigerant connections	Gas	1x42	1x42	1x42	1x42	1x42	1x54	1x54	2x42	2x42	2x42	2x42	n° x Ø
	Liquid	1x28	1x28	1x35	1x35	1x35	1x42	1x42	2x35	2x35	2x35	2x35	n° x Ø
Fan specification	Fan	2	2	2	2	3	3	3	4	4	4	4	n°
	Diameter	800	800	800	800	800	800	800	800	800	800	800	mm
	Air flow rate	6778	6778	6111	5611	10167	9167	8417	11556	10667	19333	19333	l/s
	Power input	1,18	1,18	1,18	1,18	1,77	1,77	1,77	2,36	2,36	2,36	2,36	kW
Standard configuration	Length [L]	3230	3230	3230	3230	4580	4580	4580	3230	3230	4580	4580	mm
	Height [A]	1370	1370	1370	1370	1370	1370	1370	2390	2390	2390	2390	mm
	Depth [P]	800	800	800	800	800	800	800	800	800	800	800	mm
Configuration with support brackets	Length [L]	3230	3230	3230	3230	4580	4580	4580	3230	3230	4580	4580	mm
	Height [A]	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	mm
	Depth [P]	1370	1370	1370	1370	1370	1370	1370	2390	2390	2390	2390	mm
Weight		279	279	302	324	413	447	481	502	543	680	680	kg

Standard configuration (horizontal air flow)



Configuration with Support Brackets (vertical air flow)



> EVW

CONDENSERLESS UNITS FOR INDOOR INSTALLATION



Available range

Unit type

- IR Condenserless unit
- BR Condenserless unit Brine

Version

- VB Base version
- VD Desuperheaters version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up

Unit description

This range of condenserless units are designed to meet the climate control and air conditioning needs of large capacity systems in the industrial and commercial sectors. All the units are suitable for indoor installation and can be applied to fan coil plants.

Suitable for indoor installation, as standard the units are equipped with 1 or 2 TWIN-SCREW semihermetic compressors mounted on rubber vibration dampers able to modulate the capacity from minimum 25 (not for all configurations) to 100%, plant side exchanger shell and tube type complete with Victaulic water connections, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, optimised for R134a with high efficiency grooved tubes, protected by means of a water differential pressure

switch, 1 or 2 independent refrigerant circuits, complete with electronic expansion valve which optimises unit efficiency at full and partial loads and enables maximum seasonal efficiency, maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/moisture indicator, compressor discharge and liquid shut-off valves, high and low pressure transducers, electrical panel with minimum protection IP54 containing the electrical equipment and all the components to control and command the unit complete with main supply breaker with door lock function, phase sequence control device, microprocessor controller with display (4 lines of 20 characters).

The units can be selected as Base setting up (AB) or as Low noise setting up (AS) that provides that compressor are positioned inside a soundproofed cabin, made with profiles and panels insulated with acoustic material.

The units are suitable to be combined with remote condensers cooled by air (coil and fans) or remote condensers cooled by water (plate or shell and tube heat exchanger). The electronic controller can manage the numerous ways used on the market for the head pressure control for condensation by air and for condensation by water. A wide range of options and accessories completes the commercial offer. All the units are carefully built in compliance with the current regulations and individually tested.

The units are supplied with charge of NITROGEN in order to avoid the entrance of air inside the refrigerant circuit.

Options

Compressor starting

- standard (contactors)
- soft starter

Compressors power factor correction

Electrical load protection

- standard (fuses)
- thermal magnetic circuit breakers

Evaporator flow switch (mounted)

Evaporator insulation higher thickness

Evaporator electrical heater for winter antifreeze

High and low pressure gauges

Compressor suction shut-off valve

Accessories

Rubber vibration dampers

External Water Storage Tank and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.

Antifreeze electrical heaters for Storage tank

Remote controller

Serial Interface Modbus on RS 485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Remote condenser cooled by air

CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency.

Available functions :

- Double Set Point
- Demand Limit
- Dinamic set point
- Condensation control
- Remote stand by



NET NOMINAL performances - Standard plants

IR		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
C50W7	Cooling capacity	248	275	312	359	420	472	520	623	719	840	943	1042	kW
	Power input	73,4	80,2	91,8	105	124	139	154	185	211	249	281	307	kW
	EER	3,37	3,42	3,40	3,42	3,38	3,39	3,38	3,36	3,41	3,37	3,36	3,40	W/W
	Water flow rate source side	11,9	13,2	15,0	17,2	20,2	22,7	25,0	30,0	34,5	40,4	45,4	50,1	l/s
	Pressure drops source side	36	28	36	34	43	34	42	41	35	47	47	36	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
C50W7 = condensing temperature (dew point) = 50 °C - subcooling = 5°C - plant : water in 12°C out 7°C

Desupeheater Version (VD) - NET NOMINAL performances

IR		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
C50W7 - W45	Cooling capacity	257	286	325	373	437	491	541	647	747	873	980	1083	kW
	Total power input	71	78	89	102	121	136	150	180	205	243	274	299	kW
	EER	3,60	3,66	3,63	3,65	3,61	3,62	3,60	3,59	3,65	3,59	3,58	3,63	W/W
	HRE	4,53	4,59	4,56	4,58	4,53	4,55	4,53	4,52	4,58	4,51	4,50	4,56	W/W
	Water flow rate	12,4	13,7	15,6	17,9	21,0	23,6	26,0	31,2	35,9	42,0	47,2	52,1	l/s
	Water pressure	39	30	39	37	47	37	46	45	38	50	51	39	kPa
	Heating recovery capacity	66,3	72,8	82,9	95,1	111,9	126	139	167	190	224	252	277	kW
	Water flow rate recovery	3,17	3,48	3,96	4,54	5,35	6,02	6,63	7,97	9,09	10,71	12,1	13,2	l/s
	Water pressure drop recovery	9	11	11	14	13	10	13	11	14	13	10	13	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input
C50W7-W45 = condensing temperature (dew point) = 50 °C - subcooling = 5°C - plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

Acoustic performances

Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level	97	97	97	98	98	98	98	99	100	100	100	100	dB(A)
Sound pressure level at 1 meter	79	79	79	80	80	80	80	80	81	81	81	81	dB(A)
Sound pressure level at 5 meters	70	70	70	72	72	72	71	72	73	73	73	73	dB(A)
Sound pressure level at 10 meters	65	65	65	67	67	67	66	67	68	68	68	68	dB(A)
Low noise setting up (AS)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level	92	93	92	93	93	94	94	94	95	95	96	96	dB(A)
Sound pressure level at 1 meter	74	75	74	75	75	76	76	75	76	76	77	77	dB(A)
Sound pressure level at 5 meters	65	66	65	66	66	67	67	67	68	68	69	69	dB(A)
Sound pressure level at 10 meters	60	61	60	61	61	62	62	62	63	63	64	64	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions C50W7.
 Unit placed in free field on reflecting surface (directional factor equal to 2).
 The sound power level is measured according to ISO 9614 standard.
 The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Power supply	400 - 3 - 50												V-ph-Hz
Max working pressure (HP-PS)	20												bar
Compressor type	twin-screw												-
N° compressors / N° refrigerant circuits	1 / 1						2 / 2						n°
Part load	25 / 100% continuous									12.5 / 100% continuous			
Plant side heat exchanger typex	shell and tube												-
IN/OUT Plant side hydraulic fittings	DN125	DN125	DN125	DN150	DN150	DN150	DN200	DN150	DN200	DN200	DN200	DN200	-
Refrigerant liquid line fitting	1x42	1x42	1x42	1x42	1x42	1x54	1x54	2x42	2x42	2x42	2x54	2x54	n° x Ø
Refrigerant gas line fitting	1x67	1x67	1x67	1x67	1x67	1x76	1x76	2x67	2x67	2x67	2x76	2x76	n° x Ø

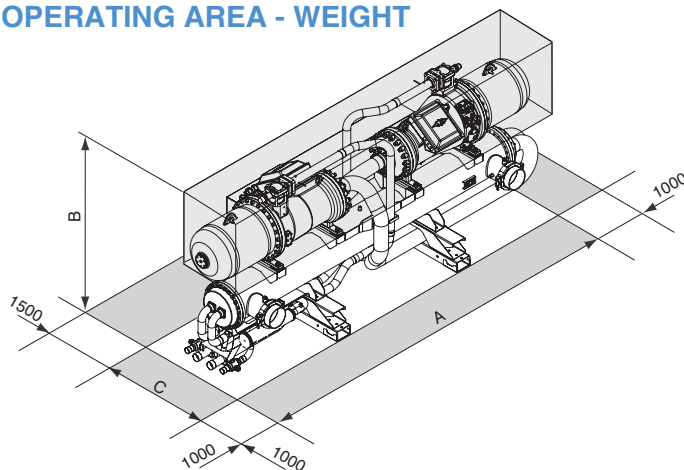
Electrical data

Standard unit	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
FLA - Full load current at maximum tolerated conditions	162	181	211	232	270	309	340	422	464	540	618	680	A
FLI - Full load power input at maximum tolerated conditions	99	110	129	144	169	190	209	257	287	339	380	418	kW
MIC - Maximum instantaneous current of the unit	520	612	665	436	465	586	650	876	668	735	895	990	A

Operating range

Temperature	Unit type	Cooling	
		min	max
Condensing temp (dew point)	IR, BR	30	60
Water outlet temperature plant side	IR	5	15
Water outlet temperature plant side	BR	-8	5

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



Model	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
A	3900	3900	3900	3900	3900	3900	3900	4320	4400	4400	4400	4400	mm
B	1845	1845	1845	1880	1880	2045	2045	1845	1880	1880	2045	2045	mm
C	1100	1100	1100	1100	1100	1100	1100	1190	1190	1190	1230	1230	mm
Operating maximum weight	1651	1669	1682	2249	2263	2329	2633	3105	4334	4367	4569	4635	kg

Remote condenser

This series of Remote Axial Condensers uses copper pipes with special internal riffling and a high efficiency fin.

The fin has been specially designed to guarantee a high thermal exchange coefficient with low air pressure drops. By combining both special tubes and fins the following features can be achieved:

- Maximum capacity related to the heat exchanger's dimensions.
- Minimum refrigerant charge.
- The most strict environment standards for sound pollution can be met.

This new series of axial condensers is equipped with fans with scythe-shaped blades to reduce the sound emission. From the noise level point of view, all models can be supplied as basic version (AB), low noise version (AS) or extra low noise version (AX).

To guarantee solidity, strength and the maximum resistance to atmospheric agents the bearing and the casing are



manufactured with galvanized steel and oven painted with a polyurethane resin (the standard colour is RAL 7035).

Options

- Special fins (Copper, Painted Aluminium, ecc.).
- Special motors
- Vertical / Horizontal air flow
- EC fans

Accessories

All models can be equipped with several accessories as:

- Rubber Vibrations Dampers
- Modulating control of the fans with cut of phase regulator
- Modulating control of the fans with inverter regulator
- Electrical Wiring Box, allows a fast and safe electrical installation of the unit since all wires and thermal protections of the fans are connected inside a waterproof box (IP54) to a terminal block where the installer connect the electrical supply and the fans thermal switches signal.
- Electrical Panel CE this accessory (like the electrical wiring box) allows a fast and safe electrical installation and moreover simplify the standard and non standard maintenance of the unit.

The accessory is in fact composed by main electrical switch, fuses and contactors of the fans, transformer to supply an alarm auxiliary relè, terminal block for remote ON-OFF (i.e. sent by the condenserless unit).

Technical data

Unit	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2		
Power supply								400 - 3 - 50					V-ph-Hz	
Fan type													axial	
Max working pressure (PS)													30	bar
Exchanger type													Aluminum fins and copper tubes	-

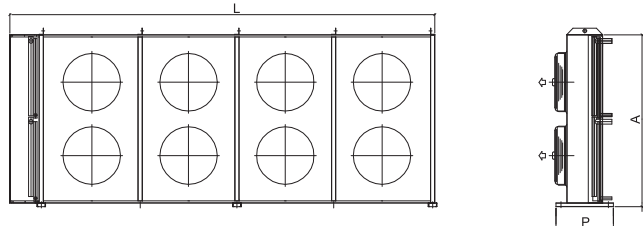
Acoustic performances

Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level	86	88	88	88	89	89	90	90	91	91	93	99	dB(A)
Sound pressure level at 1 meter	70	72	72	72	73	73	74	74	74	74	76	82	dB(A)
Sound pressure level at 5 meters	59	61	61	61	62	62	63	63	63	63	65	71	dB(A)
Sound pressure level at 10 meters	54	56	56	56	57	57	58	58	58	58	60	66	dB(A)
Low noise setting up (AS)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level	81	81	81	82	82	83	83	84	84	86	90	90	dB(A)
Sound pressure level at 1 meter	65	65	65	66	66	67	67	67	67	69	73	73	dB(A)
Sound pressure level at 5 meters	54	54	54	55	55	56	56	56	56	58	62	62	dB(A)
Sound pressure level at 10 meters	49	49	49	50	50	51	51	51	51	53	57	57	dB(A)
eXtra low noise setting up (AX)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level	74	74	74	75	75	76	76	77	76	76	83	83	dB(A)
Sound pressure level at 1 meter	58	58	58	59	59	59	59	60	59	59	66	66	dB(A)
Sound pressure level at 5 meters	47	47	47	48	48	48	48	49	48	48	55	55	dB(A)
Sound pressure level at 10 meters	42	42	42	43	43	43	43	44	43	43	50	50	dB(A)

