Ferroli

PRODUCT RANGE 2010

>>> INDUSTRIAL AIR-CONDITIONING <<<

Summary

> 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 1400M$^{2.}$

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 stiplulated 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


fig. a

fig. d

fig. b

fig. c

addition process units for leaving water temperature down to –8°C.
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 1800kW (**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.

> Ferroli production plant

THE PRODUCTION PLANT OF THE INDUSTRIAL AIR CONDITIONING DIVISION COVERS AN AREA OF 25,000 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.

>> 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 350kW are built on the assembly line.
The 5 lines total a length of 300 m.


fig. a


fig. b


fig. c


fig. d

Ferroli
i migliori gradicentigradi

>> 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 20kW units with heat pump (minimum 2 hours for operational mode) and up to 8 hours for 200kW units (approx. 4 hours per operational mode). Complete test reports are compiled and made available to entire Ferroli world.

>> Chillers up to 1400kW (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 Ferroli 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.

> Ferroli's Italy references

HOSPITAL AUTHORITIES

Milazzo (ME)
RHA + RGA + AIR HANDLING UNIT

Piemonte (ME)
RLA + FAN COIL

Roma S. Filippo Neri
RMA + FAN COIL

Militare Celio (RM)
AIR HANDLING UNIT + FAN COIL

Opera Pia (VB)
RMA + FAN COIL

Cotugno (NA)
RGA + AIR HANDLING UNIT + FAN COIL

Vecchio Palmanova (UD)
FAN COIL

V. Emanuele Gela (RG)
RHA + AIR HANDLING UNIT

Borgosesia (VC)
RHV + AIR HANDLING UNIT

Misericordia (GR)
FAN COIL

Silvestrini (PG)
FAN COIL

Villa San Pietro (RM)
AIR HANDLING UNIT

San Bonifacio (VR)
AIR HANDLING UNIT

C. Poma (MN)
FAN COIL

Monaldi (NA)
RLA + AIR HANDLING UNIT

Sarcone (BA)
RGA

S. Anna (CO)
AIR HANDLING UNIT

Belcolle (VT)
AIR HANDLING UNIT

Maggiore (BO)
AIR HANDLING UNIT

S.Martino (GE)
RGA

Barcellona (ME)
AIR HANDLING UNIT

G. Rummo (BN)
RGA

Cà Foncello (TV)
AIR HANDLING UNIT

S. Maria della Circe (SI)
AIR HANDLING UNIT

Vittorio Emanuele III (CL)
AIR HANDLING UNIT

Vincenzo dell'Erba (BA)
RMA + AIR HANDLING UNIT

Santhià (TO)
RLA + FCF

Borgomanero
RHA + AIR HANDLING UNIT

Roma Bambin Gesù
AIR HANDLING UNIT + FANCOIL

Sandro Pertini (RM)
RGA + FAN COIL

Manduria (TA)
RXA + RMA + FAN COIL + DUCTED FAN COIL

Moscati (TA)
RXA + DUCTED FAN COIL

S. Vito al Tagliamento (UD)
AIR HANDLING UNIT + DUCTED FAN COIL

Niguarda (MI)
DUCTED FAN COIL

Maggiore della Carità (NO)
AIR HANDLING UNIT + RLA + RGA

Gubbio (PG)
RGA + FAN COIL

Presidio Ospedaliero ASL n. 4 APICELLA (NA)
RGA

Azienda Ospadaliera Senese (SI)
RXA

Policlinico di Monza (MI)
RGA

USL 4 di Prato (PO)
AIR HANDLING UNIT + RGA + FAN COIL

USL 13 (BA)
AIR HANDLING UNIT

ASL NAPOLI 2 (NA)
AIR HANDLING UNIT

ASL di Frosinone (FR)
RLA + AIR HANDLING UNIT

Casa di Cura Columbus (MI)
AIR HANDLING UNIT

Istituto Zooprofilattico (SS)
RLA + RHA

Regione Lazio (RM)
AIR HANDLING UNIT

Clinica Villa Sandra (RM)
AIR HANDLING UNIT

Casa di Cura S. Lorenzino (FC)
RGA

Laboratorio TUV Scarmagno (TO)
RGA + FCS

I.P.A.B. Ist. Giovanni XXIII (BO)
RHA + AIR HANDLING UNIT

Centro Sterilizzazione "Steril Piemonte" (VC)
RHV + RLA + AIR HANDLING UNIT

Ingegneria Biomedica S. Lucia (NO)
RGA + FAN COIL

>>> INDUSTRIAL AIR-CONDITIONING <<<

San Bonifacio hospital (VR)

> Ferroli's Italy references

SCHOOLS, UNIVERSITIES, LIBRARIES
HOTELS
CATERING

> SCHOOLS, UNIVERSITIES, LIBRARIES

Liceo Classico S.M. Legnani (VA)
RGA + AIR HANDLING UNIT

Biblioteca di Palazzo Chigi (RM)
FAN COIL

Biblioteca Com. Macomer (SS)
ROOF TOP RFA

Biblioteca Com. Caserta (CE)
RLA

Università Magna Grecia (CZ)
AIR HANDLING UNIT

IPSIA di Gallarate (VA)
AIR HANDLING UNIT

Università di Bari (BA)
RGA + AIR HANDLING UNIT

Università di Salerno (SA)
ROOF TOP RFA

Palazzo Reale (NA)
RGC

Politecnico di Bari
AIR HANDLING UNIT

Campus Universitario (PI)
AIR HANDLING UNIT + FAN COIL

> HOTEL

Hotel San Marco (VR)
AIR HANDLING UNIT

Hotel Mediterraneo (RG)
RLA

Hotel Baco da Seta (AQ)
RGA

Hotel Torricella (PG)
RGA

Hotel Tilibas (SS)
AIR HANDLING UNIT

Hotel Tiberio Palace (NA)
AIR HANDLING UNIT

Hotel Incanto (PI)
RGA

Hotel Hilton (MT)
UT REC + TCX

Residence "La Giurlita" (LE)
RMA + FCF + TCX

> CATERING

Ristorante "Mare Rosso" (MI)
HSW

Cantine le Cionce (GR)
RLA

Cantina Zaccagnini (PE)
ROOF TOP

Castello di Radda (SI)
AIR HANDLING UNIT

Ristorante Santo Spirito (SA)
RLA + AIR HANDLING UNIT

Villaggio turistico Casalvelino (SA)
RLA + FAN COIL

Best Western Soave Hotel (VR)
RLA + FAN COIL + UT REC

>>> INDUSTRIAL AIR-CONDITIONING <<<

tiberio palace, hotel & conference center_NAPOLI

tiberio palace, hotel & conference center_NAPOLI

> Ferroli's Italy references

BANKS
OFFICES
SALES OUTLETS

> BANKS

Monte dei Paschi di Siena
AIR HANDLING UNIT + DUCTED FAN COIL

CMP - Poste Italiane (PG)
RLA + RGA + RMA

Poste Italiane CMP (AN)
UT REC

Poste Italiane (RM)
AIR HANDLING UNIT

Banca Finconsumo
RSA + RPC + FAN COIL

Banca d'Italia (BS)
RXA

> OFFICES

Regione Puglia (LE)
RGA

Telecom S.P.A. (AQ)
FAN COIL

Telecom S.p.A. (RM)
FAN COIL

Pirelli R.E. (TO)
RVW

Olivetti Multiservices SpA (TO)
AIR HANDLING UNIT

Sede Municipale S. Teresa di Riva (ME)
RGA

Direzione compartimentale Ferrovie Italiane (AN)
FCF + FCS

Fiat Group - Ingest Facility (TO)
RGA + RLA + AIR HANDLING UNIT

Autostrade italiane Direzione tronco 2 (MI)
AIR HANDLING UNIT

> SALES OUTLETS

Luisa Spagnoli S.P.A. (PG)
POLAR

LIDL Cairo Montenotte (SV)
RGA

Carrefour (NO)
RLA

Brico Center (PV)
ROOF TOP

Carrefour (CE)
TCX + FAN COIL

Concessionaria AUDI (VC)
RGA

Concessionaria AUDI (NO)
RLA

Calisese Centrum (CE)
RLA + AIR HANDLING UNIT + DUCTED FAN COIL + VEC

>>> INDUSTRIAL AIR-CONDITIONING <<<

teatro san carlo_NAPOLI

> Ferroli's Italy references

MILITARY SECTOR
LARGE AREAS

> MILITARY SECTOR

Caserma Guardia di Finanza "Cefalonia Corfù" (PG)
FCF

Scuola di Polizia Ministero Infrastrutture (RM)
RFA + RMA + RGA + RLA

Esercito Italiano (RM)
CARRELLABILI

Comando Guardia di Finanza (TP)
RLA

Caserma U. Polonio (GO)
RGA + FAN COIL + AIR HANDLING UNIT

Caserma Guardia di Finanza (RA)
RGA + FCS

Arsenale di Taranto (TA)
RHA + FAN COIL + AIR HANDLING UNIT

Scuola Militare di Cavalleria (TO)
AIR HANDLING UNIT

Caserma Carabinieri S. Bonifacio (VR)
RGA + RMA

> LARGE AREAS

Centro Congressi (AR)
AIR HANDLING UNIT + RLA + RGA

Museo delle Scienze Naturali (BN)
RGA + FAN COIL

Piscina Intercomunale Fucecchio (FI)
AIR HANDLING UNIT

Museo Etnografico Caravel (AO)
RGA + AIR HANDLING UNIT

Museo Comunale (RN)
RLA + AIR HANDLING UNIT

Centro Comm.le Ortuso (RC)
AIR HANDLING UNIT

Centro Comm.le Corolla (ME)
AIR HANDLING UNIT

De Martini Shipping (GE)
AIR HANDLING UNIT

Teatro San Carlo (NA)
AIR HANDLING UNIT

Teatro Diana (SA)
RLA

Mercato Tartini (BO)
AIR HANDLING UNIT

Multisala Impero (VA)
ROOF TOP

Sala Bingo di Gallipoli (LE)
ROOF TOP RFA

Palazzo INAIL (VC)
RGA

EUROMA (RM)
RHV

Auditorium di Mantova (MN)
RGA + AIR HANDLING UNIT

Conservatorio Musicale (SA)
RMA + FCS

Centro Natatorio (MN)
RLA + AIR HANDLING UNIT

CUS Campo Hockey (PI)
AIR HANDLING UNIT

Palacilento (SA)
RHA + AIR HANDLING UNIT

>>> INDUSTRIAL AIR-CONDITIONING <<<

Palacilento_SALERNO

> Ferroli's Italy references

INDUSTRIES
AIRPORTS

> INDUSTRIES

Stabilimento Versace S.P.A. (NO)
RHA

Stab. Artema S.P.A. Zegna (BI)
RGA

Stabilimento AIA (VR)
RHA

Gruppo Fendi S.P.A. (MI)
AIR HANDLING UNIT

Stab. Doimo City Line (TV)
RLA

Stabilimento LIOLÀ Spa (NO)
RGA

Stab. TYCO VALVES (PC)
RGA

Riseria Stroppiana (VC)
RLA

Finmeccanica (RM)
RGA+

Stabilimento Ferrero (CN)
AIR HANDLING UNIT + RLA

Concerie Settebello (PI)
RHA + RGA

Stabilimento Unoaerre (AR)
RHV + AIR HANDLING UNIT

Stabilimento Ericsson (NA)
AIR HANDLING UNIT + FAN COIL

Stabilimento Ansaldo (TO)
RGA + AIR HANDLING UNIT + FAN COIL

Cantiere S. Paolo (BA)
RGA + FAN COIL + UT REC

Stab. Missano S.p.A. (SA)
RLA + RGA + AIR HANDLING UNIT

> AIRPORTS

Militare Base Nato (BR)
RLA

Fiumicino L. da Vinci (RM)
AIR HANDLING UNIT

Militare "F. Baracca" (RM)
RGA

Militare Pratica di Mare (RM)
RLA + AIR HANDLING UNIT + FAN COIL

>>> INDUSTRIAL AIR-CONDITIONING <<<

Stabilimento Missano S.p.A_SALERNO

sede Finmeccanica_ROMA

> Ferroli's Spain references

SPAIN - ESPAÑA

> SPAIN

Hospital de Alta Resolución de Loja

Hospital de Sagrado Corazón

Hospital Meixorio de Vigo

Hospital de Enfermedades Raras

Hospital Benito Menni

Hospital Xanit

Centro Salud Manzanares

Clinica Cefer

Rehabilitación oficinas

Marcado Municipal

Museo de Calahorra

Colegio Corazonistas

Edificio Presidencia de la Generalitat

Edificio banco España

Polideportivo Parque Coimbra

Polideportivo Siec

Faculdad de Derecho

Centro Cultural Bembrive

Edificio Banco Espana

Ayuntamiento

Complejo Hotelero Terralta

Hotel Carlton

Hotel Fuente Las Piedras

Hotel San francisco

Hotel El Espinar

Hotel Acosta

Hotel Parador

Hotel Villa de Benavente

Hotel Meridional

Hotel Benidorm

Hotel Balneario de Orio

Hotel Abando

Juzgados de Olot

>>> INDUSTRIAL AIR-CONDITIONING <<<

Complejo HOTELERO TERRALTA Alicante (Spagna)

Los Pilares del Estado Gijón (Spagna)

Hotels CARLTON Bilbao (Spagna)

> Ferroli's Romania references

ROMANIA - ROMÂNIA

> ROMANIA

RSI Electro Office Building – Bucuresti
RGA

Office Building Vitan – Bucuresti
RLA

Office Building Pipera

Hotel Floreasca – Bucuresti
RGA

Hotel Rodna – Bistrita
RGA

Hotel Maxim – Oradea
RGA

Ness Service - Dvd Factory

Sediu Galmopan – Galati
RGA

Sediu Arabesque – Brasov
RGA

Moticica Grup – Timisoara
RGA

MMM Automotive – Turda
RGA

Climatherm Center – Iasi
RGA

Frigoglass Romania – Timisoara
RLA

Teo Center – Brasov
RLA

Amma Print – Bucuresti
AIR HANDLING UNIT + RHA

RH Printing – Bucuresti
RHA

Reamedia – Bucuresti
RHV

Delphi Romania – Ineu
AIR HANDLING UNIT

Club Office – Sighisoara
AIR HANDLING UNIT

Cazino – Sighisoara
AIR HANDLING UNIT

Aeroport – Sibiu
AIR HANDLING UNIT + RHA

ODS Business Service – DVD – Bucuresti
AIR HANDLING UNIT

Manoil Mall – Galati
AIR HANDLING UNIT

Bazin Olimpic – Resita
AIR HANDLING UNIT

Sala Sporturilor – Onesti
AIR HANDLING UNIT

Stabilus – Brasov
RLA

Stella Building / Jules Verne – Bucuresti
RLA

Sempo S A – Bucuresti
RLA

Loial – Sibiu
AIR HANDLING UNIT

Loial

Magazine DEDEMAN
RFA

>>> INDUSTRIAL AIR-CONDITIONING <<<

HYPERMARKET DEDEMAN Bacâu (Romania)

> Ferroli's Russia & Republic of Belarus references

РОССИЯ - RUSSIA
РЕСПУБЛИКА БЕЛАРУСЬ - THE REPUBLIC OF BELARUS

> RUSSIA

Commercial Center " ARMADA" - Moscow,
RHV + VHF3

"Kuba Commercial Center" - Chelabinsk,
RHV + FCS

Medical Center of Tomographics - Chelabinsk,
RGA + FCS + TOP FAN

Commercial center" Moscow prospect" - Moscow,
RGA + TOP FAN VB-M + VHF3, RHV

"SBER-BANK Russia" Moscow office - Moscow,
RGA + CMA + TOP FAN

Bank "URASLIV" - Moscow,
RGA

Factory of Technical line production - Frazevo,
RGA

JEWELLER Department store - Krasnodar,
RGA + TOP FAN

"Kvaevitskiy Museum" - Krasnodar,
RGA + TOP FAN

"Medical center branch" - Moscow,
RGA + FCP

Business Hotel – Krassnodar,
RGA + RLA

"Historical – Archeological Museum - Felizina"
FCS

> THE REPUBLIC OF BELARUS

The Skating Ring "Ice Palace" - Baranovichi,

Republican theoretical and practical 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 Center of oncology and medical radiology - Minsk,