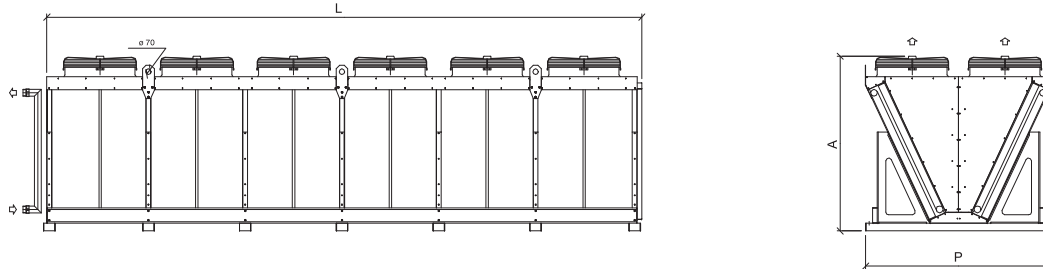
Remote condensers technical data

Base setting up (AB)		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Refrigerant connections	Gas	2x42	2x54	2x54	2x54	2x54	2x54	2x64	2x64	2x76	2x76	2x76	2x76	n° x Ø
	Liquid	2x35	2x42	2x42	2x42	2x35	2x42	2x42	2x42	2x42	2x54	2x54	2x54	n° x Ø
Fan specification	Fan	4	6	6	6	8	8	10	10	12	14	16	12	n°
	Diameter	800	800	800	800	800	800	800	800	800	800	800	900	mm
	Air flow rate	19667	31667	31667	29500	42222	39333	52778	49167	59000	68833	78667	100667	l/s
	Power input	8	12	12	12	16	16	20	20	24	28	32	43.2	kW
Standard configuration	Type												2	-
	Length [L]	3230	4580	4580	4580	5930	5930	7280	7280	8630	9980	11330	7990	mm
	Height [A]	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2262	mm
	Depth [P]	800	800	800	800	800	800	800	800	800	800	800	2400	mm
	Weight	543	742	742	804	982	1065	1222	1325	1585	1845	2106	2879	kg
Configuration with support brackets	Type												3	-
	Length [L]	3230	4580	4580	4580	5930	5930	7280	7280	8630	9980	11330	-	mm
	Height [A]	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	-	mm
	Depth [P]	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	-	mm
	Weight	569	768	768	830	1021	1104	1261	1364	1637	1897	2158	-	kg
Low noise setting up (AS)		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Refrigerant connections	Gas	2x54	2x54	2x54	2x54	2x54	2x64	2x64	2x76	2x76	2x76	2x76	2x76	n° x Ø
	Liquid	2x42	2x42	2x42	2x35	2x42	2x42	2x42	2x42	2x54	2x54	2x54	2x54	n° x Ø
Fan specification	Fan	6	6	6	8	8	10	10	12	14	16	12	12	n°
	Diameter	800	800	800	800	800	800	800	800	800	800	900	900	mm
	Air flow rate	24667	24667	22500	32889	30000	41111	37500	45000	52500	60000	87000	82333	l/s
	Power input	12	12	7.62	10.16	10.16	12.7	12.7	15.24	17.78	20.32	29.4	29.4	kW
Standard configuration	Type												1	2
	Length [L]	4580	4580	4580	5930	5930	7280	7280	8630	9980	11330	7990	7990	mm
	Height [A]	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2262	2262	mm
	Depth [P]	800	800	800	800	800	800	800	800	800	800	2400	2400	mm
	Weight	742	742	804	982	1065	1222	1325	1585	1845	2106	2879	3056	kg
Configuration with support brackets	Type												3	-
	Length [L]	3230	4580	4580	4580	5930	5930	7280	7280	8630	9980	-	-	mm
	Height [A]	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	-	-	mm
	Depth [P]	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	-	-	mm
	Weight	768	768	830	1021	1104	1261	1364	1637	1897	2158	-	-	kg
eXtra low noise setting up (AX)		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Refrigerant connections	Gas	2x42	2x54	2x54	2x64	2x64	2x76	2x76	2x76	2x76	2x76	2x76	2x76	n° x Ø
	Liquid	2x35	2x35	2x42	2x42	2x42	2x42	2x54	2x54	2x64	2x64	2x64	2x64	n° x Ø
Fan specification	Fan	8	8	8	10	10	12	14	16	14	14	14	14	n°
	Diameter	800	800	800	800	800	800	800	800	800	900	900	900	mm
	Air flow rate	25778	23111	21333	28889	26667	32000	40444	46222	56389	52500	70000	70000	l/s
	Power input	4.7	4.7	4.7	5.9	5.9	7.1	8.3	9.4	9.5	9.5	15.5	15.5	kW
Standard configuration	Type												1	2
	Length [L]	5930	5930	5930	7280	7280	8630	9980	11380	9240	9240	9240	9240	mm
	Height [A]	2390	2390	2390	2390	2390	2390	2390	2390	2262	2262	2262	2262	mm
	Depth [P]	800	800	800	800	800	800	800	800	800	2400	2400	2400	mm
	Weight	900	982	1065	1222	1325	1585	1702	1942	3309	3515	3515	3515	kg
Configuration with support brackets	Type												3	-
	Length [L]	5930	5930	5930	7280	7280	8630	9980	11380	9240	9240	-	-	mm
	Height [A]	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	-	-	mm
	Depth [P]	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	-	-	mm
	Weight	939	1021	1104	1261	1364	1637	1754	1994	-	-	-	-	kg

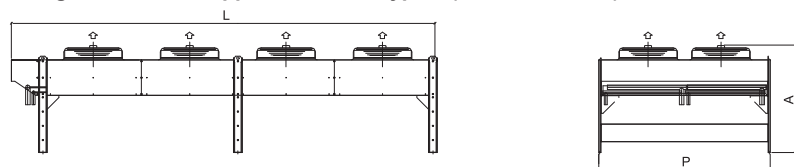
Standard configuration type 1 (horizontal air flow)



Standard configuration type 2 (vertical air flow)



Configuration with Support Brackets Type 3 (vertical air flow)



> Main characteristics terminal units

> FAN COIL

FAN COIL WITH CENTRIFUGAL FANS

Series **TOP FAN PLUS** features 2 versions:

- with cabinet and bottom air intake VM-B
- with cabinet and frontal air intake VM-F
- with 3-rows and 4-rows coil

Range include 9 sizes with air flow-rates up to 1,350 m³/h.

WALL-MOUNTED FAN COIL

Series **VTP** supplied with remote control and three-way valve. The range comprises 4 sizes with air flow-rates up to 880 m³/h.

> CEILING CONCEALED

FAN COIL TYPE

Fan coil series **TOP FAN PLUS** features 2 versions:

- without cabinet, ceiling concealed, with six-speed motor
- without cabinet, ceiling concealed, with three-speed motor
- with 3-rows and 4-rows coil

Range include 9 sizes with air flow-rates up to 1,350 m³/h.

> AQUASEL

The Ferrolì design staff has developed software for choosing the right FERROLÌ terminal unit for your system needs. FERROLÌ software calculates the performance values according to the inlet air temperature/humidity, the water Dt/temperature and, in the case of ceiling concealed or ducted units, it is possible to set a fan head value and recalculate the efficiency and air flow-rate of the units. There is also the selected choice of accessories the printing of the description of the unit specifications and a complete technical data sheet.

A sales tool much appreciated by professionals for its easy use and prompt answers

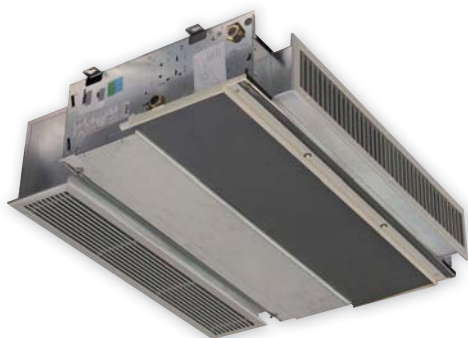
For further information, contact your local Ferrolì Industrial Climate Control Branch.

Serie	Unità	Velocità	Portata aria [m³/h]	PP [Pressura]	PF	FFs	Tn	Tout	Fmax	PAC	Taut	UR	PT	Tn	Tout	Fmax	PAC	SWS
FCF	15	vel. 1-max	215	80.0	1.10	0.85	7.00	12.0	0.2	4.40	15.1	85.0	2.80	70.0	60.0	0.2	5.10	0.00
FCF	15	vel. 2	170	20.0	0.68	0.74	7.00	11.8	0.2	4.40	14.0	87.0	2.40	70.0	61.4	0.2	5.10	0.00
FCF	15	vel. 3	110	20.0	0.77	0.66	7.00	10.5	0.2	4.40	11.7	95.0	1.80	70.0	63.6	0.2	5.10	0.00
FCF	20	vel. 1-max	280	20.0	1.40	1.04	7.00	12.0	0.2	4.80	16.4	81.0	3.45	70.0	60.0	0.2	6.70	0.00
FCF	20	vel. 2	210	20.0	1.20	0.91	7.00	11.3	0.2	6.90	14.0	88.0	3.15	70.0	61.4	0.2	6.70	0.00
FCF	20	vel. 3	140	20.0	0.85	0.71	7.00	10.4	0.2	6.90	11.8	96.0	2.28	70.0	63.8	0.2	6.70	0.00
FCF	30	vel. 1-max	420	40.0	2.10	1.42	7.00	12.0	0.4	14.8	24.1	86.0	5.50	70.0	60.0	0.5	17.6	0.00
FCF	30	vel. 2	310	40.0	1.85	1.40	7.00	11.4	0.4	14.6	15.4	80.0	4.55	70.0	61.7	0.5	17.6	0.00
FCF	30	vel. 3	220	40.0	1.45	1.09	7.00	10.5	0.4	14.8	12.1	96.0	3.40	70.0	63.8	0.5	17.6	0.00
FCF	40	vel. 1-max	515	40.0	2.80	2.06	7.00	12.0	0.5	23.0	19.0	83.0	6.30	70.0	60.0	0.6	24.3	0.00
FCF	40	vel. 2	400	40.0	2.45	1.78	7.00	11.4	0.5	23.0	15.4	86.0	5.45	70.0	61.6	0.6	24.3	0.00
FCF	40	vel. 3	290	40.0	1.80	1.39	7.00	10.4	0.5	23.0	12.6	91.0	4.00	70.0	63.8	0.6	24.3	0.00
FCF	60	vel. 1-max	615	80.0	3.40	2.42	7.00	12.0	0.6	14.0	18.2	80.0	7.80	70.0	60.0	0.7	14.1	0.00
FCF	60	vel. 2	510	80.0	3.01	2.15	7.00	11.4	0.6	14.0	13.8	88.0	6.60	70.0	61.5	0.7	14.1	0.00
FCF	60	vel. 3	390	80.0	2.39	1.71	7.00	10.5	0.6	14.0	12.3	90.0	4.90	70.0	63.7	0.7	14.1	0.00
FCF	80	vel. 1-max	750	50.0	4.00	2.90	7.00	12.0	0.7	18.0	15.4	80.0	9.40	70.0	60.0	0.8	18.0	0.00
FCF	80	vel. 2	600	50.0	3.58	2.59	7.00	11.4	0.7	18.0	14.2	84.0	7.90	70.0	61.6	0.8	18.0	0.00
FCF	80	vel. 3	430	50.0	2.80	1.99	7.00	10.5	0.7	18.0	12.4	92.0	5.80	70.0	63.8	0.8	18.0	0.00
FCF	80	vel. 1-max	1090	30.0	4.80	3.80	7.00	12.0	0.8	19.1	16.1	80.0	12.8	70.0	60.0	1.1	17.7	0.00
FCF	80	vel. 2	850	30.0	4.35	3.35	7.00	11.4	0.8	19.1	15.1	85.0	10.8	70.0	61.4	1.1	17.7	0.00
FCF	80	vel. 3	570	30.0	3.60	2.74	7.00	10.7	0.8	19.1	12.6	94.0	8.30	70.0	63.4	1.1	17.7	0.00
FCF	100	vel. 1-max	1200	30.0	6.10	4.63	7.00	12.0	1.0	9.90	15.4	83.0	14.8	70.0	60.0	1.3	10.8	0.00
FCF	100	vel. 2	970	30.0	5.50	4.05	7.00	11.3	1.0	9.90	14.5	84.0	12.5	70.0	61.6	1.3	10.8	0.00
FCF	100	vel. 3	670	30.0	4.40	3.15	7.00	10.6	1.0	9.90	12.8	88.0	9.60	70.0	63.6	1.3	10.8	0.00
FCF	120	vel. 1-max	1350	30.0	6.45	5.30	7.00	12.0	1.2	12.5	15.2	85.0	15.8	70.0	60.0	1.4	12.1	0.00
FCF	120	vel. 2	1070	30.0	6.10	4.83	7.00	11.5	1.2	12.5	14.0	88.0	13.3	70.0	61.6	1.4	12.1	0.00



> TOP FAN PLUS

FAN COIL



Units Series

Available versions

- VM-B** bottom air intake
- VM-F** frontal air intake
- VN** ceiling concealed 6-speed
- VN-3V** ceiling concealed 3-speed

Exchangers

- 3R** with 3 rows
- 4R** with 4 rows

VB unit specifications

Fan coil unit complying with Machine Directive 89/392 EEC and amendments 91/368 EEC, 93/44 EEC, 93/68 EEC, Low-Voltage Directives 72/23 EEC and Electromagnetic Compatibility Directives EMC 89/36 EEC. The fan coil unit is a terminal for the treatment of room air in the summer season (coil supplied with cold water) and in winter (coil supplied with hot water). These units are suitable for indoor installation, very compact and amply configurable to meet the requirements of highly qualified designers. The customer or the designer can find version with cabinet and with air intake from bottom (VM-B version) or with frontal air intake and version without cabinet ceiling concealed type with 6 speed fan for a short duct (VN version) or with 3 speed fan. The careful design of the main components, refined styling and the versatility of the product make it suitable for any type of installation in the residential, commercial or industrial context. Installation therefore only requires the electrical and hydraulic connections.