BMW offices and service center - Minsk,

Business Center "Europe" - Minsk,

Unitary enterprise "Mucipal Bathhouses" - Minsk,,

Belmicrosystems Reseach & Design Center - Minsk,

Organizations of the NASB Department of Chemical and Earth Sciences - Minsk,

>>> INDUSTRIAL AIR-CONDITIONING <<<

felizina_RUSSIA

prospekt moscow_RUSSIA

> Ferroli's Turkey references

TURKEY - TÜRKÇE

> TURCHIA

Turkmenistan Projeleri – Turkmenistan,
RHV + RGA + RLA + RHA + FAN COIL + RFA

Aksoy plaza – Izmir,
RLA + TCX

Ticaret Odasi – Kocaeli,
RGA

EAGLE Burgmann – Kocaeli,
RXA + RMA

BS Press – Izmit,
RHV + TOP FAN

Tekirdag Trade Center – Tekirdağ,
FCS + TCX

Tekirdag Accounting center – Tekirdağ,
RMA + FCS

Işviçre Hospital – Istanbul,
RGA + TOP FAN

Lady Diana Hotel – Istanbul,
RHA + TOP FAN + UT REC DP F

Aslan Hotel – Küthya
RGA + AHU

Panorama Otelcilik – Kayseri
RHA

Eyüpoğlu Hotel – Istanbul,
RGA

Lidersan – Gaziantep,
RFA

Cemdag Plastik – Izmir,
RHA

Plasko Plastik – Tekirda
RLA + RGA + TCX

Yildiz Plastik – Istanbul,
RGA

Cemdağ Aydinlatma Plastik – Izmir,
RHA

Özmek Plastik – Istanbul,
RGA

Önder Plastik - Gebze
RXA + RGA

AUDI Showroom – Gaziantep,
RGA + FAN COIL

Mitsubishi Servis & Showroom – Istanbul,
RGA

Namlioğlu Restaurant – Istanbul,
RGA

Sultançiftliği Alişveriş Merkezi – Istanbul,
RGA + RHA

Izmit Skoda Plaza – Kocaeli,
RGA + FAN COIL

Mitsubishi Servis & Showroom – Istanbul,
RGA

Van Hastanesi – Van,
RGA

Yasam Hastanesi
RLA + TOP FAN + FCS

Kazakistan AVM
RHA + TOP FAN

Dokuz Eylül Üniversitesi Hastane – Izmir,
RGA

Ege Üniversitesi Ziraat Fakül
RMA

Izmit Ticaret Odasi – Izmit,
RHA

Metal Dizayn Tesisleri – Istanbul,
RLA

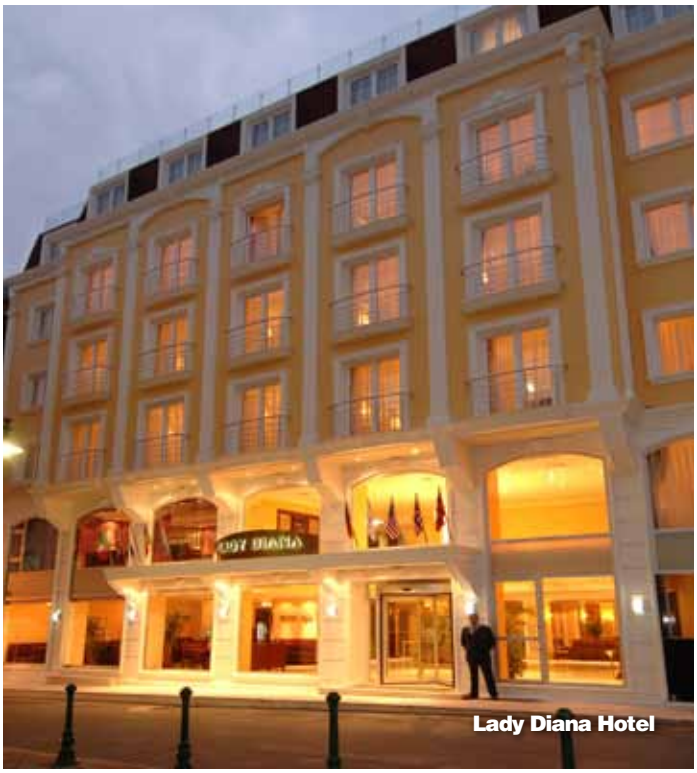
İzmit Karşiyaka Kültür Merkezi – Kocaeli,
RHA

Uğur Teneke Tesisleri Aydinlat – Kocaeli,
RHA + RLA + RMA

>>> INDUSTRIAL AIR-CONDITIONING <<<

Projeleri (Türkmenistan)

Projeleri (Türkmenistan)



Lady Diana Hotel

Plasko Plastik

> Ferroli's Poland references

INDUSTRIES / PLANT
HOTELE - RESTAURACJE / HOTELS - CATERING
SCHOOLS / SZKOLY
SZPIT AL CENTRU M MEDYCZNE MEDYCZNE / HOSPITAL AUTHORITIES

> INDUSTRIES

Budynki Biurowe BLACHOTRAPEZ Warszawa – Sękocin
RMA

Budynek biurowy ARCUS Gliwice
CMA + FCP and TOP FAN

Budynki Biurowe METALKOP Młyny k – Buska Zdroju
CMA + FCS

Budynki Biurowe POLYNT – Niepołomice
RMA + TOP FAN

Budynki biurowe STACO – Niepołomice
RMA + TOP FAN

Budynek Biurowy ASSECO – Rzeszów
RGA + FCP

Linia technologiczna w Zakładach Produkcji Grzejników Stalowych BRUGMANN – Legnicy
RGA

Budynek Biurowy PANTEON – Bytom
CMA + FCP + UT-REC

Budynki Biurowe GTM – Mysłowice
RXA + TOP FAN + UT-REC

Wylęgarnia Drobiu – Sierpc
CMA

Budynek Biurowy SOLAR-BIN – Rzeszów
RGA + TOP FAN + TCX

FIAT AUTO POLAND Bielsko – Biała
RLA

Drukarnia CGS – Poznań
RGA + roof-top RFA + TOP FAN + FCS + UT-REC + FCS

> HOTELE RESTAURACJE

Hotel ADAM – Szczyrk
FCS

Restauracja z hotelem Karczma Góralska” – Wałbrzych
CMA + TOP FAN

Dworek Kościuszko – Krakow
RMA + TOP FAN

> SZKOLY

Sala Sportowa przy Szkole Podstawowej w Porębie k –Zawiercia
rooftop RFA

Państwowa Szkoła Wyższa Zawodowa w – Krośno
CMA + FCS

Magistrat Urzędu Miasta i Gminy – Niepołomice
RGA + RVL + TOP FAN + SOFFIO

> SZPIT AL CENTRU M MEDYCZNE

Szpital Wojewódzki Bielsko – Biała
RLA

Wojewódzka Stacja Weterynaryjna w– Legnicy
RGA + TOP FAN

Medical Center SILESIA-MED. – Katowice
RGA + TOP FAN + FCS + UT-REC

Medical Center MEDICOR – Wrocław
RMA + FCP

>>> INDUSTRIAL AIR-CONDITIONING <<<


Drukarnia CGS Poznań


Biura (uffici/office) Inżynierska Łódź

FIAT AUTO POLAND Bielsko (Biała)

Biura Arcus Gliwice

> Ferroli's Balkan references

SRBIJA
CROATIA
BIH

> SRBIJA

Dedinje 3 objekta – Beograd
RXA + TOP FAN

Shopping center New Nork - Novi Sad
RLA + FCS + UT REC DP

> CROATIA

Mrksina - Zagreb
RGA + RMA + TOP FAN

Bulvanova - Zagreb
RMC + TOP FAN

Dugopolje - Split
RGA + TOP FAN

AUTO CENTAR ŠKODA - Zagreb
RGA + TOP FAN

AUTO CENTAR CITREN - Zagreb
RGA + TOP FAN

MOTEL ZIR, Auto put A1
RMA + TOP FAN

Zgrada Gradske Uprave Belišće
RGA + TOP FAN

Upravna zgrada Miagro d.o.o. Našice
RGA + TOP FAN

Vinkovci, regionalni prodajni centri - Bosso
RGA + TOP FAN

> BIH

FC – franšizni centar - Vitez
RGA + TOP FAN + FCS

FIS - Vitez
RGA + TOP FAN

Pivovara Sarajevo – Sarajevo
RGA

Hotel Central – Vitez
TOP FAN + FCS

Hotel Tilija – Gračanica
TOP FAN + FCS

Airport Dubrave – Tuzla
WATER CHILLERS

Jafa-Jase factory – Špionica
WATER CHILLERS + FAN COIL

Interex Shopping centers CDEB – Sarajevo
WATER CHILLERS + FAN COIL + MERCURY

International building Kendi – Tuzla
TOP FAN

Trocal – Tuzla
TOP FAN

Hotel SAX – Vlašić
TOP FAN

MBI Development Malaysia Central – Sarajevo
WATER CHILLERS + FAN COIL

Edo Slad ETNA – Gračanica
WATER CHILLERS + FAN COIL

BINGO d.o.o – Tuzla
WATER CHILLERS + FAN COIL + MERCURY

BINGO d.o.o – Brčko
WATER CHILLERS + FAN COIL + MERCURY

BINGO d.o.o – Gradačanica
WATER CHILLERS + FAN COIL + MERCURY

OMEGA d.o.o. – Tuzla
RLA + FAN COIL + MERCURY

Kopex Sarajlić – Sarajevo
WATER CHILLERS + FAN COIL

>>> INDUSTRIAL AIR-CONDITIONING <<<


Commercial Centre FC BIH

FIAT AUTO POLAND Bielsko-Biała

OMEGA d.o.o.