Construction characteristics

- **SUPPORT STRUCTURE:** in galvanised sheet metal of suitable thickness. There are slots at the back for fixing the unit.
- **HEAT EXCHANGE COIL:** copper pipe type arranged in staggered rows to increase heat exchange and aluminium finning in 3 or 4 rows, locked by mechanical expansion of the pipes. The manifolds have air vents, water drain holes and housing for the supply water temperature probe. The connections are located on the left side panel (facing the unit). The possibility of turning the coil is provided for.
- **CONDENSATE TRAY:** in thermoplastic material to prevent corrosion, it enables either vertical and horizontal unit installation. The drain hole is present on both sides.
- **3-speed FAN-MOTOR (versions VM-B VM-F and VN-3V):** the electric motor, protected against overloads, has three speeds with running condenser always on, directly coupled to the fans and cushioned by elastic supports. The dual-intake centrifugal fans have long blades in order to obtain high air flow-rates with reduced revolutions.
- **6-speed FAN-MOTOR (versions VN):** the electric motor has 6 speeds one or three of which selectable during installation to adjust flow-rate and head to the system's characteristics and enable a short ducting in line with the product's characteristics.

- **AIR FILTER:** regenerable simply by washing with water.
For the VM-B version it is provided with a continuous guide in plastic material to facilitate extraction operations. For the VM-F version it is positioned in the front bottom air inlet grill. For the VN and VN-3V version it is complete with frame and wire screen.
- **CABINET (only VM-B and VM-F):** partly in epoxy powder coated steel sheet to ensure high protection against corrosion, and partly in anti-UV thermoplastic material. In the upper part there are air vents and the door for accessing the control panel, both in anti-UV thermoplastic material. The VM-F version also has a front grill in anti-UV thermoplastic material for the air inlet.

Main accessories/Options

ADJUSTMENT CONTROLS

INSTALLATION ON UNIT

- Cabinet switch
- Cabinet standard thermostat
- Cabinet advanced thermostat

REMOTE INSTALLATION

- Remote switch
- Remote standard thermostat
- Remote advanced thermostat

- Hot-start consent thermostat
- Supplementary tray vertical installation
- Supplementary tray horizontal installation
- 3-way valve main coil 3-4 R
- 2-way valve main coil 3-4 R
- Supplementary coil heating only
- 3-way valve supplementary coil
- 2-way valve supplementary coil
- Single-phase electrical heater
- Condensate drain pump

VM-B and VM-F ACCESSORIES

- Support feet (VM-B only)
- Adjustable fins
- Outside air inlet damper with front grill (VM-B only)
- Damper motor with single-phase power supply (VM-B only)
- Rear closing panel

VN and VN-3V ACCESSORIES

- Inlet grill
- Straight inlet flange
- Perpendicular inlet flange
- Straight outlet flange
- Perpendicular outlet flange
- Inlet plenum
- Outlet plenum
- Outlet grill

Exposed TOP FAN



fan coil receiver

Positioned on the front panel of the unit, it is complete with Timer LED (yellow), On LED (green) and emergency ON/OFF button and reception zone.

The system is completed with the board inside the unit. The system is supplied already factory-tested and installed.



wall receiver

The receiver is supplied in case of ceiling concealed units and is positioned exposed on the false ceiling. It is complete with Timer LED (yellow), On LED (green) and emergency ON/OFF button and reception zone.

It comes with a multicore cable (max. length 0.8 m) for quick connection and electronic board for installing on the unit. The system is factory-tested, whereas positioning the receiver is up to the installer.



remote control specifications

Remote control with LCD display complete with support bracket for wall fixing, enabling the following functions:

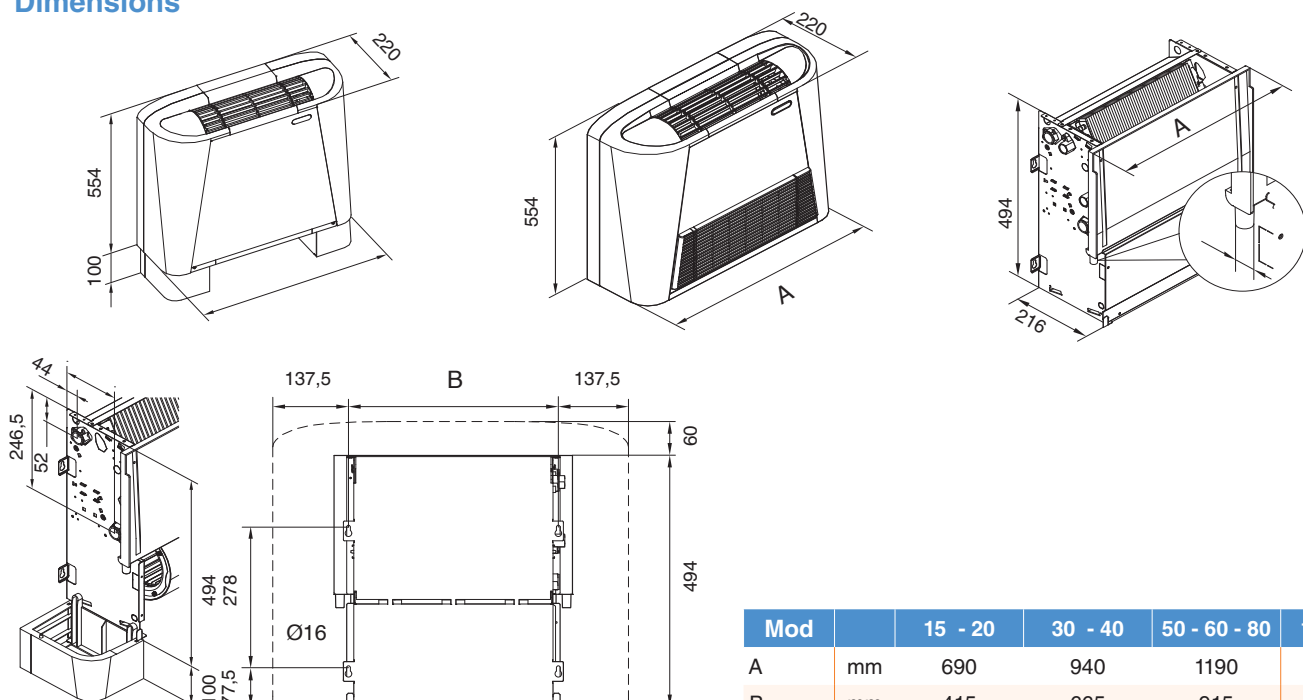
- Unit ON/OFF
- Operation mode selection
 - Auto, Heat, Cool, Fan (only if the valve accessory is present)
- Ventilation speed
 - Max, Med, Min, Auto
- Set Point
- Timer

The remote control display shows:

- Operation mode
- Selected fan speed
- Set point value
- Timer activation
- Time setting



Dimensions



Mod		15 - 20	30 - 40	50 - 60 - 80	100 - 120
A	mm	690	940	1190	1440
B	mm	415	665	915	1165

Common Data		15	20	30	40	50	60	80	100	120	
N° fan		1	1	1	1	2	2	2	2	2	N°
Air flow rate	max.	215	280	410	515	615	750	1050	1200	1350	m³/h
	med.	170	210	310	400	510	600	850	970	1070	m³/h
	min	110	140	220	290	350	410	570	670	720	m³/h
VN-3V external static pressure		0	0	0	0	0	0	0	0	0	Pa
VN external static pressure		20	20	40	40	40	50	50	30	30	Pa
Heating capacity electrical heater		800	800	1500	1500	2200	2200	2200	2600	2600	W
VM-B unit weight	3 rows	15	15	21	21	28	28	28	36	36	kg
VM-F unit weight	3 rows	14	14	20	20	27	27	27	34	34	kg
VN e VN-3V unit weight	3 rows	11	11	15	15	22	22	22	29	29	kg
VM-B unit weight	4 rows	15.8	15.8	22.5	22.5	30	30	30	39	39	kg
VM-F unit weight	4 rows	14.8	14.8	21.5	21.5	29	29	29	37	37	kg
VN unit weight	4 rows	11.8	11.8	16.5	16.5	24	24	25	32	32	kg
Condensation draining connections		16	16	16	16	16	16	16	16	16	Ø

3 rows coil data

		15	20	30	40	50	60	80	100	120	
Total Cooling Capacity *	max. (E)	1100	1400	2100	2800	3400	4000	4900	6100	6850	W
	med.	980	1200	1850	2450	3010	3550	4350	5500	6100	W
	min	770	950	1450	1900	2390	2800	3600	4400	5000	W
Sensible Cooling Capacity *	max. (E)	850	1060	1620	2060	2420	2900	3800	4630	5300	W
	med.	735	910	1400	1780	2245	2550	3350	4045	4630	W
	min	560	705	1090	1390	1710	1985	2735	3155	3720	W
Dehumidifying max speed		350	490	670	1050	1150	1550	1600	2100	2200	g/h
Water flow rate * (E)		189	241	361	482	585	688	843	1049	1178	l/h
Water pressure drop (E)		4.4	6.9	14.6	23	14	18	19.1	9.9	12.5	Kpa
Heating Capacity **	max. (E)	2800	3650	5500	6500	7800	9400	12500	14900	15800	W
	med.	2400	3150	4550	5450	6600	7900	10800	12500	13270	W
	min	1800	2250	3400	4000	4930	5800	8300	9600	10000	W
Water flow rate **		241	314	473	559	671	808	1075	1281	1359	l/h
Water pressure drop **		5.1	8.6	17.6	24.2	14	18.1	17.7	10.8	12.1	Kpa
Heating Capacity *** (E)		1700	2050	3200	3850	4300	5100	7200	8080	9300	W
Water pressure drop *** (E)		3.6	5.3	9.6	15.2	13	14.6	15	8	10.1	Kpa
Heating capacity of supplementary coil	max. (E)	1250	1650	2550	3150	3690	4100	5050	6200	6950	W
	med.	1070	1420	2110	2640	3150	3440	4360	5200	6190	W
	min	860	1130	1750	2150	2320	2820	3480	4250	4800	W
Water flow rate		108	142	219	271	317	353	434	533	598	l/h
Water pressure drop		1.8	3	8.7	13.2	4	4.1	6.88	12.8	16.1	Kpa
N° fan		1	1	1	1	2	2	2	2	2	N°
Max power input motor (E)		30	38	33	60	40	70	120	120	160	W
Sound power level (E)	max.	43	47	50	54	51	55	62	61	64	dB(A)
	med.	39	42	43	48	44	49	57	57	59	dB(A)
	min	32	35	36	41	36	38	48	49	51	dB(A)
Sound pressure level	max.	34	38	41	45	42	46	53	52	55	dB(A)
	med.	30	33	34	39	35	40	48	48	50	dB(A)
	min	23	26	27	32	27	29	39	40	42	dB(A)
Water connection 3R		F	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	Ø
Water connection 1R		F	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	Ø
Water content 3R coil		0.82	0.82	1.26	1.26	1.88	1.88	1.88	2.42	2.42	l
Water content 1R coil		0.22	0.22	0.36	0.36	0.5	0.5	0.5	0.64	0.64	l

NOTES:

* Room Air T=27°C D.B. / 19°C W.B. , IN/OUT water 7°/12°C, nominal air flow-rate; For medium and minimum fan speed, water delivery as in maximum speed.

** Room Air T=20°C D.B. , IN/OUT water 70°/60°C, nominal air flow-rate; for medium and minimum fan speed, water delivery as in maximum speed.

*** Room Air T=20°C D.B. , inlet water 50°C, water delivery as in cooling; Values referred to nominal air flow-rate.

SWL : Sound power levels, referred to 1x10-12 W in dB(A), measured in accordance with Standard ISO 9614 and certified according to the Eurovent certification programme. Eurovent certification (E) only refers to the Total Sound Power in dB(A) which is therefore the only binding acoustic data.

SPL : sound pressure in a 100 m3 place with reverberation time of 0.5 seconds.

(E) Declared data according to the certification programme LCP EUROVENT

4 rows coil data

		15-4	20-4	30-4	40-4	50-4	60-4	80-4	100-4	120-4	
Total Cooling Capacity *	max.	1400	1760	2790	3580	4050	4890	6450	7450	8200	W
	med.	1220	1460	2290	2940	3510	4020	5680	6620	7160	W
	min	900	1090	1700	2200	2500	2980	4000	5020	5250	W
Sensible Cooling Capacity *	max.	1050	1305	2060	2580	2950	3540	4950	5580	6210	W
	med.	890	1050	1640	2070	2510	2900	4200	4850	5330	W
	min	620	770	1200	1560	1770	2130	2910	3600	3820	W
Dehumidifying max speed		500	650	1050	1450	1580	1930	2330	2650	2850	g/h
Water flow rate *		240.8	302.72	479.88	615.76	696.6	841.08	1109.4	1281.4	1410.4	l/h
Water pressure drop		6	9	9	14	14	21	36	19	23	Kpa
Heating Capacity **	max.	3050	3950	5880	6950	8350	10100	13200	15800	16900	W
	med.	2580	3300	4730	5750	7260	8270	11300	13400	14310	W
	min	1900	2400	3600	4430	5460	6080	8450	10250	10500	W
Water flow rate **		262.3	339.7	505.68	597.7	718.1	868.6	1135.2	1358.8	1453.4	l/h
Water pressure drop **		5	8	7	10	11	16	27	15	18	Kpa
Heating Capacity ***		1850	2380	3460	4250	5000	5800	8100	9300	10500	W
Water pressure drop ***		5	8	8	13	12	18	32	16	20	Kpa
N° fans		1	1	1	2	2	2	2	2	2	N°
Max power input motor		35	38	55	76	75	85	144	163	200	W
Sound power level	max.	45	48	52	54	53	55	61	63	65	dB(A)
	med.	39	42	45	47	46	50	58	59	60	dB(A)
	min	32	35	39	41	37	39	48	51	52	dB(A)
Sound pressure level	max.	36	39	43	45	44	46	52	54	56	dB(A)
	med.	30	33	36	38	37	41	49	50	51	dB(A)
	min	23	26	30	32	28	30	39	42	43	dB(A)
Water connection 4R	F	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Water content 4R coil		1.09	1.09	1.68	1.68	2.51	2.51	2.51	3.23	3.23	l

NOTES:

* Room Air T=27°C D.B. / 19°C W.B. , IN/OUT water 7°/12°C, nominal air flow-rate; For medium and minimum fan speed, water delivery as in maximum speed.

** Room Air T=20°C D.B. , IN/OUT water 70°/60°C, nominal air flow-rate; for medium and minimum fan speed, water delivery as in maximum speed.

*** Room Air T=20°C D.B. , inlet water 50°C, water delivery as in cooling; Values referred to nominal air flow-rate.

SWL : Sound power levels, referred to 1x10-12 W in dB(A), measured in accordance with Standard ISO 9614 and certified according to the Eurovent certification programme. Eurovent certification (E) only refers to the Total Sound Power in dB(A) which is therefore the only binding acoustic data.

SPL : sound pressure in a 100 m3 place with reverberation time of 0.5 seconds.

> VTP

Wall type fan coil



UNIT DESCRIPTION

The wall type fan coil unit is a terminal for the treatment of room air in the summer season (coil supplied with cold water) and in winter (coil supplied with hot water).

These units are suitable for indoor installation, very compact and easily configurable to meet the requirements of highly qualified designers.

The careful design of the main components, refined styling and the versatility of the product make it suitable for any type of installation in the residential, commercial or industrial context. Available in 4 constructional sizes with **1,24 to 3,74 kW** refrigerating power rating and **1,58 to 4,77 kW** heating capacity, they are suitable for installation on walls, while their small size provides them with a pleasant appearance.

The cabinet is made of **ABS** material and provides high mechanical characteristics and resistance to ageing.

It also acts as the bearing structure of the unit.

The ventilating unit consists of a tangential fan with an **DC** brushless motor with very low power consumption. A display on the front panel shows the operating status of the units and the setting temperature.

The units are equipped with a pair of flexible hydraulic pipes to facilitate

EC motor



connections to the system.

All the units are equipped with a three-way on-off valve. The valve is installed inside the unit and can be easily accessed via the front panel: use of the three-way valve prevents the unit from cooling too much when the fan is at a standstill and also prevents the unpleasant formation of condensation on the casing

3-way valve



of the machine.

The units can be connect in **Master-Slave** mode.

Master-Slave system



CONTROLS

Two different control are available. One of them must be choose. In case of Master Slave function it will be necessary select at least one control for all the group or zone.

Infrared remote control Rem-I

It set all the function of the units via infrared. It's complete with LCD display, for quick setting of parameters necessary for correct use of the unit.

It's also provided of a wall fixing holder. It permit to control the units from max 7 m distance.



Wire wall control Rem-I

It set all the function of the units via infrared and it can locally measure the ambient temperature. If used in a Master Slave system it can control singularly any units of the system. It can be use as infrared receiver. It's equipped with a 7m connecting wire.



TECHNICAL DATA

MODEL		15	25	35	45		
Total cooling capacity ^{(1) (E)}	max.	1240	2070	3030	3740	W	
	med.	1040	1640	2480	3280	W	
	min.	841	1370	1870	2670	W	
Sensible cooling capacity ^{(1) (E)}	max.	915	1520	2220	2740	W	
	med.	766	1200	1810	2400	W	
	min.	616	995	1350	1940	W	
Dehumidification at maximum speed ⁽¹⁾		430	700	1050	1330	g/h	
Water flow rate ⁽¹⁾		213	356	521	643	l/h	
Water pressure drop on water side ^(E)		22,8	28,8	38,5	50	kPa	
Heating capacity ^{(2) (E)}	max.	1580	2640	3850	4770	W	
	med.	1320	2080	3140	4170	W	
	min.	1060	1720	2340	3370	W	
Water flow rate ⁽²⁾		213	356	521	643	l/h	
Water pressure drop on water side ^{(2) (E)}		18,4	22,4	35,0	45,0	kPa	
Heating capacity ^{(3) (E)}	max.	2606	4355	6351	7868	W	
	med.	2175	3440	5190	6860	W	
	min.	1740	2845	3880	5550	W	
Water flow rate ⁽³⁾		224	375	546	677	l/h	
Water pressure drop on water side ^{(3) (E)}		18,1	22,0	34,0	44,1	kPa	
Power supply		230-1-50				V-F-Hz	
Air flow rate	max.	370	500	645	880	m ³ /h	
	med.	290	370	445	740	m ³ /h	
	min.	220	290	370	570	m ³ /h	
Sound power ^(E)	max.	40	48	54	58	dB(A)	
	med.	35	40	43	53	dB(A)	
	min.	33	35	40	46	dB(A)	
Sound pressure ⁽⁴⁾	max.	30	38	44	48	dB(A)	
	med.	25	30	33	43	dB(A)	
	min.	23	25	30	36	dB(A)	
Absorption ^(E)	max.	13	18	22	30	W	
	med.	10	13	15	20	W	
	min.	6	10	10	13	W	
Apparent power		max.	22	41	52	94	W
Motor absorption		max.	0,1	0,19	0,24	0,44	A
Coil water content			0,26	0,38	0,72	0,93	l
Plumbing connections		Ø	1/2" F	1/2" F	1/2" F	1/2" F	"
Condensate drain connection		Ø	16	16	16	16	mm
Valve	Type	3 vie ON-OFF				-	
	Connection	1/2"	1/2"	1/2"	1/2"	"	

⁽¹⁾ Water 7°C IN- 12°C OUT - Air 27°C DB 19°C WB

⁽²⁾ Water 50°C IN - Same flow rate cool mode - Air 20°C DB

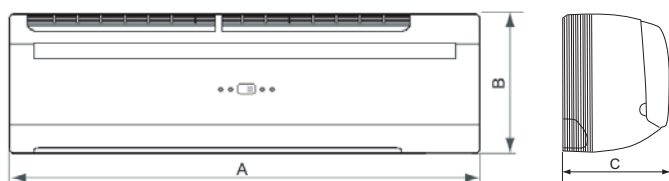
⁽³⁾ Water 70°C IN - OUT 60°C - Air 20°C DB

⁽⁴⁾ Sound pressure level at 1 metre from the unit

^(E) Eurovent certified data

Pressure losses on water side include losses on the valve.

OVERALL DIMENSIONS



MOD.	15	25	35	45	UM
A	876				mm
B	300				mm
C	228				mm
Weigh	11	12	13	14	kg

> MERCURY ST

DUCTED FAN COIL



Units Series

Unit type

MERCURY ST ducted fan coil

MERCURY ST E ducted fan coil with EC fans

Unit specification

- Horizontal or vertical installation
- Structure and panels made by Aluzink sheet metal thermal and acoustic insulated
- Water heat exchanger to 3 or 4 ranks (optional 6 ranghi) with copper pipes and aluminum fins, fitted with internal drip tray in stainless steel
- Centrifugal fans directly coupled to electric motor (standard 3 speeds for MERCURY ST, brushless EC type MERCURY ST E)
- Synthetic filters G3 (optional)
- Electrical box on board

Accessories

- Oversized internal coil 6R
- Intake grille - GAS
- Intake plenum - PAS
- Filtering section - AF
- Mixing section - CM
- Water post-heating section - SRW
- Electric post-heating section - SRE I 2SRE
- Sound proofed outlet plenum - PAM
- Outlet plenum for flexible ducts - PBC
- Outlet flange for connection to the ducts - FM
- Outlet with adjustable fins - BRM
- Speed controller - COM3
- Unit control panel - PCU
- Unit control panel with EC fans - EC - PCUE
- Unit control panel with SRE - PCMR
- Unit control panel with 0-10V - PC10R

Technical data

MODEL	05	07	11	13	17	19	21	UM	
Nominal air flow rate	930	1500	1600	2050	2400	3600	4200	m ³ /h	
External static pressure / ESP ⁽¹⁾	90	100	85	115	105	120	115	Pa	
Sound static pressure ⁽³⁾	50	51	52	55	55	58	58	dB (A)	
Power supply	230/1/50							V/ph/Hz	
Max power input	MERCURY ST	0,18	0,34	0,34	0,51	0,51	0,68	0,92	kW
Max power input	MERCURY ST E	--(*)	0,25	0,25	0,34	0,34	0,49	0,65	kW
Total cooling capacity		4,6	7,5	9,1	10,5	13,1	15,7	20,7	kW
Heating capacity ⁽¹⁾		9,8	15,5	19,7	21,6	25,9	35,5	46,3	kW
Water connections ⁽²⁾		3/4	3/4	3/4	3/4	3/4	1	1	" G

(*) Model not available in version MERCURY ST E

(1) Inlet air temperature 27°C 47% UR, inlet/outlet water temperature 7/12°C

(2) Inlet air temperature 20°C, inlet/outlet water temperature 70/60°C

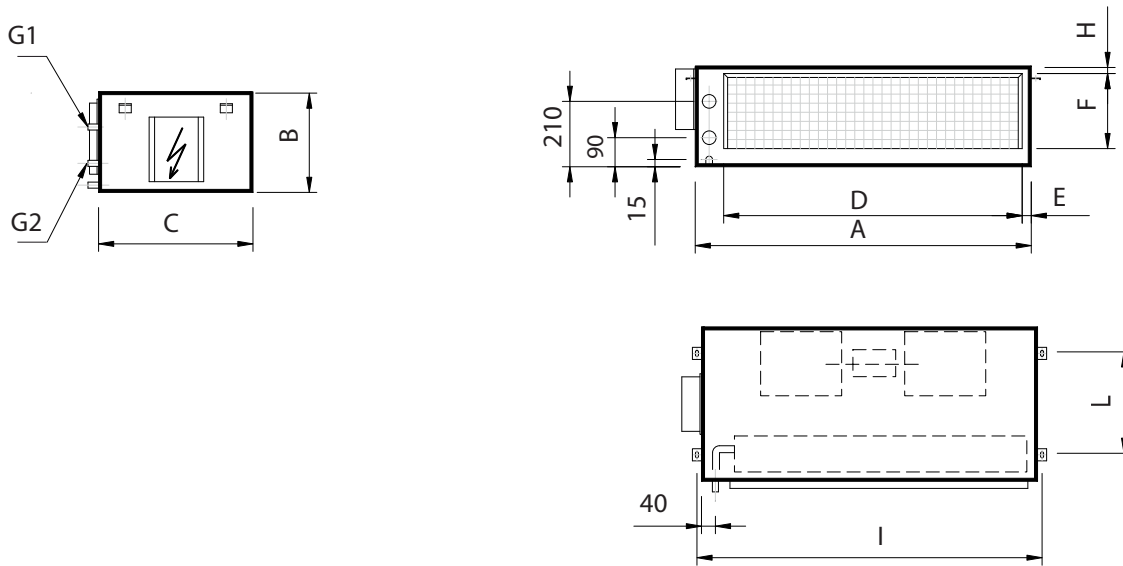
(3) Data referred to 1,5 m from inlet machine in free at nominal air flow-rate. The actual operation noise level generally differs from the values shown, depending on the operating conditions, on the reflected noise and on the surrounding noise.

NOTE: Available on high-head version required.

DIMENSIONS

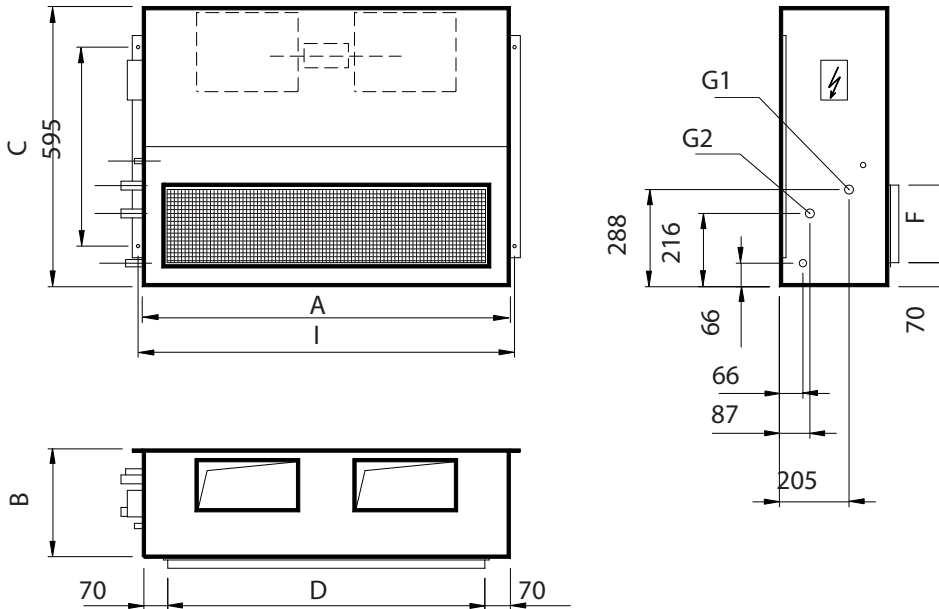
(drawing indicative of the series)

Horizontal models



MODEL	05	07 - 11	13	17	19 - 21	
A	645	1000	1100	1345	1345	
B	296	296	325	325	375	
C	520	520	600	600	600	
D	500	860	960	1200	1200	
E	40	40	40	40	40	
F	210	210	235	235	260	
G1 - G2	3/4"	3/4"	3/4"	3/4"	1"	
H	30	30	30	30	30	
I	675	1035	1135	1375	1375	
L	405	405	435	435	435	
Weight (kg)	24	34	37	41	55	60

Vertical models



MODEL	05	07 - 11	13	17	19 - 21		
A	645	1000	1100	1345	1345		
B	296	296	325	325	375		
C	750	750	835	950	950		
D	500	860	960	1200	1200		
F	210	210	235	235	260		
I	675	1035	1135	1375	1375		
G1. G2	3/4"	3/4"	3/4"	3/4"	1"		
Weight (kg)	30	45	48	54	63	72	75

> TCT

LARGE CAPACITY FAN COIL

Units Series

Unit type

TCT-H horizontal unit
TCT-V vertical unit

Version

2R with 2 rows
4R with 4 rows
6R with 6 rows
4-2R 4 pipes systems with 4+2-row coil
6-2R 4 pipes systems with 6+2-row coil