Edo Slad ETNA


New Nork Shopping Center

> Ferroli's Albania references

> ALBANIA

Drejtoria e policise – Tirane
RHA + TOP FAN

TEC – VLORE
RGA + FTP + TOP FAN

Center shqipetare
RLA + TOP FAN + TCX

Dieoqeza e rrethit mirdite
RGA + TOP FAN

American hospital – Tirana
RGA + TOP FAN + TCX + FTP

Drejtoria e policise – Durres
RGA + TOP FAN

Karburant – Alpet
RGA + TOP FAN

Bkt (banka kombetare tregetare) – Korçe
TOP FAN

Hotel Tomorri – Berat
RGA + TOP FAN

Reparti Ushtarak – Zallherr

>>> INDUSTRIAL AIR-CONDITIONING <<<

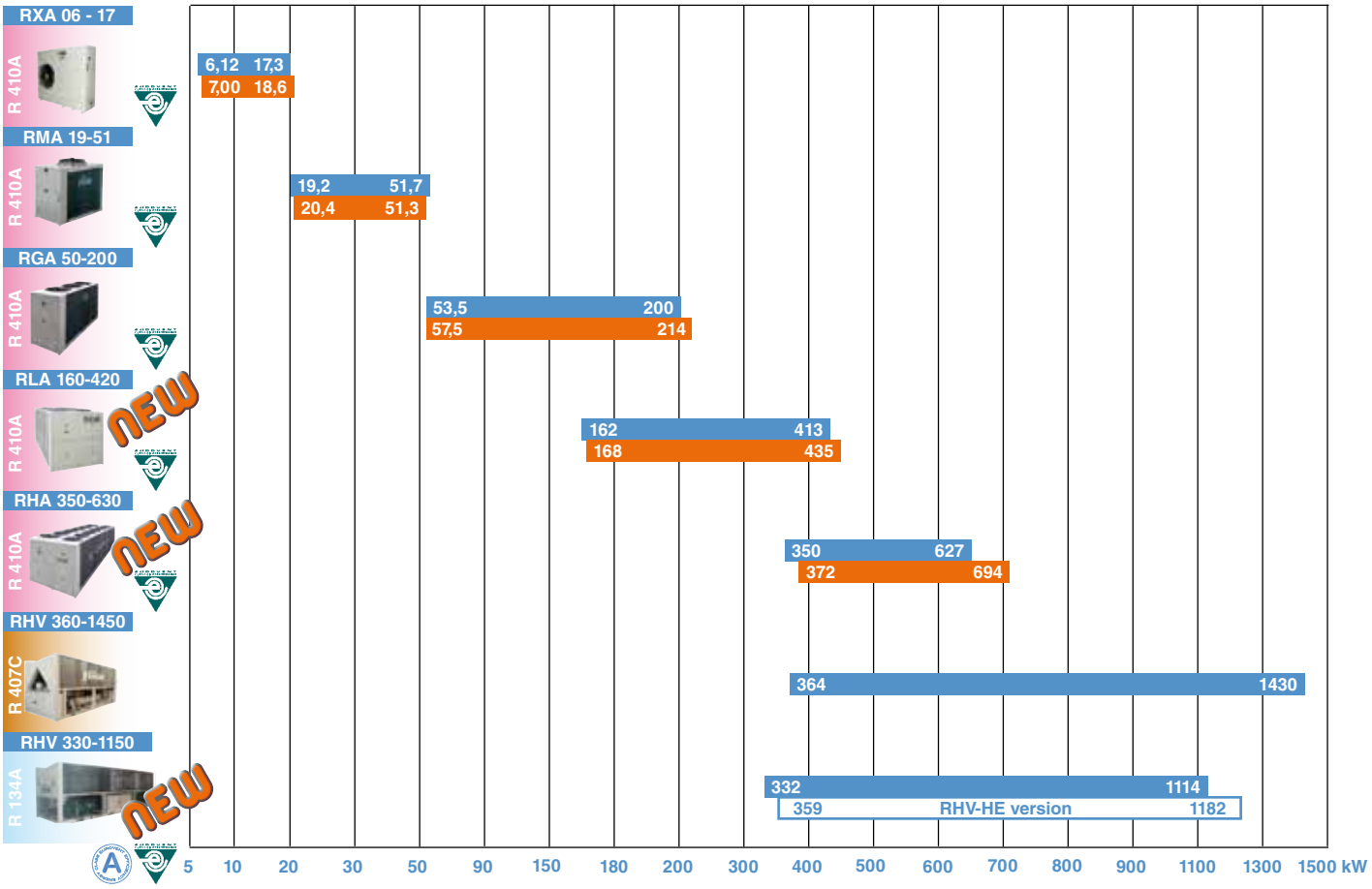

DREJTORIA E POLICISE


TEC – VLORE

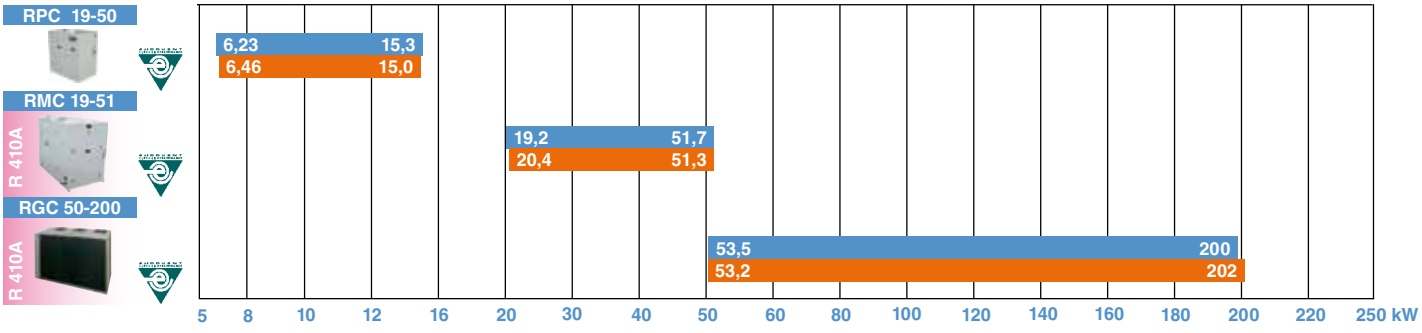

Center Shqiptare

Ferroli product range

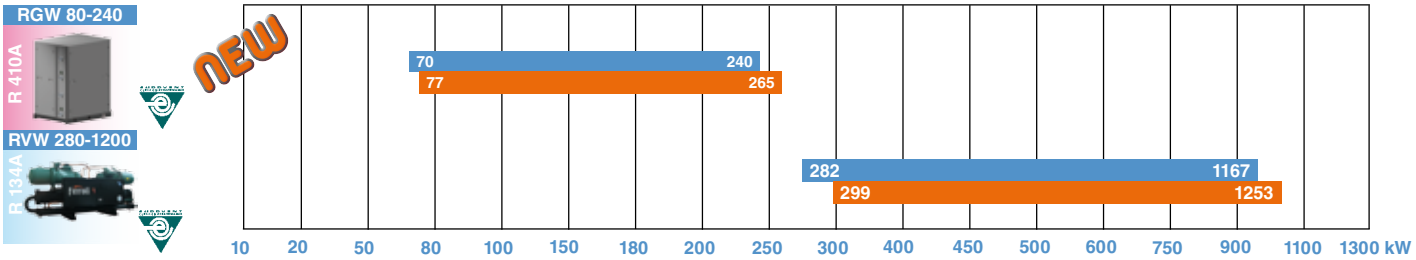
AIR COOLED WATER CHILLERS



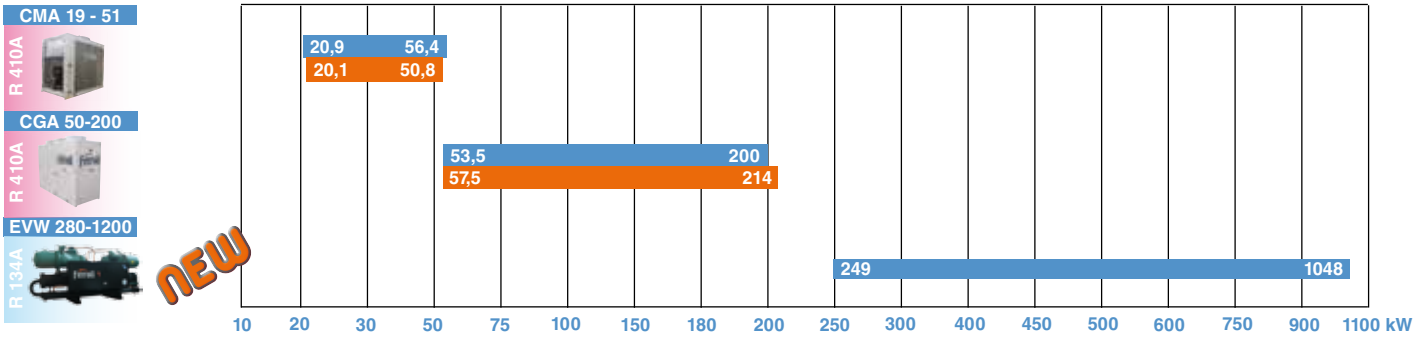
AIR COOLED WATER CHILLERS WITH CENTRIFUGAL FANS



WATER COOLED WATER CHILLERS

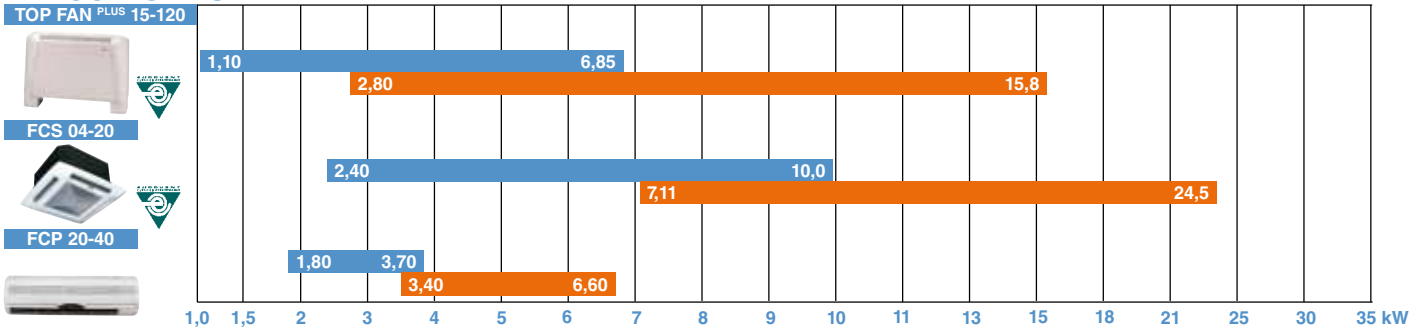


CONDENSING AND EVAPORATING UNITS

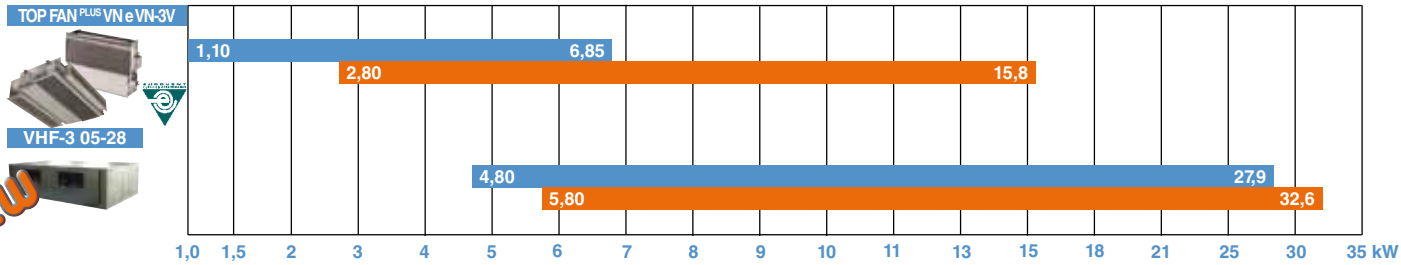


Ferroli product range

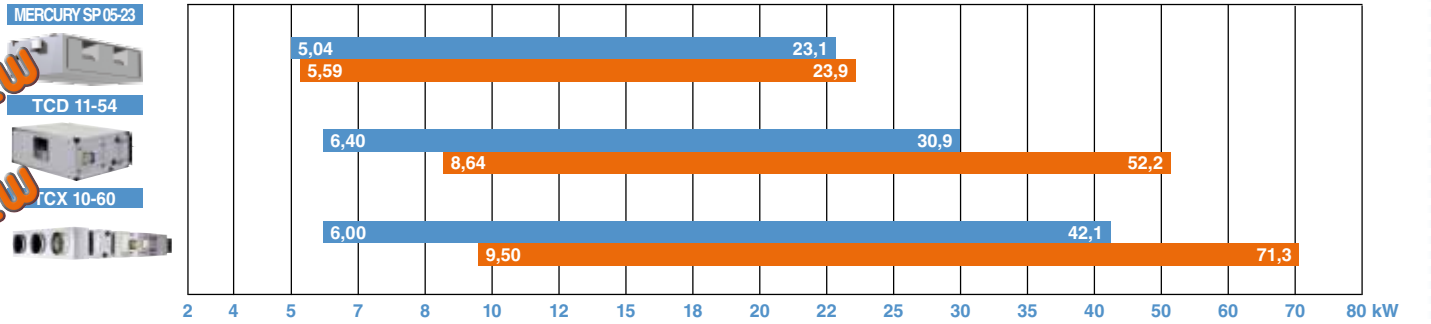
FAN COIL UNITS



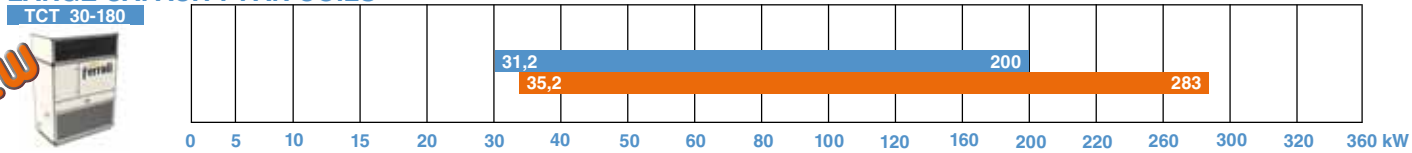
CEILING CONCEALED



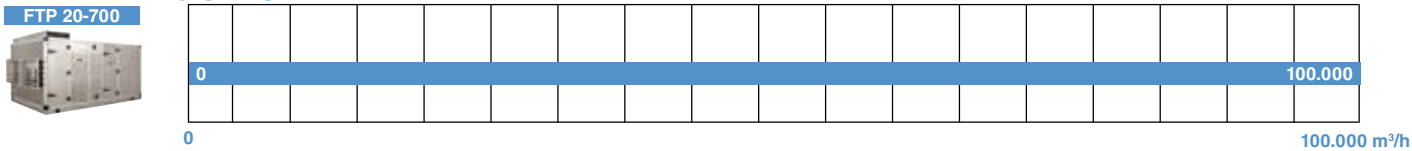
DUCTED FAN COIL



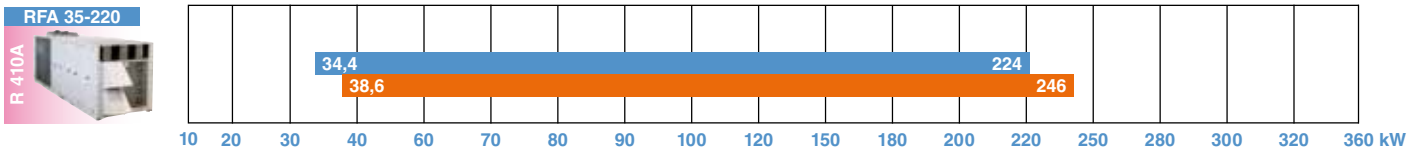
LARGE CAPACITY FAN COILS



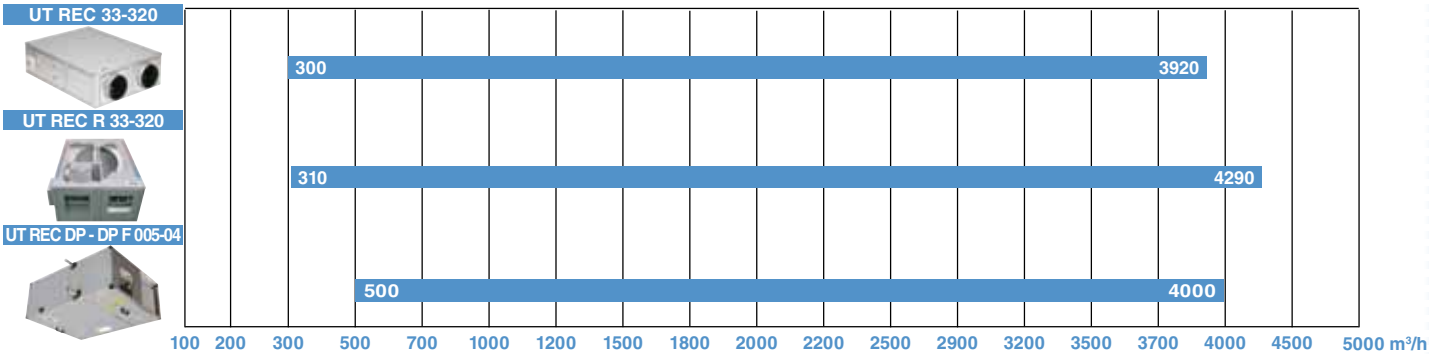
AIR HANDLING UNITS



PACKAGED ROOF-TOP AIR-CONDITIONER



HEAT RECOVERY UNITS



> News 2010

AIR COOLED WATER CHILLERS
CONDENSERLESS UNITS
HIGH EFFICIENCY CLASS **A**
TERMINAL UNITS

NEW

> AIR COOLED WATER CHILLERS

AIR- WATER

Units with R410A ecological refrigerant gas up to capacities of 630kW (fig. a).

* RLA

Expansion of the current range for cooling capacities up to 420kW

* RHA

New range for cooling capacity up to 630kW

Available in a basic model, with total heat recovery or de-superheating phase and three acoustic versions.

WATER - WATER

A new range is included with Scroll compressors and R410A ecological refrigerant gas

* RGW

New range for cooling capacity up to 240kW.

Available in a basic model, with heat recovery or de superheating.

>CONDENSERLESS UNITS

New range with TWIN SCREW compressors and R134a ecological refrigerant gas complete with remote condensers in 3 acoustic versions (fig. b).

* EVW

New range for cooling capacity up to 1200kW complete with Remote Condenser

> HIGH EFFICIENCY CLASS **A**

AIR - WATER

* RHV HE

Units with TWIN SCREW compressor and R134a ecological refrigerant gas (fig. c)

The customer can choose **RHV-HE** units coming within the parameters of Class **A** Eurovent.

fig. b

fig. c

fig. a

fig. d

> TERMINAL UNITS

FAN COIL

* TOP FAN - 4

New range of fan coil unit VM-B, VM-F version or for ceiling concealed version fan coil VN with 4 rows coil

* TOP FAN - rem

New accessories remote control for fan coil unit VM-B, VM-F version (fig. d) or ceiling concealed version fan coil VN and VN-3V with the receiver to install on ceiling (fig. e).

* FCS - rem

New accessories remote control for cassette type fan coil unit (fig. f).

fig. g

fig. f

fig. e

CEILING CONCEALED

* VHF3

Ceiling concealed terminal units with a medium static pressure and compact design.

DUCTED UNITS

* MERCURY SP

Ducted fan coil with high static pressure and compact design.

* TCD

Ducted fan coil with high external static pressure and a double panel structure (fig. g).

LARGE CAPACITY UNITS

* TCT

Large capacity fan coil for industrial application, for higher air flow volume and a double panel structure (fig. h).

fig. h

> Main characteristics water chillers

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


fig. a

> 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. b

fig. c

> 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).

> 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.

ECOMOMY 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.

ADVACED 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

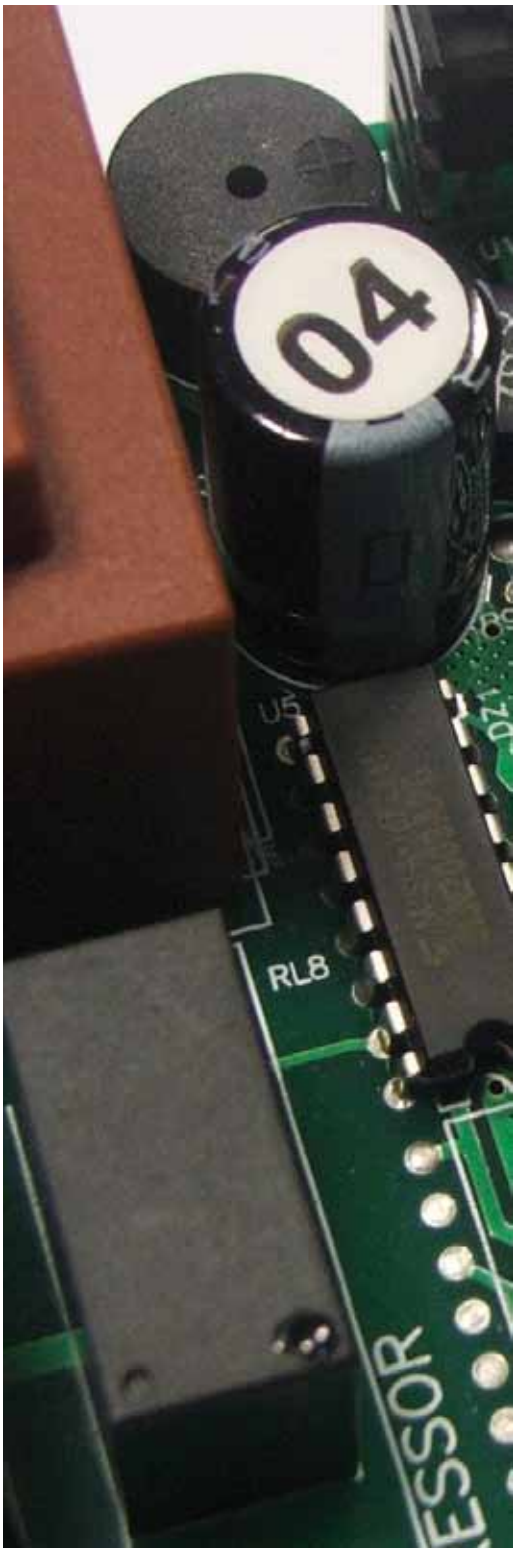
For multi-circuit Extra low noise units (AX), one of the circuits is saturated to minimise fan noise. The control system provides for a regulation logic enabling this system to be Low noise as much as possible.

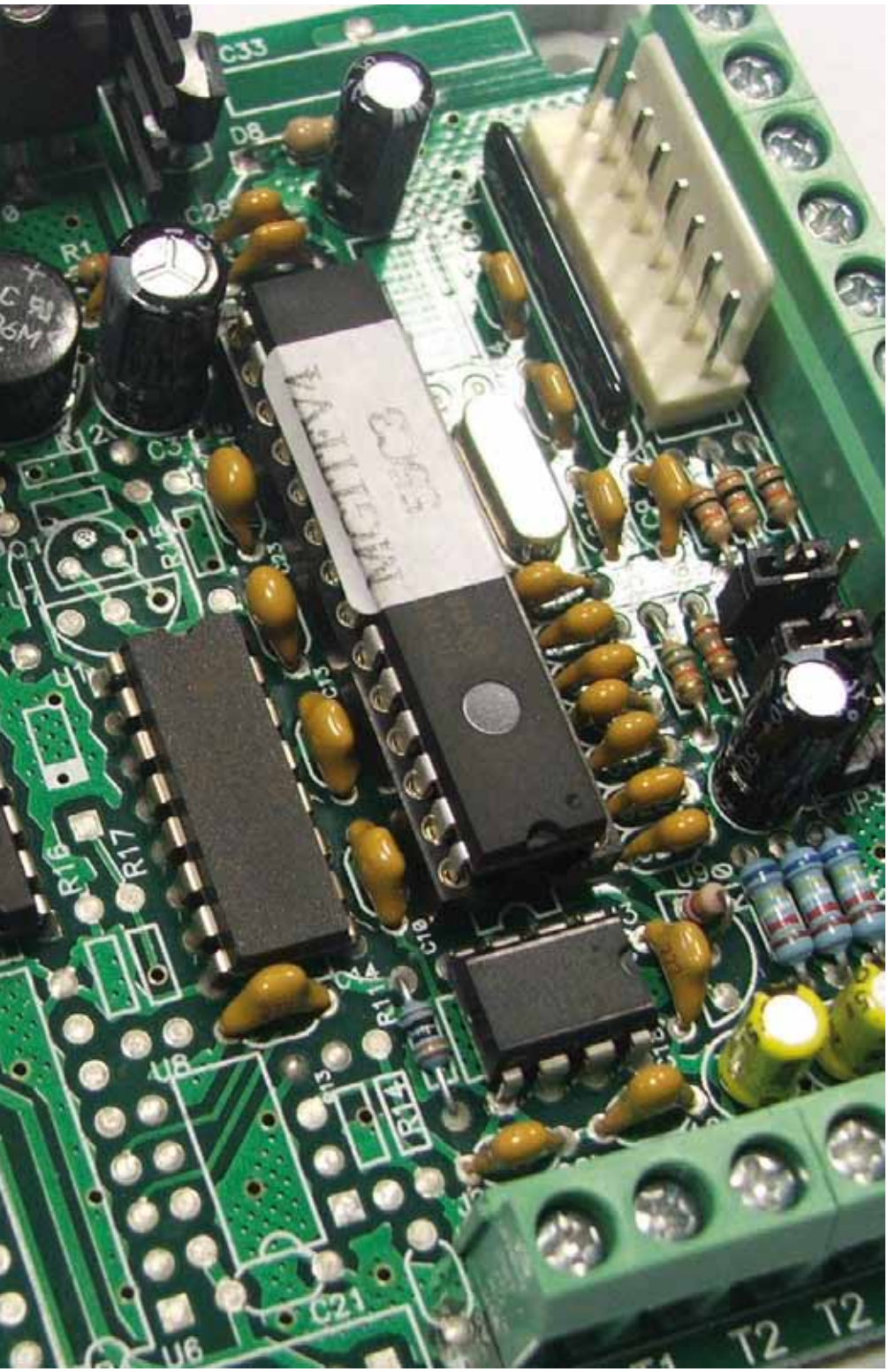
> EUROVENT

Ferroli is associated with formula
CERTIFY ALL

EUROVENT CERTIFIED PERFORMANCE

Products and certification rules are present on the site:
www.eurovent-certification.com





> HIGH ESEER

ESEER is calculated as follows:
ESEER = A×EER100% + B×EER75% + C×EER50% + D×EER25%

With the following weighting coefficients:
- A = 0,03 EER100% 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

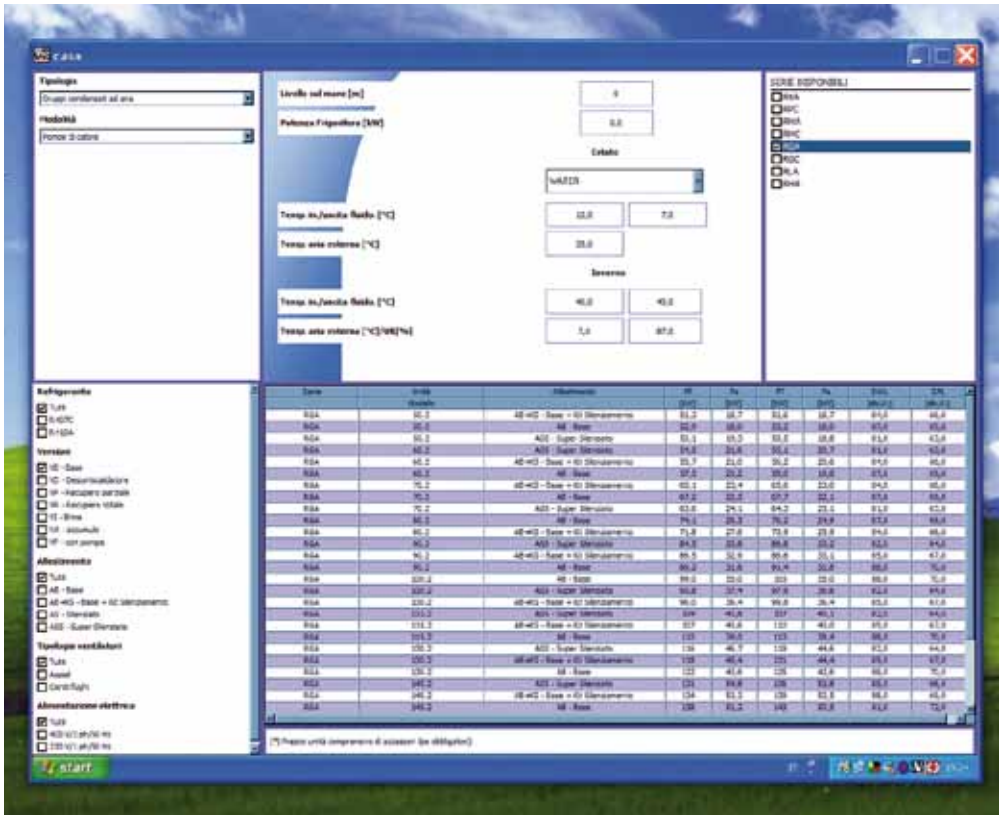
- voltage monitor and sequence meter

> 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 system 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 Ferroli 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.

For more information contact Ferroli Air conditioning Industrial department

> Main characteristics water chillers

CHILLERS SEQUENCER

Capacity control of system become a major point of discussion both in the design stage and that of production.

The Ferroli design team, has developed a logic control that allows you to manage and monitor the operation of more chiller to serve a single plant.

> CHILLERS SEQUENCER

The controller, suitable for internal installation within a heating plant, as standard feature such as an electrical panel, (housed in a sheet metal enclosure) and complete with a main disconnecting switch, LEDs for displaying alarms and operation status (ON/OFF), manual summer/winter selector (provided for units with heat pump) and manual ON/OFF selector plus a large display for unit programming. A terminal block is fitted on a metal plate inside the panel to facilitate unit connections. The system comes standard complete with a telescopic-type water probe (picture below), IP65 protection rating, to facilitate reading the delivery temperature of the water inside the header or the hydraulic separator.

NTC-type sensitive element.

The sensor element is of the NTC.

System programming is designed to be clear and easy.

Various menus can be accessed by buttons on the display for setting and programming management of the control system and units.

Through the LCD display the following is possible:

- programming operation times,
- selecting the date and time,
- programming a holiday period,
- monitoring and modification of temperatures,
- monitoring and modification of control outputs,
- monitoring and modification of set-point,
- monitoring system status.

■ MANAGEMENT OF SEVERAL UNITS WITH PRIMARY PUMP

For correct system management the 3GFC and 6GFC controllers can control one pump (only 3GFC) or one twin pump (only 6GFC) serving the primary circuit if the units do not have them, as indicated in the example in figure A.

In this case the units are type **RMA VB AB 0M5** configured with just the pipe kit and connected in parallel. They are fed by a single pump. The choice of delivery pump is to the installer or designer. Pump electrical protection and power supply installation are the installer's responsibility.

■ MANAGEMENT OF UNITS WITH DOUBLE PRIMARY PUMP

Fig. A-1 implies the use of a 6GFC type panel enabling management of a twin pump serving the primary circuit.

NB: 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.

All these components are the installer's responsibility.

The pumps electrical protection and power supply installation are the installer's responsibility.

Suggested connection diagram

Fig. **A**

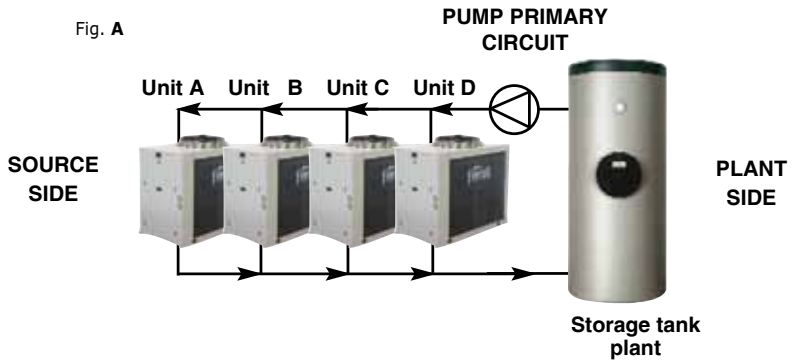
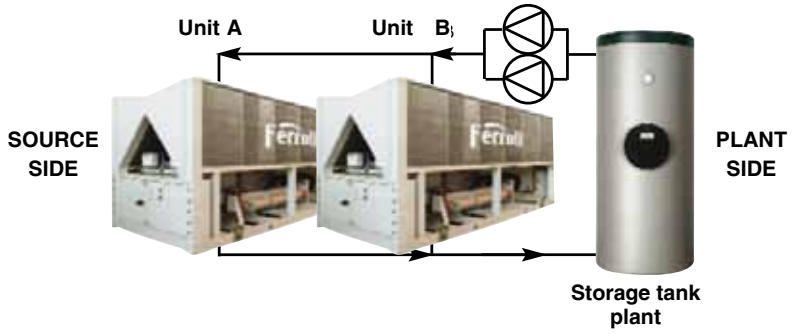


Fig. **A-1**

Suggested connection diagram



Connecting several units in cascade involves the calculation of a pumping system that correctly feeds each exchanger with the correct water flow-rate value given in the technical data of the units.

Qualified Ferroli personnel are available upon request to provide the delivery and pressure loss data of the units.

Ferroli
i migliori gradi centigradi

Suggested connection diagram

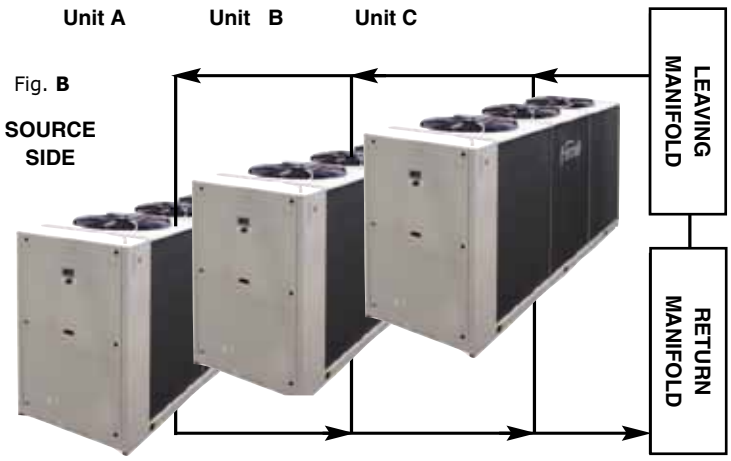


Fig. **B**

MANAGEMENT OF UNITS WITH PUMP FITTED INSIDE (ACCESSORY)

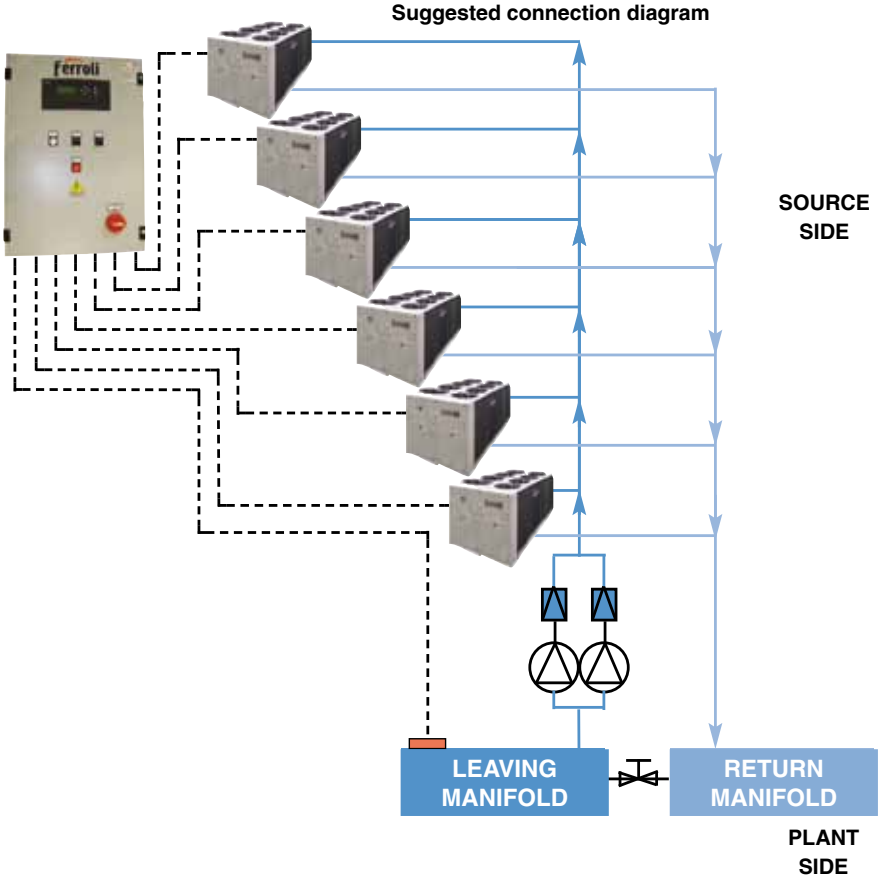
The Ferroli range encompasses (as an accessory when available), a range of pumping modules with tank, serving only the primary circuit (consisting of tank-pump-plate type exchanger) controlled directly by the microprocessor control.