Unit specification

- Horizontal or vertical installation
- Frame in extruded aluminium with node joints in preloaded nylon
- Sandwich panels thickness 25 mm
- Synthetic filters G4
- Main water coil 2, 4 or 6 rows with internal drip tray
- Centrifugal fans coupled to three-phase electric motor via belt drive and pulleys

Accessories

- High efficiency filters F7 - F7CF
- High efficiency filters F9 - F9CF
- Griglia frontale di aspirazione - GRA
- Front grate - SER
- Closed plenum - PC
- Plenum with one damper - P1S
- Plenum with two dampers - P2S
- Outlet plenum - PMB
- Post-heating coil 2R - BP2R

Technical data

UNIT TCT/H - TCT/V	30	50	70	100	130	180	
Air flow (MIN – MAX)	2300-3800	3900-6700	6300-8100	8200-11000	11000-15000	15000-20000	m³/h
Air flow rate nominal	3000	5300	7200	9600	13000	17500	m³/h
Total static pressure (Δ)	150-370	180-350	250-340	250-375	260-350	250-400	Pa
Sound pressure level(*)	58	73	70	68	71	69	dB(A)
Horizontal unit weight TCT-H	197	240	260	360	380	580	kg
Vertical unit weight TCT-V	220	268	290	380	410	550	kg
Fan							
Power input	0,75	1,5	2,2	2,2	4	5,5	kW
N° Fans / Poles	1/4	1/4	1/4	1/4	1/4	1/4	n°
Power supply	400 / 3 / 50						V/ph/Hz
TCT 2R							
Heating Capacity (*)	35,2	53	69,9	95,8	130	178	kW
Water flow rate	3,09	4,66	6,13	8,42	11,3	15,6	m³/h
Water pressure drop	9	4	8	10	12	23	kPa
Air pressure drop	18	32	38	35	35	39	Pa
Water connection	1"1/2	1"1/2	1"1/2	1"1/2	1"1/2	1"1/2	Gas
TCT 4R							
Heating							
Heating Capacity (*)	52,7	84,8	112	153	206	283	kW
Water flow rate	4,63	7,44	9,91	13,4	18,1	24,8	m³/h
Water pressure drop	15	15	27	33	41	45	kPa
Air pressure drop	32	52	57	51	53	58	Pa
Cooling							
Cooling capacity total/sens (**)	31,2 / 17,8	46,5 / 27	62,7 / 36,4	86,9 / 50,5	117 / 68,1	161 / 91,8	kW
Water flow rate	5,2	7,8	10,5	14,5	19,6	26,9	m³/h
Water pressure drop	24	20	35	40	45	80	kPa
Air pressure drop	51	75	90	82	85	86	Pa
Water connection	1" 1/2	1" 1/2	1" 1/2	1" 1/2	1" 1/2	1" 1/2	Gas
TCT 6R							
Cooling capacity total/sens (**)	36,2 / 19,9	60,7 / 34	78,3 / 43,9	108 / 60,6	146 / 81,8	200 / 110	kW
Water flow rate	6	10,1	13,1	18,1	24,4	33,5	m³/h
Water pressure drop	15	42	27	35	44	71	kPa
Air pressure drop	60	90	95	95	96	90	Pa
Water connection	1" 1/2	1" 1/2	1" 1/2	1" 1/2	1" 1/2	2"	Gas

(*) Inlet air 0 °C, water IN/OUT 70/60 °C. max speed air flow.

(**) Inlet air 32 °C, RH 50%. water IN/OUT 7/12 °C. max speed air flow.

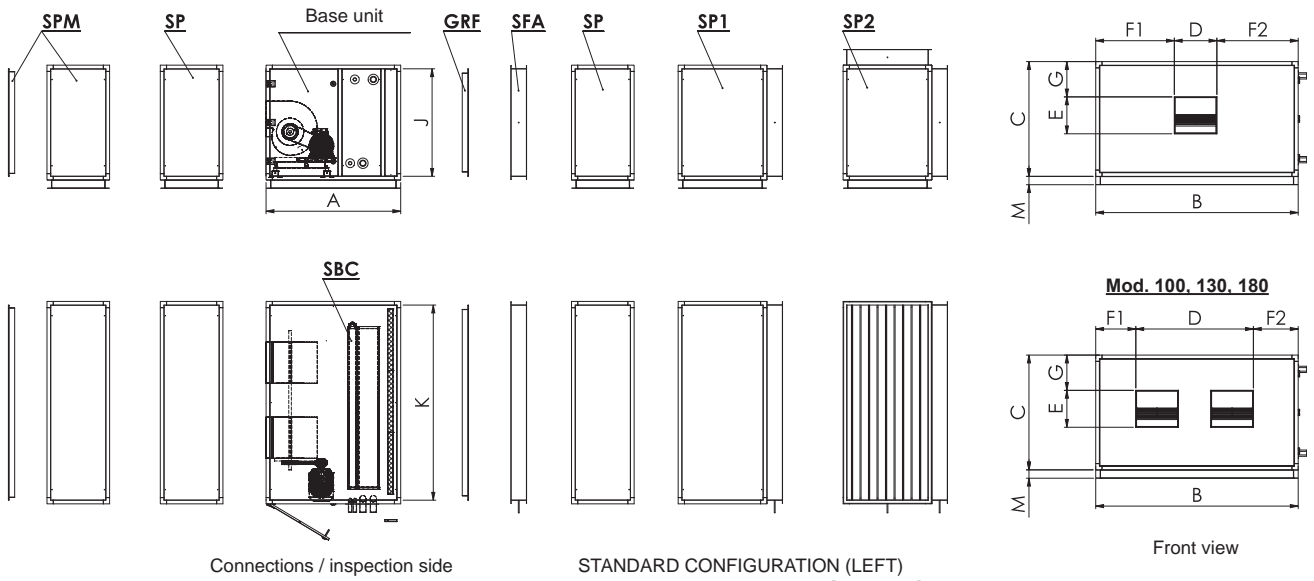
(*) Referred to the fan: deduct the pressure drop of the selected components in order to get the external static pressure.

(**) Sound pressure level: data referred to 1,5 metres from inlet in free field. The actual operation noise level generally differs from the values shown in the table, depending on operating conditions, reflected noise and surrounding noise.

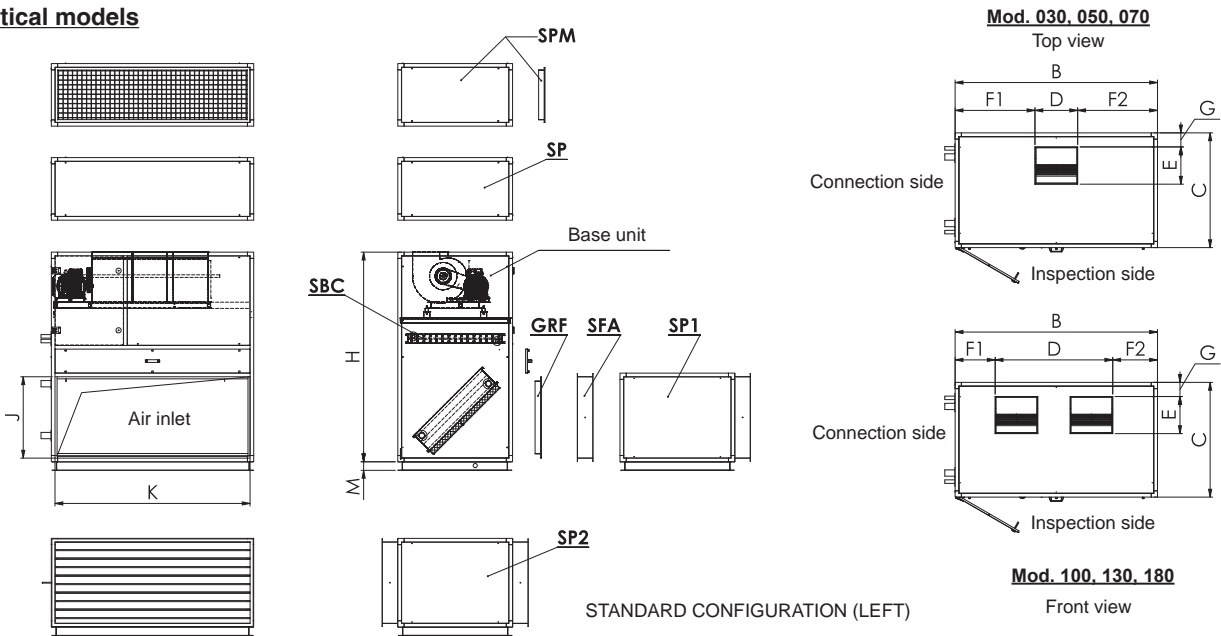
DIMENSIONS, WEIGHT

(drawing indicative of the series)

Horizontal models



Vertical models



Dimensions	Horizontal models						Vertical models					
	030	050	070	100	130	180	030	050	070	100	130	180
A [mm]	1290	1290	1290	1290	1290	1290	-	-	-	-	-	-
B [mm]	1180	1420	1660	1780	1940	2300	1180	1420	1660	1780	1940	2300
C [mm]	770	770	770	920	1100	1100	770	770	770	920	1100	1100
D [mm]	344	410	410	1130	1130	1340	344	410	410	1130	1130	1340
E [mm]	304	354	354	354	354	417	304	354	354	354	354	417
F1 [mm]	418	505	625	222	383	392	418	505	625	222	383	392
F2 [mm]	418	505	625	428	427	568	418	505	625	428	427	568
G [mm]	155	75	75	230	410	335	150	150	150	105	105	105
J [mm]	700	700	700	850	1030	1030	450	450	450	600	780	780
K [mm]	1110	1350	1590	1710	1870	2230	1110	1350	1590	1710	1870	2230
H [mm]	-	-	-	-	-	-	1540	1540	1540	1830	2010	2090
M [mm]	80	80	80	80	80	80	80	80	80	80	80	80
Weight [kg] (1)	197	240	260	360	380	550	220	268	290	380	410	580

(1) Approximate weight in the standard configuration with 4 rows coil

> FTE

AIR HANDLING UNITS

The **FTE series is Eurovent certified** and is built with a modular system providing for 29 sizes for a wide range of capacities with the possibility of special set-up upon request.

■ **STRUCTURE:** made with strong framework in extruded anodised aluminium sections, joined with angle joints in die-cast aluminium panels with double shell made by galvanised steel sheet, prepainted, stainless ASI 304 or peraluman.

The panels are available in 2 different thickness:

- 48 mm with polyurethane foam
- 48 mm with high density rock wool
- 63 mm only with high density rock wool, coupled to special extruded anodised aluminium sections with rounded edges complete with thermal break to minimize heat loss and air leakage. In this configuration, panels and profiles are coplanar thus making the surface of the central completely smooth, thus facilitating the operations of cleaning and sanitizing.

This solution is particularly suitable for applications in hospitals, food processing, pharmaceutical, etc.

The panels are equipped with self-adhesive type seals. The inspection panels are fitted on hinges and provided with double closing handles (internal and external).

The fixed panels 48 mm thickness are fasten to the frame with galvanised steel or stainless steel screws.

The fixed panels 63 mm thickness are fasten to the frame with galvanised steel or stainless steel screws that are completely surrounded by the thermal insulation so avoiding any possible thermal bridge.



Ferrol participates to the Eurovent certification program referred to the Air Handling Units (AHU). The Eurovent certification program is based on the requirements defined by the EN 1886 standard that ranks the following technical features of air-handling units:

- Mechanical strength of the casing
- Air leakage through the casing
- Air leakage around the filter frame
- Thermal transmittance of the casing
- Thermal bridges of the casing
- Acoustic insulation of the casing



The verification of these requirements is based on tests conducted by TUV laboratory accredited by Eurovent.

> FTP

AIR HANDLING UNITS

The **FTP series** is built with a modular system providing for 29 sizes for a wide range of capacities with the possibility of special set-up upon request.

■ **STRUCTURE:** made with strong framework in extruded anodised aluminium sections, joined with angle joints in die-cast aluminium or nylon panels with double shell and insulated with high density rock wool or polyurethane foam with thickness 23, 48 or 63 mm, with normal profiles or with thermal break. The panels can be made by:

- galvanised steel sheet
- prepainted steel sheet
- peraluman sheet
- AISI 304 stainless steel sheet

The panels are fixed to the frame with galvanised steel or stainless steel screws and are equipped with self-adhesive type seals. The inspection panels are fitted on hinges and provided with double closing handles (internal and external).

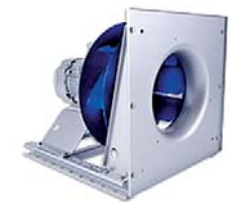


> General features

■ **BASE:** With a continuous beam in heavy galvanised steel sheet, press bent with sections with a high structural rigidity which ensure safe transport and handling on site.



■ **FANS:** to be selected upon the specific application:
- Dual-intake centrifugal type with forward or backward blades
- Dual-intake centrifugal type with airfoil backward blades
- Plug fan with speed control via 0-10V signal. They can be supplied with standard AC motor and external inverter control or with brushless EC motor ("inverter" built-in motor)



■ **MOTORS:** brushless type (for EC plug fan) or three-phase asynchronous squirrel-cage rotor windings and class F. All motors have efficiency class IE2 (IE3 on request) according to the international standard IEC 60034-30 and the ErP Directive 2009/125/EC (formerly EuP).

■ **HEAT EXCHANGER COILS,** removable type, can be chosen to work with water, brine solutions (eg. Glycol), steam or direct expansion. In the standard version are made with aluminum fins and copper pipes mechanically expanded. On request can be supplied in special versions (steel pipes or stainless steel, pre-painted aluminium fins, copper fins, etc..).



■ **ELECTRIC COILS:** The electric coils have armored-type heaters with one or two stages, complete with electrical panel and safety thermostat.