This solution, as indicated in the example in figure B, enables the correct distribution of water even in the case of several units. The tank-pump (accessory) system is installed and tested at the factory.

NB: In specific cases, for correct operation and maintenance of the hydronic circuit all the components are fitted standard inside the unit (refer to the item "pumping modules" in the guide).

The installer only has to ensure the hydraulic connection of the units and the various electrical connections.

Suggested connection diagram



MANAGEMENT OF UNITS WITH PUMP FITTED INSIDE (ACCESSORY)

In the case opposite, six RLA units configured with just the Pipe Kit are connected to a 6GFC system.

The electrical panel controls the six units and the single or twin pump.

The pumps electrical protection and power supply installation are the installer's responsibility.

The pumping system must be provided with a one-way valve (in case of twin pump), mesh filter, system calibration valves, expansion tank, safety valve and anything else necessary to make the system operational and easily serviced

UNIT CONSENT MANAGEMENT

All the electrical connections for activation consent and for management of the units must be taken to the electrical panel and an NTC probe, supplied standard, and must be connected for the system water temperature reading.

> RXA

AIR COOLED WATER CHILLERS AND HEAT PUMPS

* Units Series

Type
IR chiller
IP reversible heat pump

Available version
VB Basic

Available sound configuration
AB Basic

* Unit specifications

This range of air-water heat pumps and chillers meets the climate control needs of small and medium-capacity systems for the commercial and residential applications.
All the units are suitable for outdoor installation and can be used in fan coil systems and radiant panel system. Compact and highly configurable units, they are built to adapt to the various types of systems design and meet the requirements of highly qualified designers. All the units are equipped with an outside air probe to enable climate adjustment (sliding temperature) in heating, cooling and dynamic defrost.

- COMPRESSOR : no. 1 SCROLL or ROTARY type depending on the model, mounted on rubber vibration-mounting supports.
- REFRIGERANT CIRCUIT: complete with bi-flow thermostatic valve with external equaliser, dehydrator filter, high and low pressure switches, liquid receiver (IP units) and reversing valve (IP units).
- PLANT SIDE HEAT EXCHANGER: braze-welded plate-type exchanger in stainless steel (AISI 316), complete with thermal insulation, antifreeze heater and differential pressure switch.
- SOURCE SIDE HEAT EXCHANGER : finned coil with copper pipes and aluminium fins.
- FAN : variable speed axial-flow fans complete with safety grill.
- PUMP : three-speed circulating pump, multistage centrifugal pump or variable rotation speed circulating pump depending on the model and configuration.
- STORAGE TANK : configured for storage in delivery, positioned inside the unit and thermally insulated. It is arranged for installing antifreeze or supplementary heating elements.
- ELECTRICAL PANEL : complete with thermal magnetic switch, microprocessor controller and user display. All units with three-phase power supply are fitted standard with the correct phase sequence and presence control device.

* Main accessories/Options

Integrated storage and pumping modules available in the configurations :
without storage
storage in delivery
standard pump
high head pump
variablee flow pump
Coil protection grills
Rubber vibration dampers
Compressor soft starter
Antifreeze tank heater
Supplementary heating elements (boosters)
Supplementary heating elements within tank
Remote control
Serial interface
Programmer clock
Voltage monitor sequence meter

Common Data

	6.1	7.1	9.1	11.1	14.1	17.1	
Supply	230-1-50	230-1-50	230-1-50 400-3-50	230-1-50 400-3-50	400-3-50	400-3-50	V-ph_Hz
Quantity & Type compressor	1 - Rotary		1 - Scroll				
Water content	0,29	0,29	0,46	0,46	0,53	0,72	l
Connection	1”M/1”M						“ GAS
Connection RXA with pump	1”M/1”M		1”F/1”M				“ GAS
Quantity, diameter fan	1 - 450		1 - 500		2 - 500		-
water content storage tank	33		50		71		l
Standard pump	3 speed circulating pump				3 speed multistage centrifugal pump		-
HIGH head pump	circ. pump 3 speed		3 speed multistage centrifugal pump				-
Variable flow pump	circulating inverter pump CLASS A						-
RXA VP operation weight	97	103	122	140	156	165	Kg
RXA VA operation weight	130	136	172	190	227	236	Kg
F.L.A. Full load ampere	14,1	17,3	26,7 13	30,9 14,6	18,1	21	A

Standard plant

Cooling only (IR)	6.1	7.1	9.1	11.1	14.1	17.1	
Cooling capacity (E)	6,23	7,45	9,44	10,9	13,9	17,4	kW
Total power input	2,12	2,8	3,66	4,08	5,05	6,54	kW
EER (E)	**2,94**	**2,66**	**2,58**	**2,67**	**2,75**	**2,66**	-
ESEER (E)	**3,33**	**3,01**	**2,92**	**3,02**	**3,11**	**3,01**	-
Water flow rate	1072	1281	1624	1875	2391	2993	l/h
Water pressure drop	28	39	26	34	41	36	kPa
Available static head	73	58	170	152	122	96	kPa

Radiant floor plant

Cooling only (IR)	6.1	7.1	9.1	11.1	14.1	17.1	
Cooling capacity	7,40	8,90	11,3	13,0	16,6	20,8	kW
Total power input	2,20	2,90	3,80	4,25	5,3	6,85	kW
EER	**3,36**	**3,07**	**2,97**	**3,06**	**3,13**	**3,04**	-
Water flow rate	1273	1531	1944	2236	2855	3578	l/h
Water pressure drop	38	53	36	46	56	49	kPa
Available static head	58	37	146	122	82	49	kPa

NOTES:
Cooling performance values for STANDARD systems measured with EWT/LWT 12/7°C - AT 35°C D.B.
Cooling performance values for RADIANT systems measured with EWT/LWT 23/18°C - AT 35°C D.B.
Heating performance values for STANDARD systems measured with EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.
Heating performance values for RADIANT systems measured with EWT/LWT 30/35°C - AT 7°C D.B. 6°C W.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.

Standard plant

Heat pump (IP)	6.1	7.1	9.1	11.1	14.1	17.1	
Cooling capacity (E)	6,02	7,14	9,24	10,7	13,7	17,2	kW
Total power input	2,13	2,81	3,67	4,08	5,06	6,54	kW
EER (E)	**2,83**	**2,54**	**2,52**	**2,62**	**2,71**	**2,63**	-
ESEER (E)	**3,21**	**2,88**	**2,85**	**2,97**	**3,07**	**2,98**	-
Water flow rate	1035	1228	1589	1840	2356	2958	l/h
Water pressure drop	26	36	25	33	40	35	kPa
Available static head	75	62	173	155	124	99	kPa
Heating capacity (E)	6,96	8,14	10,3	11,4	15,2	18,5	kW
Total power input	2,21	2,69	3,6	3,99	4,83	6,27	kW
COP (E)	**3,15**	**3,03**	**2,86**	**2,86**	**3,15**	**2,95**	-
Water flow rate	1197	1400	1772	1961	2614	3182	l/h
Water pressure drop	34	45	31	37	48	40	kPa
Available static head	63	47	157	143	101	79	kPa

Radiant floor plant

Heat pump (IP)	6.1	7.1	9.1	11.1	14.1	17.1	
Cooling capacity	7,20	8,50	11,0	12,8	16,3	20,5	kW
Total power input	2,20	2,90	3,80	4,25	5,30	6,85	kW
EER	**3,27**	**2,93**	**2,89**	**3,01**	**3,08**	**2,99**	-
Water flow rate	1238	1462	1892	2202	2804	3526	l/h
Water pressure drop	36	49	34	45	54	48	kPa
Available static head	60	43	150	125	86	53	kPa
Heating capacity	7,20	8,40	10,6	11,7	15,6	19	kW
Total power input	1,90	2,35	3,05	3,4	4,15	5,4	kW
COP (E)	**3,79**	**3,57**	**3,48**	**3,44**	**3,76**	**3,52**	-
Water flow rate	1238	1445	1823	2012	2683	3268	l/h
Water pressure drop	36	48	32	38	50	42	kPa
Available static head	60	44	155	140	97	74	kPa

NOTES:
Cooling performance values for STANDARD systems measured with EWT/LWT 12/7°C - AT 35°C D.B.
Cooling performance values for RADIANT systems measured with EWT/LWT 23/18°C - AT 35°C D.B.
Heating performance values for STANDARD systems measured with EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.
Heating performance values for RADIANT systems measured with EWT/LWT 30/35°C - AT 7°C D.B. 6°C W.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.

		Cooling		Heating		
Operation limits	**Unit type**	**min**	**max**	**min**	**max**	
Ambient air	IR, BR, IP, BP	-10	46	-6	28	(°C)
Leaving water temperature	IR, IP	5	12	35	50	(°C)

Noise data

	6.1	7.1	9.1	11.1	14.1	17.1	
SWL (E)	69	69	72	72	74	74	dB(A)
SPL 1 m	55	55	57	57	59	59	dB(A)
SPL 5 m	44	44	46	46	48	48	dB(A)
SPL 10 m	38	38	41	41	43	43	dB(A)

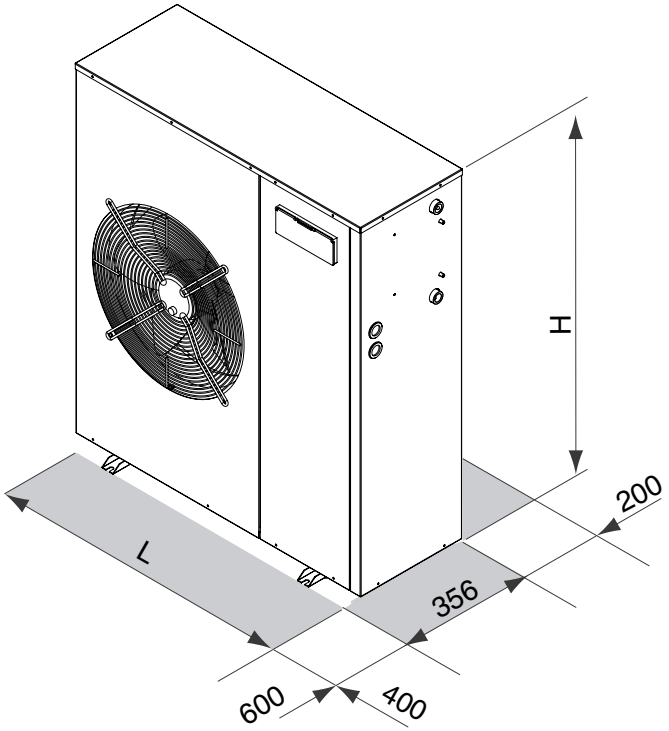
NOTE:
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

UNIT CONTROL

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

- Dynamic Defrost
- Dynamic set-point (climatic control)
- Integrative heaters control

Dimensions and minimun operating space



With storage tank	6 - 7	9 - 11	14 - 17	
L	1329	1329	1329	mm
H	903	1153	1453	mm
Without Storage Tank	**6 - 7**	**9 - 11**	**14 - 17**	
L	994	994	994	mm
H	903	1153	1453	mm

> RMA

AIR COOLED WATER CHILLERS AND HEAT PUMPS

* Units Series

Tipologia
IR chiller
IP reversible heat pump

Available version
VB Basic

Available configuration
AB Basic

* VB unit specifications

This range of air-water heat pumps and chillers are designed to meet the climate control and air conditioning needs of medium-small capacity systems in the industrial, residential and commercial sectors.
These units are air/water heat pumps with helical fans suitable for outdoor installation.
When developing the units, special attention was also paid to the problems of noise, in order to comply with increasingly strict laws on noise pollution.
Compact and highly configurable units, they are built to adapt to the various types of system design and meet the requirements of highly qualified designers.

Basic Version (VB) and (AB) Basic Configuration units

- COMPRESSOR: no. 1 SCROLL type, mounted on vibration-mounting rubber supports, complete with high and low pressure switch.
- IR REFRIGERANT CIRCUIT, complete with thermostatic valve with external equaliser, liquid/humidity indicator and cartridge dehydrator filter
- IP REFRIGERANT CIRCUIT, in addition to the cooling only model, is the circuit supplied with a liquid receiver, one-way valves and 4-way reversing valve
- PLANT SIDE HEAT EXCHANGER : braze-welded plate-type exchanger in stainless steel (AISI 316), complete with thermal insulation, antifreeze heater and differential pressure switch.
- SOURCE SIDE HEAT EXCHANGER : finned coil with copper pipes and aluminium fins.
- FAN : variable speed axial-flow fans complete with safety grill.
- ELECTRICAL PANEL: for command and control suitable for outdoor installation (min. protection rating IP 54), housed within a sheet metal enclosure complete with all electrical protection devices according to the current regulations.
- CONTROL: the UNIT CONTROL terminal with Display enables access to all the main system functions and the display of alarms.

Basic Version (VB) and Basic Configuration + Low noise kit (AB+KS)

In addition to the characteristics given in the Basic Version (AB), the Basic Version + Low noise Kit (AB+KS) provides for:
- FANS: reduced speed.
- COMPRESSORS: covered with a soundproofing jacket.

To further reduce the noise level, the compartment is covered with sound-absorbing material of suitable thickness.

* Main accessories/Options

Integrated storage and pumping modules available in the configurations :
storage in delivery
standard pump
high head pump
Coil protection grills
Rubber vibration dampers
Compressor soft starter
Antifreeze tank heater
Remote control
Serial interface
Programmer clock
Voltage monitor and sequence meter

Common Data	19.1	22.1	26.1	30.1	40.1	51.1	
Supply	400V - 3ph+N - 50 Hz						V-ph-Hz
Quantity-type compressor-n° circ.-part load	1 - Scroll - 1 - 0/100 %						-
Quantity-type evaporator	1 - of brazed stainless steel plates						-
Water content evaporator	1,4	1,7	2	2,3	3,1	4,2	l
Quantity-D-Max fan speed	1 - 630 - 900				2 - 630 - 900		n°-mm-rpm
Water content storage tank	140				180		l
Water connection IN/OUT	1" ¼ - 1" ¼				1" ¼ - 1" ½		"
Operation weight with MAP	483	492	506	512	712	764	Kg
F.L.A. Full Load Ampere	21,2	26,2	27,2	30,2	40,1	49,1	A

Basic Configuration (AB)

Cooling only (IR)	19.1	22.1	26.1	30.1	40.1	51.1	
Cooling capacity (E)	19,2	22,3	26,0	29,1	40,8	51,7	kW
Total power input	7,06	7,74	8,90	10,3	13,1	17,9	kW
EER (E)	**2,72**	**2,88**	**2,92**	**2,84**	**3,11**	**2,89**	-
ESEER (E)	**3,54**	**3,77**	**3,80**	**3,68**	**4,05**	**3,75**	-
Water flow rate	0,92	1,07	1,24	1,39	1,95	2,47	l/s
Water pressure drop (E)	37	33	34	34	47	43	kPa
Available static head	121	112	98	81	97	72	kPa
Heat pump (IP)	**19.1**	**22.1**	**26.1**	**30.1**	**40.1**	**51.1**	
Cooling capacity (E)	18,7	21,9	25,6	28,2	39,1	49,7	kW
Total power input	6,90	7,66	8,80	10,1	12,7	17,7	kW
EER (E)	**2,71**	**2,86**	**2,91**	**2,79**	**3,08**	**2,81**	-
ESEER (E)	**3,44**	**3,60**	**3,69**	**3,55**	**3,80**	**3,56**	-
Water flow rate	0,89	1,05	1,22	1,35	1,87	2,37	l/s
Water pressure drop (E)	35	32	33	32	43	40	kPa
Available static head	126	115	101	87	105	82	kPa
Heating capacity (E)	20,4	23,5	27,6	29,4	41,0	51	kW
Total power input	6,95	7,75	9,05	9,75	13,1	16,8	kW
COP (E)	**2,94**	**3,03**	**3,05**	**3,02**	**3,13**	**3,05**	-
Water flow rate	0,97	1,12	1,32	1,40	1,96	2,45	l/s
Water pressure drop (E)	42	37	38	35	47	43	kPa
Available static head	112	104	85	79	95	74	kPa

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.
Heating performance values measured with EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.

Basic Configuration + Low noise kit (AB+KS)

Cooling only (IR)	19.1	22.1	26.1	30.1	40.1	51.1	
Cooling capacity (E)	18,4	21,2	24,3	27,1	38,1	47,8	kW
Total power input	7,09	7,86	9,15	10,6	13,4	18,6	kW
EER (E)	**2,60**	**2,70**	**2,66**	**2,55**	**2,85**	**2,58**	-
Water flow rate	0,88	1,01	1,16	1,29	1,82	2,28	l/s
Water pressure drop (E)	34	30	30	29	41	37	kPa
Available static head	128	121	110	96	110	90	kPa
Heat pump (IP)	**19.1**	**22.1**	**26.1**	**30.1**	**40.1**	**51.1**	
Cooling capacity (E)	18,0	20,8	23,9	26,2	36,6	46,0	kW
Total power input	6,93	7,75	9,04	10,5	12,9	18,3	kW
EER (E)	**2,59**	**2,68**	**2,65**	**2,51**	**2,83**	**2,51**	-
Water flow rate	0,86	0,99	1,14	1,25	1,75	2,20	l/s
Water pressure drop (E)	32	29	29	28	38	34	kPa
Available static head	131	124	113	102	116	98	kPa
Heating capacity (E)	20,4	23,5	27,6	29,4	41,0	51,3	kW
Total power input	6,95	7,75	9,05	9,75	13,1	16,8	kW
COP (E)	**2,90**	**3,00**	**3,00**	**3,00**	**3,10**	**3,10**	-
Water flow rate	1,00	1,10	1,30	1,40	2,00	2,50	l/s
Water pressure drop (E)	42	37	38	35	47	43	kPa
Available static head	107	107	89	79	91	69	kPa

		Cooling		Heating		
Operation limits	**Unit type**	**min**	**max**	**min**	**max**	
Ambient air	IR, BR, IP, BP	-10	46	-6	28	(°C)
Leaving water temperature	IR, IP	5	12	35	50	(°C)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.
Heating performance values measured with EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.

Basic Configuration (AB)

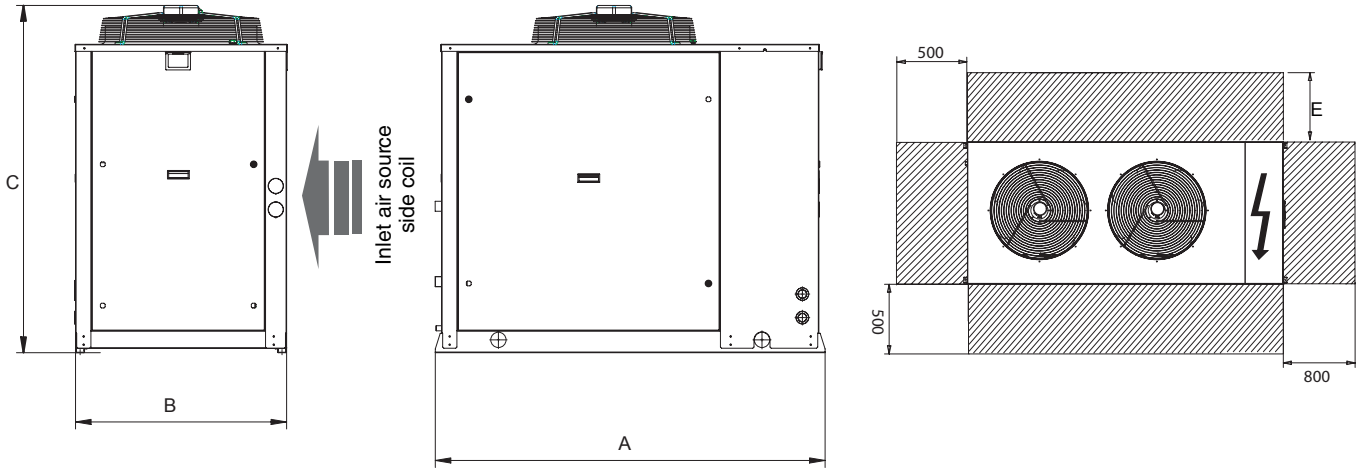
	19.1	22.1	26.1	30.1	40.1	51.1	
SWL (E)	78	78	79	79	81	81	dB(A)
SPL 1 m	61	62	62	63	64	65	dB(A)
SPL 5 m	51	52	52	52	54	55	dB(A)
SPL 10 m	46	47	47	47	49	49	dB(A)

Basic Configuration + Low noise kit (AB+KS)

	19.1	22.1	26.1	30.1	40.1	51.1	
SWL (E)	73	73	73	73	75	76	dB(A)
SPL 1 m	56	56	57	57	59	59	dB(A)
SPL 5 m	46	46	47	47	49	49	dB(A)
SPL 10 m	41	41	42	42	43	44	dB(A)

NOTE:
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Dimensions and minimun operating space



	19.1	22.1	26.1	30.1	40.1	51.1	
L	1655				2055		mm
W	896				896		mm
H	1474				1674		mm
A	1100				1400		mm

> RGA

AIR COOLED WATER CHILLERS AND HEAT PUMPS

* Units Series

Type

IR	chiller
IP	reversible heat pump
BR	chiller brine
BP	reversible heat pump brine

Available version

VB	Basic
VD	De-supeheated

Available configuration

AB	Basic
AS	Low noise
AX	eXtra Low Noise

Operating range

M	Medium Ambient temperature
A	High Ambient temperature

* VB unit specifications

Industrial chillers and heat pumps designed to meet the requirements of the global markets for medium capacity systems in the industrial and commercial sectors.

Compact and highly configurable units, they are built to adapt to the various types of system design and meet the requirements of highly qualified designers .

When developing the range, special attention has been paid to obtaining high performance enabling efficiency at full load, maximum seasonal efficiency at partial loads, reduced consumption, and low noise levels in order to comply with increasingly strict laws on noise pollution. On request, it is possible to choose from the Basic Version (AB), Low Noise Version (AS) and Extra Low Noise Version (AX). All the units are carefully built in compliance with the current regulations and individually tested. Installation only requires the electrical and hydraulic connections.

Basic Version (VB) and Basic Configuration (AB)

- COMPRESSOR: no. 2 SCROLL type, mounted on vibration-mounting rubber supports, complete with high and low pressure switch.
- IR REFRIGERANT CIRCUIT complete with liquid stop valve and compressor shut-off valve, liquid/humidity indicator, mechanical expansion valve, gas safety valve and dehydrator filter.
- IP REFRIGERANT CIRCUIT integrated with liquid receiver, liquid separator, one-way valves and 4-way reversing valve.
- PLANT SIDE HEAT EXCHANGER: braze-welded plate-type in stainless steel (AISI 316), complete with thermal insulation shell, antifreeze heater and differential pressure switch.
- SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,
- FANS: helical fans with crescent-shaped blades to limit noise
- ELECTRICAL PANEL: control and command electrical panel with a main door lock disconnecting switch, microprocessor controller with display containing the electrical equipment and all the components with minimum protection rating IP54.

Low noise Configuration (AS)

In addition to the characteristics given in the Basic version (AB), the Low noise version (AS) provides for the following configurations:

- FANS: reduced speed
- COMPRESSORS: covered with a soundproofing jacket.

To further reduce the noise level, the compartment is covered with sound-absorbing material of suitable thickness.

EXtra low noise Configuration (AX)

In addition to the characteristics given in the Low Noise version (AS), the extra Low Noise version (AX) provides for the following configurations:

- FANS: further fan speed reduction
- CONDENSING COILS: larger with respect to the basic version, to further increase the heat exchange coefficient.

* Main accessories/Options

Pumping Modules
available in configurations:
- without storage
- storage in system delivery
- storage prearranged for primary and secondary circuit
- 1 or 2 pumps
- standard or high head pumps
- variable flow pump

Paddle flowswitch
Remote Control repeats the functions of the control system (max. 100 m)
Voltage monitor and sequence meter
Compressor Soft-starter
Compressor retiming condensers
Compressors and fan thermal magnetic switches

Basic Configuration (AB)

Cooling only (IR)	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 (E)	53,5	58,6	68,8	78,7	91,0	102	112	126	143	158	180	200	kW
Total power input	18,3	20,3	23,5	27,4	31,8	35,2	39,1	44,1	50,4	55,9	63,2	70,0	kW
EER (E)	2,92	2,89	2,93	2,87	2,86	2,90	2,86	2,86	2,84	2,83	2,85	2,86	-
ESEER (E)	4,03	3,98	4,04	3,96	3,95	4,00	3,95	3,94	3,92	3,90	3,93	3,94	-
Water flow rate	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
Water pressure drop (E)	42	51	48	40	40	40	40	39	39	39	58	57	kPa
Available static head	135	116	97	75	143	129	113	92	116	95	141	107	kPa
Heat pump (IP)	**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 (E)	52,9	57,5	67,2	74,1	89,2	99,0	110	122	138	154	178	198	kW
Total power input	18,5	20,2	23,6	26,5	31,6	35,0	39,0	43,6	49,3	55,2	62,2	69,7	kW
EER (E)	2,86	2,85	2,85	2,80	2,82	2,83	2,82	2,80	2,80	2,79	2,86	2,84	-
ESEER (E)	3,95	3,93	3,93	3,86	3,90	3,90	3,89	3,86	3,86	3,85	3,95	3,92	-
Water flow rate	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
Water pressure drop (E)	41	49	46	35	38	38	39	37	36	37	57	56	kPa
Available static head	138	120	102	85	149	137	117	98	125	100	144	109	kPa
Heating capacity (E)	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
Total power input	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 (E)	3,11	3,09	3,11	3,06	3,03	3,12	3,10	3,09	3,03	3,09	3,08	3,07	-
Water flow rate	2,75	2,99	3,53	3,93	4,72	5,22	5,92	6,45	7,31	8,17	9,32	10,23	l/s
Water pressure drop	48	58	55	44	47	46	49	45	45	46	68	65	kPa
Available static head	117	102	84	69	121	112	92	80	101	81	120	93	kPa
Sound level	**50.2**	**60.2**	**70.2**	**80.2**	**90.2**	**100.2**	**115.2**	**130.2**	**145.2**	**160.2**	**180.2**	**200.2**	
Total - SWL (E)	83	83	84	84	85	85	85	86	87	87	88	88	dB(A)
SPL 1 m	65	65	66	66	67	67	66	67	68	68	69	69	dB(A)
SPL 5 m	56	56	57	57	58	58	57	58	59	59	60	60	dB(A)
SPL 10 m	51	51	52	52	53	53	53	54	55	55	56	56	dB(A)

Low noise Configuration (AS)

Cooling only (IR)	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 (E)	51,9	56,8	66,7	76,3	88,2	98,5	109	122	139	153	174	194	kW
Total power input	19,0	21,1	24,4	28,6	33,1	36,6	40,7	45,9	52,4	58,1	65,7	72,8	kW
EER (E)	2,73	2,69	2,73	2,67	2,66	2,69	2,68	2,66	2,65	2,63	2,65	2,66	-
ESEER (E)	3,76	3,71	3,77	3,68	3,68	3,71	3,70	3,67	3,66	3,63	3,65	3,68	-
Water flow rate	2,48	2,71	3,19	3,65	4,21	4,71	5,21	5,83	6,64	7,31	8,31	9,27	l/s
Water pressure drop (E)	39	48	45	38	37	37	38	37	37	37	54	54	kPa
Available static head	144	124	103	80	153	138	119	98	123	101	151	114	kPa
Heat pump (IP)	**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 (E)	50,8	55,2	64,5	71,1	85,6	95,0	106	117	132	148	171	190	kW
Total power input	19,6	21,4	25,0	28,1	33,5	37,1	41,3	46,2	52,3	58,5	65,9	73,9	kW
EER (E)	2,59	2,58	2,58	2,53	2,56	2,56	2,57	2,53	2,52	2,53	2,59	2,57	-
ESEER (E)	3,58	3,56	3,56	3,49	3,53	3,53	3,54	3,49	3,48	3,49	3,58	3,55	-
Water flow rate	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
Water pressure drop (E)	38	45	42	33	35	35	36	34	33	34	52	51	kPa
Available static head	150	130	111	92	162	148	126	107	136	108	156	119	kPa
Heating capacity (E)	56,0	61,1	71,9	80,2	96,2	106	121	132	149	167	190	209	kW
Total power input	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 (E)	3,16	3,15	3,18	3,12	3,09	3,17	3,17	3,17	3,09	3,16	3,14	3,13	-
Water flow rate	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
Water pressure drop	46,03	55,47	52,48	41,50	44,73	43,18	46,69	42,85	42,38	43,57	64,66	62,24	kPa
Available static head	123	107	89	72	128	119	97	84	107	85	126	98	kPa
Sound level	**50.2**	**60.2**	**70.2**	**80.2**	**90.2**	**100.2**	**115.2**	**130.2**	**145.2**	**160.2**	**180.2**	**200.2**	
Total - SWL (E)	80	80	81	81	82	82	82	83	84	84	85	85	dB(A)
SPL 1 m	62	62	63	63	64	64	63	64	65	65	66	66	dB(A)
SPL 5 m	53	53	54	54	55	55	54	55	56	56	57	57	dB(A)
SPL 10 m	48	48	49	49	50	50	50	51	52	52	53	53	dB(A)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.
Heating performance values measured with EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

eXtra low noise Configuration (AX)

Cooling only (IR)	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 (E)	50,7	55,5	65,2	74,5	86,2	96,2	106	119	135	150	170	189	kW
Total power input	19,4	21,7	24,9	29,4	32,2	37,7	41,9	47,3	53,4	59,3	67,6	74,9	kW
EER (E)	2,61	2,56	2,62	2,53	2,68	2,55	2,53	2,52	2,53	2,53	2,51	2,52	-
ESEER (E)	3,61	3,53	3,61	3,50	3,69	3,52	3,49	3,47	3,49	3,49	3,47	3,48	-
Water flow rate	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
Water pressure drop (E)	38	46	43	36	36	36	36	35	35	35	52	51	kPa
Available static head	151	130	108	84	159	145	126	103	130	105	158	120	kPa
Heat pump (IP)	**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 (E)	49,7	54,1	63,2	69,7	83,8	93,1	103	115	130	145	167	186	kW
Total power input	20,7	22,6	26,4	29,7	35,4	39,2	43,7	48,8	55,2	61,8	69,7	78,1	kW
EER (E)	2,40	2,39	2,39	2,35	2,37	2,38	2,36	2,36	2,36	2,35	2,40	2,38	-
ESEER (E)	3,31	3,30	3,30	3,24	3,27	3,28	3,25	3,25	3,25	3,24	3,31	3,29	-
Water flow rate	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
Water pressure drop (E)	36	43	40	31	34	33	34	32	32	33	50	49	kPa
Available static head	158	137	115	96	169	154	134	111	140	113	164	124	kPa
Heating capacity (E)	54,0	58,9	69,4	77,4	92,8	103,0	117	127	144	161	183	201	kW
Total power input	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 (E)	3,21	3,18	3,21	3,16	3,12	3,23	3,21	3,19	3,13	3,19	3,17	3,17	-
Water flow rate	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
Water pressure drop	43	51	49	39	41	41	44	40	40	40	60	57	kPa
Available static head	133	115	95	77	138	126	104	90	114	92	137	106	kPa
Sound level	**50.2**	**60.2**	**70.2**	**80.2**	**90.2**	**100.2**	**115.2**	**130.2**	**145.2**	**160.2**	**180.2**	**200.2**	
Total - SWL (E)	78	78	79	79	80	80	80	81	82	82	83	83	dB(A)
SPL 1 m	60	60	61	61	62	62	61	62	63	63	64	64	dB(A)
SPL 5 m	53	53	54	54	55	55	54	55	56	56	57	57	dB(A)
SPL 10 m	46	46	47	47	48	48	48	49	50	50	51	51	dB(A)

Common Data	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Supply	400V - 3ph+N - 50 Hz				400V - 3p - 50 Hz								V-ph-Hz
Quantity-type compressor-n° circ. - part load	2 - Scroll - 2 - 0/50/100												-
Quantity-type evaporator	1 - of brazed stainless steel plates												-
Water content evaporator	3,61	3,61	4,56	5,42	7,56	8,40	9,66	10,9	12,6	14,5	11,1	13,0	l
Quantity-D-Max fan speed	3 - 630 - 900				2 - 800 - 900				3 - 800 - 900		4 - 800 - 900		n°-mm-rpm
Water content storage tank	200				400						460		l
Water connection IN/OUT	2"				2"1/2								"
Operation weight with 2 pump	1030	1031	1071	1096	1566	1647	1777	1805	1863	1915	2123	2152	Kg
F.L.A. Full Load Ampere	54	57	65	75	82	88	98	106	125	140	161	176	A

UNIT CONTROL

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

- Dynamic Defrost
- Demand Limit
- Economy
- Sound managing
- Heating in integration
- ATC function to protect in high ambient air conditions
- Function climate control evolved (temperature scrolling)

		Cooling		Heating		
Operation limits	**Unit type**	**min**	**max**	**min**	**max**	
Ambient air	IR, BR, IP, BP	-10	50	-7	40	(°C)
Leaving water temperature	IR, IP	5	25	30	55	(°C)
Leaving water temperature	BR, BP	-12	25	30	55	(°C)
Leaving water temperature De-supeheated (VD)	IR, BR, IP, BP	30	70	30	70	(°C)

* VD unit specifications

These versions are complete with an additional heat exchanger to recover thermal energy otherwise dispersed in the air.