■ **AIR FILTERS** with high surface area and low pressure drop, can be selected:
- Roll filters
- Rigid or soft pockets filters
- Corrugated filter cells
- Activated carbon filters



■ **HEAT RECOVERY** can be selected:
- Static type cross-flow plates made of aluminum (or steel) sealed so as to ensure the total absence of contact between the exhaust air and the fresh air entered.
- Rotary with rotating hygroscopic drum; on demand can be supplied complete with a device for controlling the speed of rotation.



■ **DAMPERS:** constructed of galvanized sheet metal frame and paneled extruded aluminum fins, complete with gasket for maximum sealing.

■ **HUMIDIFICATION** to be selected according to the specific application:
- **STEAM** through the installation of a steam generator or through distributors in case of steam network.
- by **NOZZLES** through self-cleaning spray nozzles, mounted on one or two trains.
- **PACK** by a honeycomb packing cellulose impregnated with phenolic resins, complete with metal frame containing and water distributor.

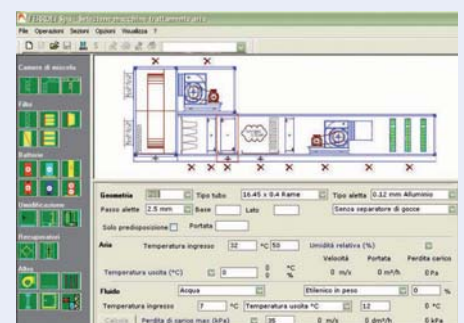
■ **COLLECTION TRAYS:** These can be in galvanised steel or AISI 304 stainless steel sheet, provided with drain manifold.

■ **SILENCERS** available in different lengths, are made with insulating baffles, constructed with multiple layers of rock wool content from a microperforated sheet metal; external surfaces of the septa in direct contact with the treated air are coated with a plastic film to prevent flaking.

Software Selection

Ferrol cta is a selection powerful and versatile software that allows you to select the air handling unit best suited to your specific needs quickly and completely.

The output generated by the SW is offering a comprehensive economic, including technical drawings and characteristics of the selected components.



> RFA

PACKAGED AIR CONDITIONERS AND HEAT PUMPS ROOF TOP FOR OUTDOOR INSTALLATION



Available range

Unit type

PC Heat pump
(reversible on the refrigerant side)

Constructive configurations

VB Base version
V1 1 damper version
V2 2 dampers version
V2 3 dampers version

Acoustic setting up

AB Base setting up
AS Low noise setting up

Unit description

This series of packaged air conditioners and heat pumps (roof top) satisfies the cooling and heating requirements of medium and large buildings (commercial centres, supermarkets, cinemas, outlets, offices, canteens, restaurants ...)

All the units are suitable for outdoor installation and can be applied to plants realized with various type of air ducts.

Each model is available in various constructive configurations and can be equipped with a large range of accessories in order to fit the different installation requirements.

The region in contact with the treated air, easily accessible, is realized with perfectly washable metal surfaces, externally insulated in order to minimize the thermal losses and to avoid condensate generation both on the internal part and the external part of the structure.

The refrigerant circuit, contained in a compartment protected by the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports. Each compressor is placed on an independent refrigerant circuit in order to keep a constant ratio between the sensible cooling power and total cooling power also at partial loads and to guarantee a better treatment of the air besides a greater reliability.

Each refrigerant circuit is equipped with thermostatic expansion valves, reverse cycle valve, axial fans with safety protection grilles, finned coils made of copper pipes and aluminium louvered fins and high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

All the units are supplied with an outdoor temperature sensor, already installed on the unit.

All the units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory. Only electric, aeraulic and hydraulic connections are required for installation.

Options

Air flow position

- upwards / frontal
- downwards

Internal fan

- standard
- upsized
- reduced

Heating integration

- hot water coil
(2 or 3 rows with pipes or 3 way valve)
- electrical heater coil
(standard or upsized)
- condensing gas heating module
(standard or upsized)

Air flow silencers

External fans control

- on-off control
- modulating control (condensation / evaporation control)

Enthalpic free cooling

Air quality control (CO₂)

Special filters

- rigid pockets filters (F6 - F7 - F8 - F9)
- rigid pocket filters with active carbons

Filters differential pressure switch

Droplets separator

Accessories

Spring vibration dampers

External coils protection grilles

High and low pressure gauges

Remote thermostat

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Roof curb

NOMINAL performances

PC	Base setting up (AB)										
	35.1	45.1	55.1	70.2	90.2	110.2	140.2	180.2	220.2		
A35A27	Low noise setting up (AS)										
	Total cooling capacity	35,5	46,3	57,7	71,0	92,3	113	142	184	226	kW
	RST *	0,70	0,70	0,70	0,70	0,70	0,70	0,70	0,70	0,70	-
	Power input	10,9	14,0	17,7	22,5	28,8	36,6	46,6	59,5	73,7	kW
	EER	3,26	3,31	3,26	3,16	3,20	3,09	3,05	3,09	3,07	-
	Air flow rate plant side	6200	8100	10000	11000	14500	17000	22500	29000	35000	m ³ /h
	Available static head plant side	200	200	200	200	200	200	200	200	200	Pa
A7A20	Heating capacity	36,7	47,8	59,5	73,9	95,9	118	148	192	236	kW
	Power input	11,2	14,4	18,2	23,0	29,5	37,5	47,7	60,9	75,5	kW
	COP	3,28	3,32	3,27	3,21	3,25	3,15	3,10	3,15	3,13	-
	Air flow rate plant side	6200	8100	10000	11000	14500	17000	22500	29000	35000	m ³ /h
	Available static head plant side	200	200	200	200	200	200	200	200	200	Pa

Data declared according to EN 14511. The values are referred to units without options and accessories operating with 100% return air.

* RST = ratio between sensible cooling capacity and total cooling capacity.

A35A27 = source : air in 35°C d.b. / plant : air in 27°C d.b. 19°C w.b.

A7A20 = source : air in 7°C d.b. 6°C w.b. / plant : air in 20°C d.b.

Acoustic performances

Base setting up (AB)											
	35.1	45.1	55.1	70.2	90.2	110.2	140.2	180.2	220.2		
Sound power level	84	85	85	87	87	88	90	92	93		dB(A)
Sound pressure level at 1 metre	67	67	68	69	69	70	71	73	74		dB(A)
Sound pressure level at 5 metres	58	58	59	60	61	61	63	65	66		dB(A)
Sound pressure level at 10 metres	53	53	54	55	56	56	58	60	61		dB(A)
Low noise setting up (AS)											
Sound power level	81	82	82	84	84	85	87	89	90		dB(A)
Sound pressure level at 1 metre	64	64	65	66	66	67	68	70	71		dB(A)
Sound pressure level at 5 metres	55	55	56	58	58	59	60	62	63		dB(A)
Sound pressure level at 10 metres	50	50	51	53	53	54	55	57	58		dB(A)

Performances referred to units with VB constructive configuration (base version) operating in cooling mode at NOMINAL conditions A35A27 with STANDARD air flow rate and available static head.

Unit placed in free field on reflecting surface (directional factor equal to 2) with air inlet and outlet connections ducted for 2 metres.

The sound power level is measured according to ISO 3744 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

OPERATING LIMITS	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	PC	10	50	-10	22	°C
Return air inlet temperature	PC	15	37	5	22	°C

TECHNICAL DATA	35.1	45.1	55.1	70.2	90.2	110.2	140.2	180.2	220.2	
Power supply	400 - 3N - 50	400 - 3N - 50	400 - 3N - 50	400 - 3N - 50	400 - 3N - 50	400 - 3N - 50	400 - 3N - 50	400 - 3N - 50	400 - 3N - 50	V-ph-Hz
Compressor type	scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll	-
N° compressors / N° refrigerant circuits	1 / 1	1 / 1	1 / 1	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	n°
Plant side heat exchanger type	finned coil	finned coil	finned coil	finned coil	finned coil	finned coil	finned coil	finned coil	finned coil	-
Source side heat exchanger type	finned coil	finned coil	finned coil	finned coil	finned coil	finned coil	finned coil	finned coil	finned coil	-
External fans type	axial	axial	axial	axial	axial	axial	axial	axial	axial	-
N° external fans	2	2	2	4	4	4	4	4	4	n°
Internal fans type	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	-
N° internal fans	2	2	2	2	2	2	2	2	2	n°

HEATING INTEGRATION											
	35.1	45.1	55.1	70.2	90.2	110.2	140.2	180.2	220.2		
Electrical heater coil	standard	9,0	9,0	9,0	18,0	18,0	18,0	36,0	36,0	36,0	kW
	upsized	18,0	18,0	18,0	31,5	31,5	31,5	63,0	63,0	63,0	kW
Condensing gas heating module	standard	44,8	44,8	44,8	93,4	93,4	93,4	186,8	186,8	186,8	kw
	upsized	54,0	54,0	54,0	145,0	145,0	145,0	290,0	290,0	290,0	kW

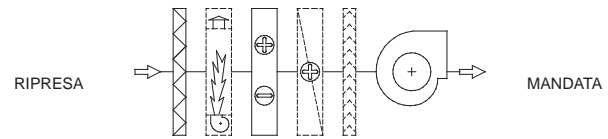
CONSTRUCTIVE CONFIGURATIONS

Each model can be supplied in different constructive configurations in order to satisfy the application requirements that can be necessary for the plants. The various versions, obtained adding to the base version some modules, are always supplied already assembled, wired and tested in the factory. All the versions can be arranged with standard air flow position (frontal for the models of frame 1 and 2 and upwards for the models of frame 3) or with downwards air flow position. The dotted components are accessories.

VB - Base version

It only allows to operate with all return air. It contains the standard filtering section and the air-refrigerant exchange coil that allows the heating, cooling and dehumidification processes to be performed.

It is possible to add a further heating section (hot water coil or electrical heater coil) and the droplets separator. Instead of such heating section it is possible to add a gas heating module, placed between the filtering section and the air-refrigerant exchange coil.

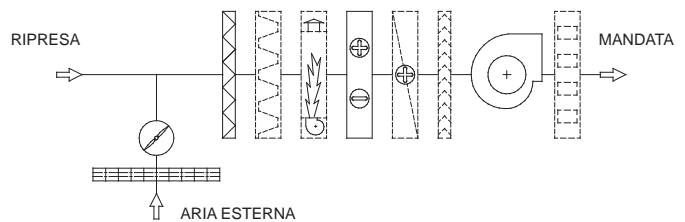


V1 - 1 damper version

It allows to operate with a percentage of outdoor fresh air, adjustable manually setting the damper placed on the adding module. The outdoor air inlet is equipped with a rain protection cap and a metal safety grille. The expulsion from the conditioned ambient of an air flow rate equal to the outdoor fresh air flow rate must be realized independently from the unit by means of overpressure openings or other extraction devices. In the adding module can be placed various type of special filters in order to complete the standard filtering section.

Also in this version it is possible to add a further heating section (hot water coil or electrical heater coil) and the droplets separator.

Instead of such heating section it is possible to add a gas heating module, placed between the filtering section and the air-refrigerant exchange coil. Downstream the internal fans, air flow silencers can be installed to reduce the noise transmitted to the conditioned ambients through the air ducts (only for the models of frame 1 and 2).



V2 - 2 dampers version

The presence of two motorized dampers managed by the controller of the unit allows to operate with a minimum percentage of outdoor fresh air (adjustable through the user interface) and to perform thermal free cooling.

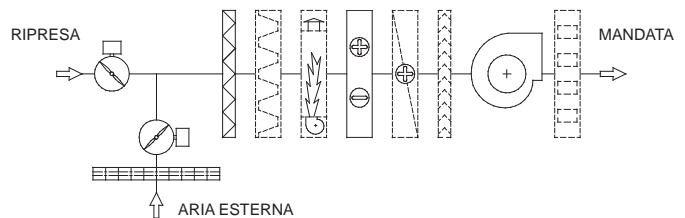
The outdoor air inlet, equipped with a rain protection cap and a metal safety grille, is designed for 100% of the total air flow rate and allows to operate in free cooling with all outdoor air.

The expulsion from the conditioned ambient of an air flow rate equal to the outdoor fresh air flow rate must be realized independently from the unit by means of overpressure openings or other extraction devices.

In the adding module can be placed various type of special filters in order to complete the standard filtering section.

It is possible to add a further heating section (hot water coil or electrical heater coil) and the droplets separator. Instead of such heating section it is possible to add a gas heating module, placed between the filtering section and the air-refrigerant exchange coil.

It is also possible to perform enthalpic free cooling by means of the installation of the humidity sensors. Downstream the internal fans, air flow silencers can be installed to reduce the noise transmitted to the conditioned ambients through the air ducts (only for the models of frame 1 and 2).



V3 - 3 dampers version

The presence of three motorized dampers managed by the controller of the unit allows to operate with a minimum percentage of outdoor fresh air (adjustable through the user interface), to perform thermal free cooling and to manage the air expulsion.

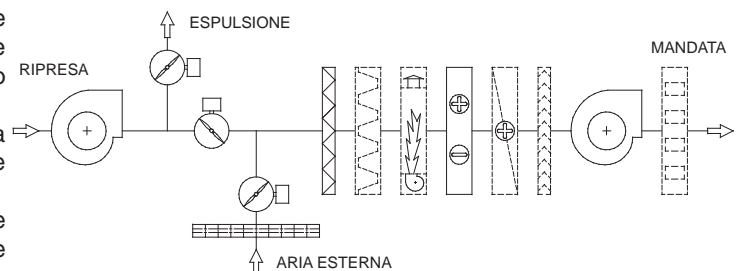
The outdoor air inlet, equipped with a rain protection cap and a metal safety grille, is designed for 100% of the total air flow rate and allows to operate in free cooling with all outdoor air.

The expulsion from the conditioned ambient of an air flow rate equal to the outdoor fresh air flow rate is realized through the return air fan and the expulsion damper placed inside the unit.

In the adding module can be placed various type of special filters in order to complete the standard filtering section.

Also in this version it is possible to add a further heating section (hot water coil or electrical heater coil) and the droplets separator. Instead of such heating section it is possible to add a gas heating module, placed between the filtering section and the air-refrigerant exchange coil. It is also possible to perform enthalpic free cooling by means of the installation of the humidity sensors.