De-supeheated “IR VD”

The cooling only version enables the production of cold water as in the standard version and, at the same time, with hot water at temperatures of 30 to 70°C. This is possible by installing a water-refrigerant gas heat exchanger between the compressor and finned coil enabling heat recovery of 15 to 20% of the heating power.

De-supeheated “IP VD”

As in the previous version, but applied to a reversible unit. It enables the production of hot and cold water by the main exchanger, and recovery at the same time.

Cooling only (IR) - De-supeheated Version (VD) - Basic Configuration (AB)

_	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	55,6	60,9	71,6	81,8	94,6	106	116	131	149	164	187	208	kW
Total power input	17,8	19,7	22,8	26,6	30,8	34,1	37,9	42,8	48,9	54,2	61,3	67,9	kW
EER	**3,13**	**3,10**	**3,14**	**3,08**	**3,07**	**3,11**	**3,07**	**3,06**	**3,04**	**3,03**	**3,05**	**3,06**	-
Water flow rate	2,66	2,91	3,42	3,91	4,52	5,07	5,57	6,26	7,11	7,85	8,94	9,94	l/s
Water pressure drop	45	55	52	43	43	43	43	42	42	42	63	62	kPa
Heating recovery capacity	15,7	17,6	20,0	23,6	27,1	30,4	34,4	38,4	44,0	49,3	55,4	61,3	kW
Water flow rate recovery	0,75	0,84	0,96	1,13	1,29	1,45	1,64	1,83	2,10	2,36	2,65	2,93	l/s
Water pressure drop rec.	9	11	14	19	15	18	11	14	18	22	18	21	kPa

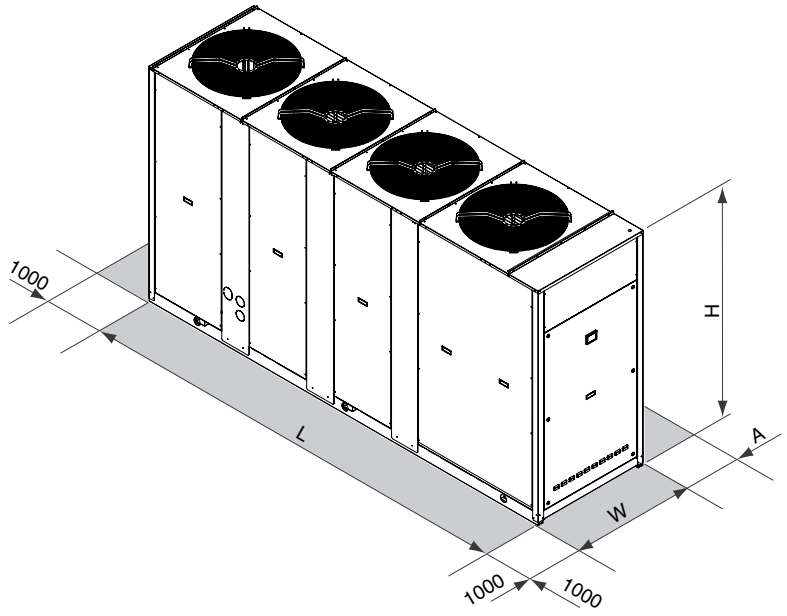
Heat pump (IP) -De-supeheated version (VD) - Basic Configuration (AB)

	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	55,0	59,8	69,9	77,1	92,8	103	114	127	144	160	185	206	kW
Total power input	17,9	19,6	22,9	25,7	30,7	34,0	37,8	42,3	47,8	53,5	60,3	67,6	kW
EER	**3,07**	**3,05**	**3,05**	**3,00**	**3,03**	**3,03**	**3,02**	**3,00**	**3,00**	**2,99**	**3,07**	**3,05**	-
Water flow rate	2,63	2,86	3,34	3,68	4,43	4,92	5,47	6,06	6,86	7,65	8,84	9,84	l/s
Water pressure drop	44	53	49	38	41	41	42	40	39	40	61	60	kPa
Heating recovery capacity	15,2	17,0	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	0,73	0,81	0,93	1,10	1,25	1,39	1,58	1,77	2,03	2,27	2,50	2,78	l/s
Water pressure drop rec.	8	10	13	18	14	17	10	13	17	20	16	19	kPa

NOTES:

Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B. during heat recovery operation. Heating recovery capacity: water 40/45°C.

Dimensions and minimun operating space



	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	2501				3343		3343				4097		mm
W	954				1104		1104				1104		mm
H	1930				1793		2193				2193		mm
A	1600						2000						mm

> RLA

AIR COOLED WATER CHILLERS AND HEAT PUMPS

* Units Series

Type

IR	chiller
IP	reversible heat pump
BR	chiller brine
BP	reversible heat pump brine

Available version

VB	Basic
VD	De-supeheated
VR	total Recovery

Available configuration

AB	Basic
AS	Low noise
AX	eXtra Low Noise

Operating range

M	Medium Ambient temperature
A	High Ambient temperature

* VB unit specifications

Industrial chillers and heat pumps designed to meet the requirements of the global markets for very high capacity systems in the industrial and commercial sectors.

Compact and highly configurable units, they are built to adapt to the various types of system design and meet the requirements of highly qualified designers.

When developing the range, special attention has been paid to high performance enabling efficiency at full load, maximum seasonal efficiency at partial loads, reduced consumption, and low noise levels in order to comply with increasingly strict laws on noise pollution.

On request, it is possible to choose from the Basic Version (AB), Low Noise Version (AS) and Extra Low Noise Version (AX). All the units are carefully built in compliance with the current regulations and individually tested.

Installation only requires the electrical and hydronic connections.

Basic Version (VB) and Basic Configuration (AB)

- COMPRESSOR: no. 4 SCROLL type, mounted on vibration-mounting rubber supports, complete with high and low pressure switch.
- IR REFRIGERANT CIRCUIT complete with liquid stop valve and compressor shut-off valve, liquid/humidity indicator, electronic expansion valve which optimises unit efficiency at full load and partial loads and therefore enables **maximum seasonal efficiency**, gas safety valve and dehydrator filter.
- IP REFRIGERANT CIRCUIT integrated with liquid receiver, liquid separator, one-way valves and 4-way reversing valve.
- PLANT SIDE HEAT EXCHANGER: braze-welded plate-type in stainless steel (AISI 316), complete with thermal insulation shell, antifreeze heater and differential pressure switch.
- SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,
- FANS: helical fans with crescent-shaped blades to limit noise
- ELECTRICAL PANEL: control and command electrical panel with door lock main disconnecting switch, microprocessor controller with display (4 lines of 20 characters) containing the electrical equipment and all the components with minimum protection rating IP54.

Low noise Configuration (AS)

In addition to the specification given in the Basic version (AB), the Low Noise version (AS) provides for the following configurations:

- FANS: reduced speed
- COMPRESSORS: covered with a soundproofing jacket.

To further reduce the noise level, the technical compartment is covered with sound-absorbing material of suitable thickness.

EXtra low noise Configuration (AX)

In addition to the characteristics given in the Low Noise version (AS), the extra Low Noise version (AX) provides for the following configurations:

- FANS: further fan speed reduction
- CONDENSING COILS: larger with respect to the basic version, to further increase the heat exchange coefficient.

* Main accessories/Options

Pumping Modules
available in configurations:
- without storage
- storage in system delivery
- storage prearranged for primary and secondary circuit
- 1 or 2 pumps
- standard or high head pumps

Condensation Control Device (standard for AS and AX), enables unit operation to outside air temperatures =-10°C)
Paddle flowswitch
Remote Control repeats the functions of the control system (max. 100 m)
Pressure transducers
Voltage monitor and sequence meter
Compressor Soft-starter
Compressor retiming condensers
Compressor and fan thermal magnetic switches

Basic Configuration (AB)

Cooling only (IR)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Cooling capacity (E)	162	179	201	230	257	292	326	371	413	kW
Total power input	54,9	61,2	69,1	78,3	88,2	100	112	127	142	kW
EER (E)	**2,95**	**2,92**	**2,91**	**2,94**	**2,91**	**2,92**	**2,91**	**2,92**	**2,91**	-
ESEER (E)	**4,13**	**4,09**	**4,07**	**4,11**	**4,08**	**4,09**	**4,08**	**4,09**	**4,07**	-
Water flow rate	7,74	8,55	9,60	11,0	12,3	14,0	15,6	17,7	19,7	l/s
Water pressure drop (E)	55	54	62	65	67	71	59	61	62	kPa
Available static head	93	85	108	90	69	102	125	83	104	kPa
Heat pump (IP)	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
Cooling capacity (E)	155	172	194	217	246	278	312	360	401	kW
Total power input	54,2	60,5	67,9	76,7	87,7	99,2	111	126	140	kW
EER (E)	**2,86**	**2,84**	**2,86**	**2,83**	**2,81**	**2,80**	**2,81**	**2,86**	**2,86**	-
ESEER (E)	**4,00**	**3,98**	**4,00**	**3,96**	**3,93**	**3,92**	**3,94**	**4,00**	**4,01**	-
Water flow rate	7,41	8,22	9,27	10,4	11,8	13,3	14,9	17,2	19,2	l/s
Water pressure drop (E)	50	50	58	58	62	64	54	58	59	kPa
Available static head	101	92	116	100	75	113	137	88	110	kPa
Heating capacity (E)	168	189	213	238	270	305	342	391	435	kW
Total power input	55,3	62,3	70,1	78,9	89,8	101	113	128	143	kW
COP (E)	**3,04**	**3,03**	**3,04**	**3,02**	**3,01**	**3,02**	**3,03**	**3,05**	**3,04**	-
Water flow rate	8,03	9,03	10,2	11,4	12,9	14,6	16,3	18,7	20,8	l/s
Water pressure drop	59	60	70	69	74	77	65	68	69	kPa
Available static head	86	76	95	84	63	94	114	75	94	kPa
Sound level	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
Total - SWL (E)	91	92	92	92	93	94	94	95	95	dB(A)
SPL 1 m	72	73	73	73	74	75	74	75	75	dB(A)
SPL 5 m	64	65	65	65	66	67	67	68	68	dB(A)
SPL 10 m	59	60	60	60	61	62	62	63	63	dB(A)

Low noise Configuration (AS)

Cooling only (IR)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Cooling capacity (E)	156	172	193	221	247	280	313	356	396	kW
Total power input	58,7	65,5	74,1	84,0	94,4	108	120	135	152	kW
EER (E)	**2,66**	**2,63**	**2,60**	**2,63**	**2,62**	**2,59**	**2,61**	**2,64**	**2,61**	-
ESEER (E)	**3,72**	**3,68**	**3,65**	**3,68**	**3,66**	**3,63**	**3,65**	**3,69**	**3,65**	-
Water flow rate	7,45	8,22	9,22	10,56	11,8	13,4	15,0	17,0	18,9	l/s
Water pressure drop (E)	51	50	57	60	62	65	55	57	57	kPa
Available static head	100	92	117	97	75	111	135	90	113	kPa
Heat pump (IP)	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
Cooling capacity (E)	149	165	186	208	236	267	300	346	385	kW
Total power input	58,0	64,8	72,8	82,3	93,9	106	119	134	149	kW
EER (E)	**2,57**	**2,55**	**2,55**	**2,53**	**2,51**	**2,52**	**2,52**	**2,58**	**2,58**	-
ESEER (E)	**3,60**	**3,56**	**3,58**	**3,54**	**3,52**	**3,53**	**3,53**	**3,61**	**3,62**	-
Water flow rate	7,12	7,88	8,89	9,94	11,3	12,8	14,3	16,5	18,4	l/s
Water pressure drop (E)	46	46	53	53	57	59	50	53	54	kPa
Available static head	110	100	126	110	82	122	149	96	120	kPa
Heating capacity (E)	161	181	204	228	259	293	328	375	418	kW
Total power input	52,9	59,5	67,0	75,3	85,9	96,7	108	122	137	kW
COP (E)	**3,04**	**3,04**	**3,04**	**3,03**	**3,02**	**3,03**	**3,04**	**3,07**	**3,05**	-
Water flow rate	7,69	8,65	9,75	10,9	12,4	14,0	15,7	17,9	20,0	l/s
Water pressure drop	54	55	64	64	68	71	60	63	64	kPa
Available static head	94	83	104	91	68	102	123	82	101	kPa
Sound level	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
Total - SWL (E)	85	86	86	86	87	88	88	89	89	dB(A)
SPL 1 m	66	67	67	67	68	69	68	69	69	dB(A)
SPL 5 m	58	59	59	59	60	61	61	62	62	dB(A)
SPL 10 m	53	54	54	54	55	56	56	57	57	dB(A)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.
Heating performance values measured with EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

eXtra low noise Configuration (AX)

Cooling only (IR)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Cooling capacity (E)	152	168	189	216	242	274	306	349	388	kW
Total power input	60,1	67,1	75,9	86,1	96,7	110	123	138	156	kW
EER (E)	**2,53**	**2,50**	**2,49**	**2,51**	**2,50**	**2,49**	**2,49**	**2,53**	**2,49**	-
ESEER (E)	**3,54**	**3,51**	**3,49**	**3,51**	**3,50**	**3,49**	**3,48**	**3,54**	**3,48**	-
Water flow rate	7,26	8,03	9,03	10,3	11,6	13,1	14,6	16,7	18,5	l/s
Water pressure drop (E)	48	47	55	57	60	62	52	55	55	kPa
Available static head	106	96	122	102	78	116	142	94	118	kPa
Heat pump (IP)	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
Cooling capacity (E)	146	162	182	204	231	261	293	338	377	kW
Total power input	59,4	66,4	74,6	84,3	96,2	109	122	137	153	kW
EER (E)	**2,46**	**2,44**	**2,44**	**2,42**	**2,40**	**2,39**	**2,40**	**2,47**	**2,46**	-
ESEER (E)	**3,44**	**3,42**	**3,42**	**3,39**	**3,36**	**3,35**	**3,36**	**3,45**	**3,45**	-
Water flow rate	6,98	7,74	8,70	9,75	11,0	12,5	14,0	16,2	18,0	l/s
Water pressure drop (E)	44	44	51	51	55	56	48	51	52	kPa
Available static head	114	103	131	114	86	128	155	101	125	kPa
Heating capacity (E)	160	180	202	226	257	290	325	371	413	kW
Total power input	51,9	58,4	65,7	73,9	84,3	94,9	106	120	134	kW
COP (E)	**3,08**	**3,08**	**3,07**	**3,06**	**3,05**	**3,06**	**3,07**	**3,09**	**3,08**	-
Water flow rate	7,64	8,60	9,65	10,8	12,3	13,9	15,5	17,7	19,7	l/s
Water pressure drop	53	54	63	62	68	70	59	62	62	kPa
Available static head	95	84	107	93	69	103	126	83	104	kPa
Sound level	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
Total - SWL (E)	82	83	83	83	84	85	85	86	86	dB(A)
SPL 1 m	63	64	64	64	65	66	65	66	66	dB(A)
SPL 5 m	55	56	56	56	57	58	58	59	59	dB(A)
SPL 10 m	50	51	51	51	52	53	53	54	54	dB(A)