Downstream the internal fans, air flow silencers can be installed to reduce the noise transmitted to the conditioned ambients through the air ducts (only for the models of frame 1 and 2).



CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a board placed inside the electrical panel, all the electrical loads and the control devices are connected. The user interface, accessible removing the protection panel of the electrical board, is realized by a display and two buttons that allow to view and, if necessary, modify all the operating parameters of the unit.

Are available, as accessories, a remote control, that reports all the functionalities of the user interface placed on the unit, or a remote thermostat.

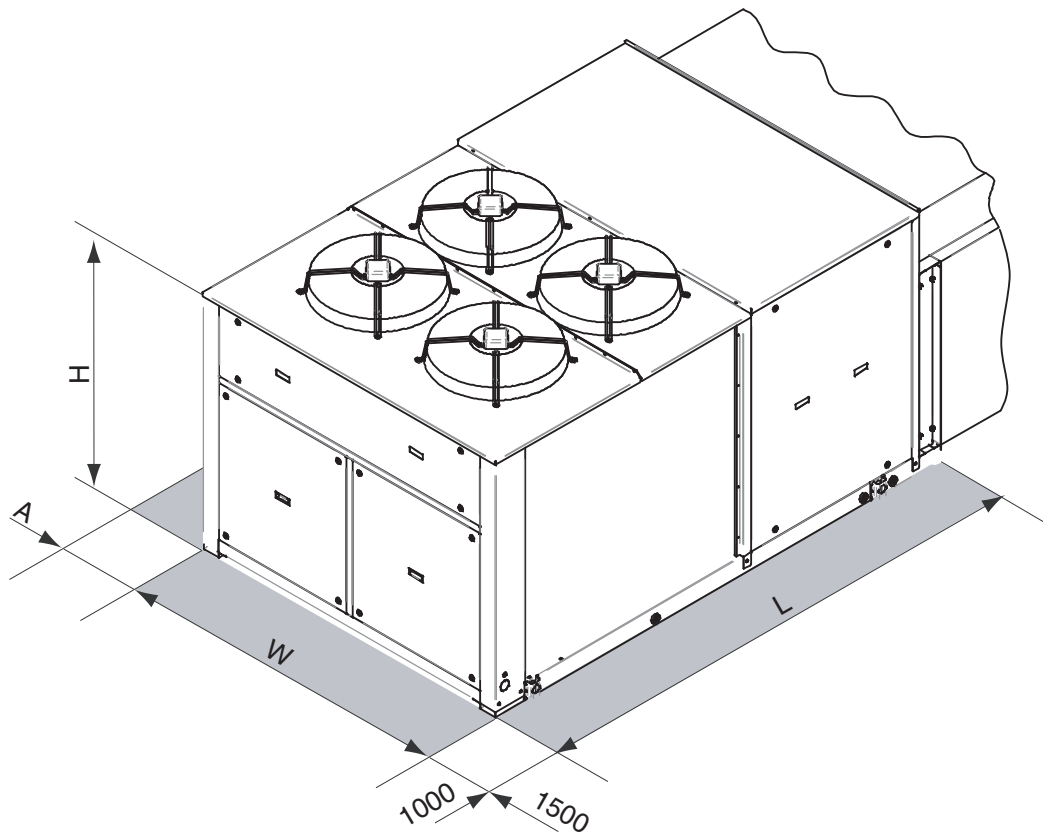
The main functions available are :

- treated air temperature management (through set point adjustment)
- treated air humidity management (only with enthalpic free cooling option)
- treated air quality management (CO₂)
- thermal or enthalpic (option) free cooling
- external fan management by means of continuous rotational speed control (option)
- internal fan management
- return air fan management

- integrative heating sources management (electrical heater coil, hot water coil, gas heating module)
- defrost cycle management
- dampers management (outdoor air, return air and expulsion air)
- compressor and internal fan operating hours recording
- serial communication through Modbus protocol
- remote on-off
- remote cooling-heating
- active alarms visualization
- general alarm digital output



DIMENSIONS AND MINIMUM OPERATING AREA



		35.1	45.1	55.1	70.2	90.2	110.2	140.2	180.2	220.2	
L	VB	2900	2900	2900	3100	3100	3100	3900	3900	3900	mm
	VB with gas heating module	3830	3830	3830	4300	4300	4300	5100	5100	5100	mm
	V1 e V2	4000	4000	4000	4200	4200	4200	5000	5000	5000	mm
	V1 e V2 with gas heating module	4930	4930	4930	5400	5400	5400	6200	6200	6200	mm
	V3	4800	4800	4800	5000	5000	5000	6600	6600	6600	mm
	V3 with gas heating module	5730	5730	5730	6200	6200	6200	7800	7800	7800	mm
W		1400	1400	1400	2000	2000	2000	2200	2200	2200	mm
H		1600	1600	1600	1600	1600	1600	2350	2350	2350	mm
A		1000	1000	1000	1500	1500	1500	1500	1500	1500	mm

> UT REC +

HEAT RECOVERY UNITS



Units Series

Version

UT REC+ with recuperator in aluminium and standard fans

UT REC E+ with recuperator in aluminium and EC fans

Unit specification

- Horizontal installation
- Structure and panels made by Aluzink sheet metal thermal and acoustic insulated
- F7 efficiency class in the renewal flow and M5 efficiency class in the ejection flow.
- Air-air recuperator countercurrent-flow with removable aluminium plates, with thermal by-pass facility
- Centrifugal fans directly coupled to electric motor (multiple speeds for UT REC +, brushless EC type UT REC E+)
- Electrical box on board

Accessories

- Bypass kit - KBP
- Anti-freeze thermostat - TA
- Electric post-heating section - BER
- Post-heating internal water coil - BCR
- Water coil section - SBFR
- High efficiency filters on exhaust air - F7CF
- Regulation damper - SR
- 3 dampers section for mixing/recirculating - RMS
- Damper actuators - SMISMR
- N. 4 connections for circular ducts kit - SPC
- Duct silencers - SSC
- Signal lamps kit - KLS
- Pressure switch for dirty filter signal - PF
- Kit for external installation - EXT
- Kit weather hood for external installation - CPA
- Electronic speed controller (only for mod. 40) - VVM
- Unit speed control panel (for mod. 75-500) - COM 3
- Unit control panel - PCU-PCUE

Technical data

MODEL - UT-REC +	40	75	100	150	200	320	400	500	UM
Airflow rate	400	750	1000	1600	2050	3150	3700	4700	m ³ /h
Total static pressure - ESP ⁽¹⁾	100	100	100	100	100	100	100	100	Pa
Electrical power supply STD fans	230/1/50							400/3/50	V/ph/Hz
Max power input STD fans	1,5	1,8	3,7	4,0	5,1	9,4	13,0	6,6	A
Sound level pressure ⁽⁵⁾	59	60	63	63	63	69	69	72	dB (A)
MODEL - UT-REC E+	40	75	100	150	200	320	400	500	UM
Airflow rate	400	750	1000	1600	2050	3150	3700	4700	m ³ /h
Total static pressure - ESP ⁽¹⁾	≤ 250	≤ 375	≤ 570	≤ 535	≤ 535	≤ 270	≤ 660	≤ 335	Pa
Electrical power supply STD fans	230/1/50								V/ph/Hz
Max power input STD fans	2,0	3,2	8,2	8,2	9	9	19,0	19,0	A
Sound level pressure ⁽⁵⁾	60	61	62	64	62	68	68	69	dB (A)
EXCHANGER	40	75	100	150	200	320	400	500	UM
Winter efficiency ⁽²⁾	79,2	83,0	81,2	78,5	79,2	74,5	75,1	75,0	%
Summer efficiency ⁽³⁾	82,8	88,7	87,1	83,0	83,4	78,5	78,5	78,6	%
Dry efficiency ⁽⁴⁾	77,2	83,4	81,5	77,4	77,8	73,0	73,0	73,0	%

(1) Figures refer to the nominal air flow and won the heat recovery and standard filters F7

(2) Nominal winter conditions: (outside air: -5°C DB, RH 80 % - ambient air: 20°C DB, RH 50 %)

(3) Nominal summer conditions: (outside air: 32°C DB, RH 50 % - ambient air: 26°C DB, RH 50 %)

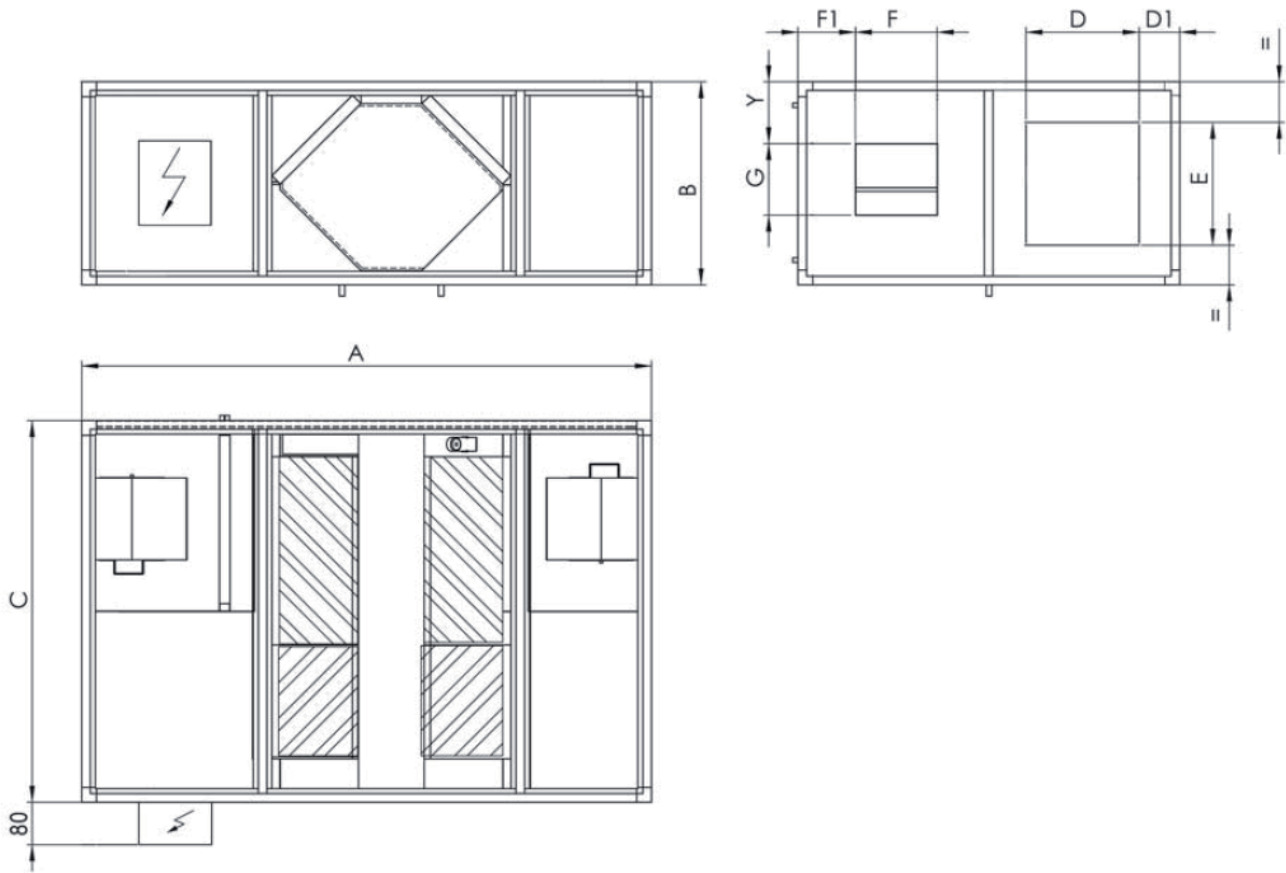
(4) Nominal dry conditions: (outside air: 5°C DB - ambient air: 25°C DB) according to EN308

(5) Data referred to 1,5 m from inlet machine in free at nominal air flow-rate. The actual operation noise level ganarally differes from the values shown, depending on the operating conditions, on the reflected noise and on the surrounding noise.

NOTE: All recuperators have a minimum efficiency of 67%, according to **EN308**, (outside air: 5°C DB - ambient air: 25°C DB), with balanced mass flow.

DIMENSIONS, WEIGHT

(drawing indicative of the series)



Model	A [mm]	B [mm]	C [mm]	D [mm]	D1 [mm]	E [mm]	F [mm]	F1 [mm]	G [mm]	G1 ⁽¹⁾ Ø gas	Y [mm]	Peso [kg]
40	1480	380	800	300	70	210	215	90	70	3/4"	115	90
75	1940	480	990	300	100	310	230	140	210	3/4"	140	140
100	1940	480	990	300	100	310	230	140	260	3/4"	140	150
150	2200	550	1000	300	100	410	230	145	260	3/4"	90	170
200	2200	550	1400	500	100	410	330	215	260	3/4"	90	200
320	2500	680	1290	400	130	510	330	170	290	3/4"	155	210
400	2500	680	1400	500	100	510	330	195	290	3/4"	155	240
500	2500	680	1700	500	50	510	330	270	290	1"	155	270

(1) Connection for optional post-heating water coil BCR

> UT REC C+

HEAT RECOVERY UNITS



Units Series

Version

UT REC C+ with paper pack recuperator and standard fans

UT REC CE+ with paper pack recuperator and EC fans

Unit specification

- Horizontal installation
- Structure and panels made by Aluzink sheet metal thermal and acoustic insulated
- F7 efficiency class in the renewal flow and M5 efficiency class in the ejection flow.
- Air-air recuperator countercurrent-flow (removable), with thermal by-pass facility
- Centrifugal fans directly coupled to electric motor (multiple speeds for UT REC C+, brushless EC type UT REC CE+)
- Electrical box on board

Accessories

- Bypass kit - KBP
- Anti-freeze thermostat - TA
- Electric post-heating section - BER
- Post-heating internal water coil - BCR
- Water coil section - SBFR
- High efficiency filters on exhaust air - F7CF
- Regulation damper - SR
- 3 dampers section for mixing/recirculating - RMS
- Damper actuators - SMISMR
- N. 4 connections for circular ducts kit - SPC
- Duct silencers - SSC
- Signal lamps kit - KLS
- Pressure switch for dirty filter signal - PF
- Kit for external installation - EXT
- Kit weather hood for external installation - CPA
- Electronic speed controller (only for mod. 40) - VVM
- Unit speed control panel (for mod. 75-500) - COM 3
- Unit control panel - PCU-PCUE

Technical data

MODEL - UT-REC C+	40	75	100	150	200	320	400	UM
Airflow rate	400	660	1000	1550	2000	3250	4050	m ³ /h
Total static pressure - ESP ⁽¹⁾	100	100	100	100	100	100	100	Pa
Electrical power supply STD fans	230/1/50							V/ph/Hz
Max power input STD fans	1,6	1,8	3,5	3,8	4,8	9,7	5,9	A
Sound level pressure ⁽³⁾	59	60	63	63	63	69	72	dB (A)
MODEL - UT-REC CE+	40	75	100	150	200	320	400	UM
Airflow rate	400	660	1000	1550	2000	3250	4050	m ³ /h
Total static pressure - ESP ⁽¹⁾	≤ 285	≤ 380	≤ 410	≤ 500	≤ 600	≤ 600	≤ 650	Pa
Electrical power supply STD fans	230/1/50						400/3/50	V/ph/Hz
Max power input STD fans	2,1	2,6	8,2	8,2	8,5	16	19	A
Sound level pressure ⁽³⁾	60	61	62	64	62	68	69	dB (A)
EXCHANGER	40	75	100	150	200	320	400	UM
Efficiency in temperature ⁽²⁾	75	69	68	68	73	67	67	%
Efficiency in enthalpy ⁽²⁾	60	53	48	48	63	55	57	%

(1) The max speed included standard G4 filters

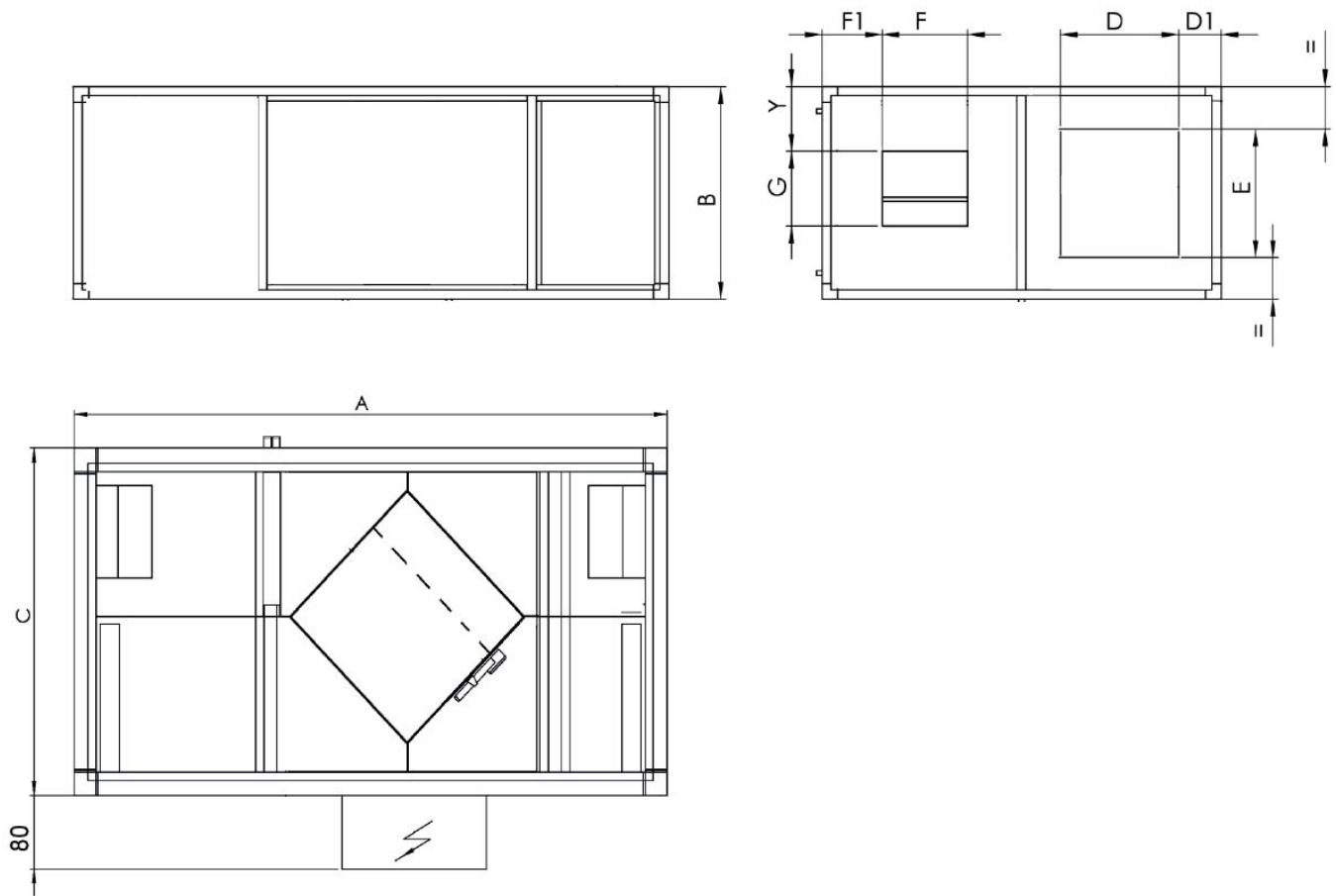
(2) in winter conditions: (outside air: -5°C DB - ambient air: 20°C DB, RH 50%)

(3) Data referred to 1,5 m from inlet machine in free at nominal air flow-rate. The actual operation noise level generally differs from the values shown, depending on the operating conditions, on the reflected noise and on the surrounding noise.

NOTE: All recuperators have a minimum efficiency of 67%, according to EN308, (outside air: 5°C DB - ambient air: 25°C DB), with balanced mass flow.

DIMENSIONS, WEIGHT

(drawing indicative of the series)



Model	A [mm]	B [mm]	C [mm]	D [mm]	D1 [mm]	E [mm]	F [mm]	F1 [mm]	G [mm]	G1 ⁽¹⁾ Ø gas	Y [mm]	Weight [kg]
40	1480	380	800	300	70	270	215	90	70	3/4"	115	80
75	1450	480	990	300	100	310	230	140	200	3/4"	140	120
100	1450	480	990	300	100	310	230	140	260	3/4"	140	130
150	1600	550	1000	300	100	410	230	145	260	3/4"	90	150
200	2000	680	1290	400	130	410	300	170	260	3/4"	220	190
320	2000	680	1290	400	50	410	330	170	290	3/4"	155	200
400	2100	680	1400	500	50	510	330	195	290	1"	155	220

(1) Connection for optional post-heating water coil BCR

> UT REC R+

ROTARY HEAT RECOVERY UNITS



Units Series

Version

UT REC R+ horizontal unit and standard fans
 UT REC RE+ horizontal unit EC fans

Unit specification

- Horizontal installation
- Structure and panels made by Aluzink sheet metal thermal and acoustic insulated
- F7 efficiency class in the renewal flow and M5 efficiency class in the ejection flow.
- Rotary air-air heat recuperator (removable), with thermal by-pass facility
- Centrifugal fans directly coupled to electric motor (multiple speeds for UT REC R+, brushless EC type UT REC RE+)
- Electrical box on board

Accessories

- Bypass kit - KBP
- Anti-freeze thermostat - TA
- Electric post-heating section - BER
- Post-heating internal water coil - BCR
- Water coil section - SBFR
- High efficiency filters on exhaust air - F7CF
- Regulation damper - SR
- 3 dampers section for mixing/recirculating - RMS
- Damper actuators - SMISMR
- N. 4 connections for circular ducts kit - SPC
- Duct silencers - SSC
- Signal lamps kit - KLS
- Pressure switch for dirty filter signal - PF
- Kit for external installation - EXT
- Kit weather hood for external installation - CPA
- Electronic speed controller (only for mod. 40) - VVM
- Unit speed control panel (for mod. 75-500) - COM 3
- Unit control panel - PCU-PCUE

Technical data

MODEL - UT-REC R+	40	75	100	150	200	320	400	UM
Airflow rate	310	650	1150	1900	2320	3600	4250	m ³ /h
Total static pressure - ESP ⁽¹⁾	100	100	100	100	100	100	100	Pa
Electrical power supply STD fans	230/1/50				400/3/50			V/ph/Hz
Max power input STD fans	1,1	1,6	3,0	3,9	4,9	10,1	6,0	A
Sound level pressure ⁽³⁾	59	60	63	63	63	69	69	dB (A)
MODELLO - UT-REC RE+	40	75	100	150	200	320	400	UM
Airflow rate	310	650	1150	1900	2320	3600	4250	m ³ /h
Total static pressure - ESP ⁽¹⁾	≤ 230	≤ 180	≤ 280	≤ 600	≤ 550	≤ 260	≤ 680	Pa
Electrical power supply STD fans	230/1/50							V/ph/Hz
Max power input STD fans	1,78	2,5	6,5	9,0	9,0	9,0	18,8	A
Sound level pressure ⁽³⁾	60	61	62	64	62	68	68	dB (A)
RECUPERATORE	40	75	100	150	200	320	400	UM
Efficiency in temperature ⁽²⁾	72	74	72	73	74	70	67	%
Efficiency in enthalpy ⁽²⁾	65	66	65	65	67	63	60	%

(1) The max speed included standard G4 filters

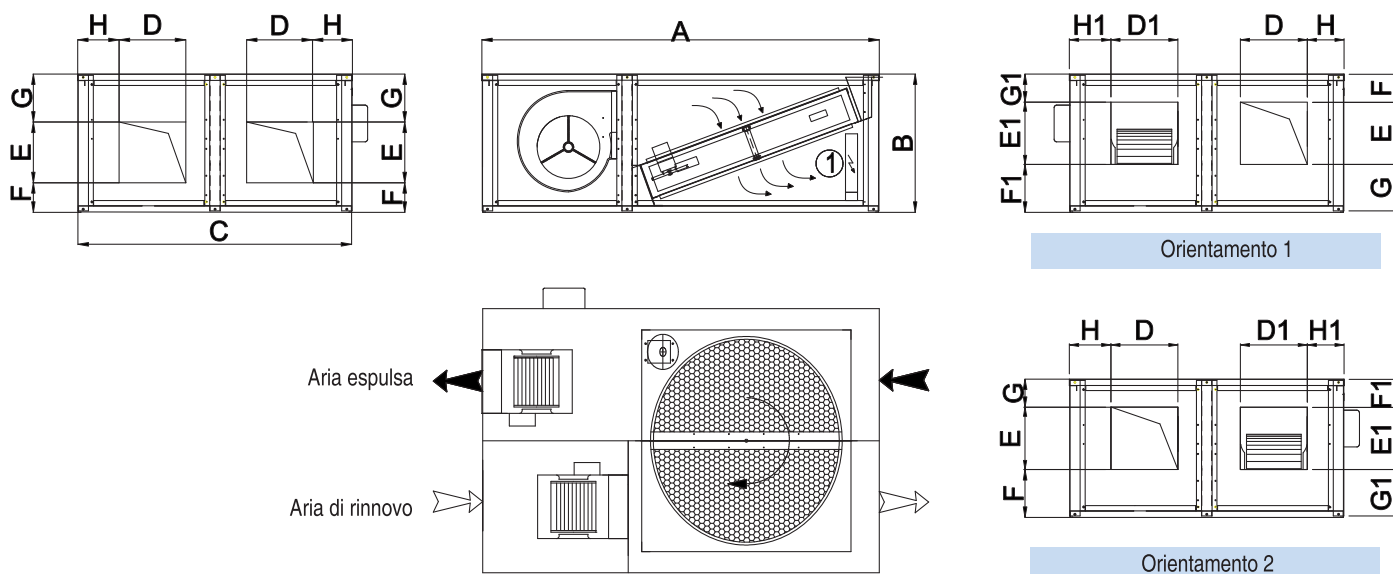
(2) in winter conditions: (outside air: -5°C DB - ambient air: 20°C DB, RH 50 %)

(3) Data referred to 1,5 m from inlet machine in free at nominal air flow-rate. The actual operation noise level generally differs from the values shown, depending on the operating conditions, on the reflected noise and on the surrounding noise.

NOTE: All recuperators have a minimum efficiency of 67%, according to EN308, (outside air: 5°C DB - ambient air: 25°C DB), with balanced mass flow.

DIMENSIONS, WEIGHT

(drawing indicative of the series)



1 Connection for optional post-heating water coil BCR

Model	A [mm]	B [mm]	C [mm]	D [mm]	D1 [mm]	E [mm]	E1 [mm]	F [mm]	F1 [mm]	G [mm]	G1 [mm]	H [mm]	H1 [mm]	Weight [kg]
40	1075	480	800	200	224	210	100	130	195	140	185	110	96	67
75	1075	480	800	200	224	210	100	130	195	140	185	110	96	71
100	1205	550	1000	260	225	220	200	153	162	177	190	125	145	102
150	1400	550	1000	290	225	310	255	90	170	150	125	110	145	139
200	1720	680	1290	410	288	410	255	157	170	113	255	125	185	178
320	1720	680	1290	410	325	410	280	157	200	113	200	125	165	194
400	1720	680	1400	410	325	410	280	157	200	113	200	155	195	207



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WARNING FOR TRADERS

As part of its efforts to constantly improve its range of products, with the aim of increasing the level of Customer satisfaction, the Company stresses that the appearance, dimensions, technical data and accessories may be subject to variation. Consequently, ensure that the Customer is provided with updated documents.

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