Common Data	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Supply	400V - 3ph - 50 Hz									V-ph-Hz
Quantity-type compressor-n° circ.-part load	4 - Scroll - 2 - 0/25/50/75/100									-
Quantity-type evaporator	1 - of brazed stainless steel plates									-
Water content evaporator	7,33	8,27	9,52	10,76	12,01	14,20	22,95	25,65	29,25	l
Quantity-D-Max fan speed	4 - 800 - 900				6 - 800 - 900			8 - 800 - 900		n°-mm-rpm
Water content storage tank	325						710			l
Water connection IN/OUT	3"						4"			"
Operation weight with 2 pump	2642	2752	2867	3008	3107	3178	3749	3864	3986	Kg
F.L.A. Full Load Ampere	150	161	175	191	216	249	278	316	352	A

USER INTERFACING

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

- Dynamic Defrost
- Double Set Point
- Demand Limit
- Noise control
- Heating in integration
- ATC function to protect in high ambient air conditions
- Function climate control evolved (temperature scrolling)

		Cooling		Heating		
Operation limits	**Unit type**	**min**	**max**	**min**	**max**	
Ambient air	IR, BR, IP, BP	15 (-10*)	50 (55**)	-7	40	(°C)
Leaving water temperature	IR, IP	5	25	30	55	(°C)
Leaving water temperature	BR, BP	-12	25	30	55	(°C)
Leaving water temperature De-supeheated (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Leaving water temperature Totale Recovery (VR)	IR, BR,	35	50	-	-	(°C)

* with accessories DCC condensation control device ** with ATC regolation for protection high ambient air

* VD unit specifications

These versions are complete with an additional heat exchanger to recover thermal energy otherwise dispersed in the air.

De-supeheated “IR VD”

The cooling only version enables the production of cold water as in the standard version and, at the same time, hot water at temperatures of 30 to 70°C. This is possible by installing a water-refrigerant gas heat exchanger between the compressor and finned coil enabling heat recovery of 15 to 20% of the heating power.

De-supeheated “IP VD”

As in the previous version, but applied to a reversible unit. It enables the production of hot and cold water by the main exchanger, and recovery at the same time.

TOTAL HEAT RECOVERY “IR VR”

Available in the cooling only version, it enables the production of cold water and, at the same time, hot water at temperatures of 35 to 50°C, through the use of a water-refrigerant gas heat exchanger enabling total recovery of the thermal power. The activation and deactivation of total heat recovery occurs by means of a valve on the delivery of the compressors each circuit.

Cooling only (IR) - De-supeheated Version (VD) - Basic Configuration (AB)

_	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Cooling capacity	169	186	209	239	267	304	339	385	430	kW
Total power input	53,5	59,6	67,2	76,2	85,8	97,8	109	124	138	kW
EER	**3,15**	**3,12**	**3,12**	**3,14**	**3,11**	**3,10**	**3,11**	**3,12**	**3,11**	-
Water flow rate	8,06	8,89	10,0	11,4	12,8	14,5	16,2	18,4	20,5	l/s
Water pressure drop	59,2	58,2	67,5	69,8	73,0	76,8	64,2	66,2	67,2	kPa
Heating recovery capacity	47,2	52,2	59,1	65,7	74,3	84,2	97,8	111,0	125,0	kW
Water flow rate recovery	2,26	2,49	2,82	3,14	3,55	4,02	4,67	5,30	5,97	l/s
Water pressure drop rec.	5	7	8	10	13	16	16	21	25	kPa

Heat pump (IP) -De-supeheated version (VD) - Basic Configuration (AB)

	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Cooling capacity	161	179	202	226	256	289	324	374	417	kW
Total power input	52,8	58,9	66,1	74,6	85,4	96,5	108	122	136	kW
EER	**3,05**	**3,04**	**3,05**	**3,02**	**3,00**	**2,99**	**3,01**	**3,07**	**3,07**	-
Water flow rate	7,70	8,55	9,64	10,78	12,22	13,81	15,50	17,89	19,93	l/s
Water pressure drop	54,1	53,8	62,7	62,2	66,8	69,6	58,7	62,4	63,3	kPa
Heating recovery capacity	44,8	51,6	58,1	65,6	73,3	84,0	94,7	108	121	kW
Water flow rate recovery	2,14	2,47	2,78	3,13	3,50	4,01	4,52	5,16	5,78	l/s
Water pressure drop rec.	5	6	8	10	13	16	15	19	24	kPa

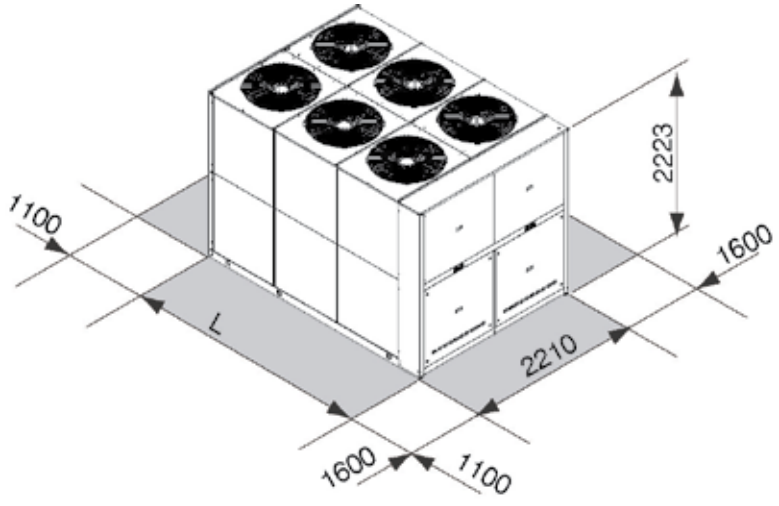
Cooling only (IR) - total Recovery version (VR) - Basic Configuration (AB)

	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Cooling capacity	165	183	205	234	262	298	333	378	421	kW
Total power input	47,7	54,0	61,9	71,1	77,4	89,7	101	112	128	kW
EER	**3,47**	**3,38**	**3,32**	**3,30**	**3,39**	**3,32**	**3,28**	**3,36**	**3,30**	-
Water flow rate	7,90	8,72	9,81	11,2	12,5	14,2	15,9	18,1	20,1	l/s
Water pressure drop	57,0	56,0	65,0	67,1	70,2	73,9	61,8	63,7	64,7	kPa
Heating recovery capacity	200	222	251	287	319	364	408	461	516	kW
Water flow rate recovery	9,57	10,6	12,0	13,7	15,3	17,4	19,5	22,0	24,7	l/s
Water pressure drop rec.	40	38	40	40	42	43	43	44	45	kPa

NOTES:

Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B. during heat recovery operation. Heating recovery capacity: water 40/45°C.

Dimensions and minimun operating space



	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

> RHA

AIR COOLED WATER CHILLERS AND HEAT PUMPS

* Units Series

Type

IR	chiller
IP	reversible heat pump
BR	chiller brine
BP	reversible heat pump brine

Available version

VB	Basic
VD	De-supeheated
VR	total Recovery

Available configuration

AB	Basic
AS	Low noise
AX	eXtra Low Noise

Operating range

M	Medium Ambient temperature
A	High Ambient temperature

* VB unit specifications

Industrial chillers and heat pumps designed to meet the requirements of the global markets for very high capacity systems in the industrial and commercial sectors.

Compact and highly configurable units, they are built to adapt to the various types of system design and meet the requirements of highly qualified designers.

When developing the range, special attention has been paid to high performance enabling efficiency at full load, maximum seasonal efficiency at partial loads, reduced consumption, and low noise levels in order to comply with increasingly strict laws on noise pollution.

On request, it is possible to choose from the Basic Version (AB), Low Noise Version (AS) and Extra Low Noise Version (AX). All the units are carefully built in compliance with the current regulations and individually tested.

Installation only requires the electrical and hydronic connections.

Basic Version (VB) and Basic Configuration (AB)

- COMPRESSOR: no. 5 OR 6 SCROLL type, mounted on vibration-mounting rubber supports, complete with high and low pressure switch.
- IR REFRIGERANT CIRCUIT complete with liquid stop valve and compressor shut-off valve, liquid/humidity indicator, electronic expansion valve which optimises unit efficiency at full load and partial loads and therefore enables **maximum seasonal efficiency**, gas safety valve and dehydrator filter.
- IP REFRIGERANT CIRCUIT integrated with liquid receiver, liquid separator, one-way valves and 4-way reversing valve.
- PLANT SIDE HEAT EXCHANGER: braze-welded plate-type in stainless steel (AISI 316), complete with thermal insulation shell, antifreeze heater and differential pressure switch.
- SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,
- FANS: helical fans with crescent-shaped blades to limit noise
- ELECTRICAL PANEL: control and command electrical panel with door lock main disconnecting switch, microprocessor controller with display (4 lines of 20 characters) containing the electrical equipment and all the components with minimum protection rating IP54.

Low noise Configuration (AS)

In addition to the characteristics given in the Basic version (AB), the Low Noise version (AS) provides for the following configurations:

- FANS: reduced speed
- COMPRESSORS: covered with a soundproofing jacket.

To further reduce the noise level, the technical compartment is covered with sound-absorbing material of suitable thickness.

EXtra low noise Configuration (AX)

In addition to the characteristics given in the Low Noise version (AS), the extra Low Noise version (AX) provides for the following configurations:

- FANS: further fan speed reduction
- CONDENSING COILS: larger with respect to the basic version, to further increase the heat exchange coefficient.

* Main accessories/Options

Pumping Modules
available in configurations:
- without storage
- storage in system delivery
- storage prearranged for primary and secondary circuit
- 1 or 2 pumps
- standard or high head pumps

Condensation Control Device (standard for AS and AX), enables unit operation to outside air temperatures =-10°C)
Paddle flowswitch
Remote Control repeats the functions of the control system (max. 100 m)
Pressure transducers
Voltage monitor and sequence meter
Compressor Soft-starter
Compressor retiming condensers
Compressor and fan thermal magnetic switches

Basic Configuration (AB)

Cooling only (IR)	350.5	390.6	440.6	490.6	560.6	630.6	
Cooling capacity (E)	351	374	439	494	558	625	kW
Total power input	120	128	149	169	189	213	kW
EER (E)	**2,93**	**2,92**	**2,95**	**2,92**	**2,95**	**2,93**	-
ESEER (E)	**4,10**	**4,09**	**4,12**	**4,09**	**4,13**	**4,11**	-
Water flow rate	16,8	17,9	21,0	23,6	26,7	29,9	l/s
Water pressure drop (E)	53	53	62	62	64	68	kPa
Available static head	-	-	-	-	-	-	kPa
Heat pump (IP)	**350.5**	**390.6**	**440.6**	**490.6**	**560.6**	**630.6**	
Cooling capacity (E)	341	364	426	480	540	608	kW
Total power input	118	127	148	167	187	211	kW
EER (E)	**2,88**	**2,87**	**2,88**	**2,87**	**2,88**	**2,89**	-
ESEER (E)	**4,03**	**4,02**	**4,03**	**4,01**	**4,03**	**4,04**	-
Water flow rate	16,3	17,4	20,4	22,9	25,8	29,1	l/s
Water pressure drop (E)	50	51	58	58	60	64	kPa
Available static head	-	-	-	-	-	-	kPa
Heating capacity (E)	370	393	456	516	576	658	kW
Total power input	120	128	148	169	188	217	kW
COP (E)	**3,09**	**3,06**	**3,09**	**3,06**	**3,06**	**3,03**	-
Water flow rate	17,7	18,8	21,8	24,7	27,5	31,4	l/s
Water pressure drop	59	59	67	68	68	75	kPa
Available static head	-	-	-	-	-	-	kPa
Sound level	**350.5**	**390.6**	**440.6**	**490.6**	**560.6**	**630.6**	
Total - SWL (E)	95	95	96	96	97	97	dB(A)
SPL 1 m	75	75	76	76	77	77	dB(A)
SPL 5 m	67	67	68	68	69	69	dB(A)
SPL 10 m	63	63	64	64	65	65	dB(A)

Low noise Configuration (AS)

Cooling only (IR)	350.5	390.6	440.6	490.6	560.6	630.6	
Cooling capacity (E)	337	359	421	474	536	600	kW
Total power input	128	138	160	181	203	228	kW
EER (E)	**2,64**	**2,61**	**2,64**	**2,62**	**2,64**	**2,63**	-
ESEER (E)	**3,69**	**3,66**	**3,70**	**3,66**	**3,70**	**3,68**	-
Water flow rate	16,1	17,2	20,1	22,7	25,6	28,7	l/s
Water pressure drop (E)	49	49	57	57	58	62	kPa
Available static head	-	-	-	-	-	-	kPa
Heat pump (IP)	**350.5**	**390.6**	**440.6**	**490.6**	**560.6**	**630.6**	
Cooling capacity (E)	327	349	409	461	518	584	kW
Total power input	127	136	158	179	201	226	kW
EER (E)	**2,58**	**2,57**	**2,58**	**2,57**	**2,58**	**2,58**	-
ESEER (E)	**3,61**	**3,60**	**3,62**	**3,60**	**3,61**	**3,62**	-
Water flow rate	15,6	16,7	19,5	22,0	24,8	27,9	l/s
Water pressure drop (E)	46	46	54	54	55	59	kPa
Available static head	-	-	-	-	-	-	kPa
Heating capacity (E)	355	377	438	495	553	632	kW
Total power input	115	123	141	161	180	207	kW
COP (E)	**3,10**	**3,08**	**3,10**	**3,07**	**3,08**	**3,05**	-
Water flow rate	17,0	18,0	20,9	23,7	26,4	30,2	l/s
Water pressure drop	54	54	61	62	62	69	kPa
Available static head	-	-	-	-	-	-	kPa
Sound level	**350.5**	**390.6**	**440.6**	**490.6**	**560.6**	**630.6**	
Total - SWL (E)	89	89	90	90	91	91	dB(A)
SPL 1 m	69	69	70	70	71	71	dB(A)
SPL 5 m	61	61	62	62	63	63	dB(A)
SPL 10 m	57	57	58	58	59	59	dB(A)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.
Heating performance values measured with EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

eXtra low noise Configuration (AX)

Cooling only (IR)	350.5	390.6	440.6	490.6	560.6	630.6	
Cooling capacity (E)	330	352	413	464	525	588	kW
Total power input	131	141	163	186	208	234	kW
EER (E)	**2,52**	**2,50**	**2,53**	**2,50**	**2,52**	**2,51**	-
ESEER (E)	**3,53**	**3,50**	**3,54**	**3,50**	**3,53**	**3,52**	-
Water flow rate	15,8	16,8	19,7	22,2	25,1	28,1	l/s
Water pressure drop (E)	47	47	55	55	56	60	kPa
Available static head	-	-	-	-	-	-	kPa
Heat pump (IP)	**350.5**	**390.6**	**440.6**	**490.6**	**560.6**	**630.6**	
Cooling capacity (E)	321	342	400	451	508	572	kW
Total power input	130	139	162	184	206	232	kW
EER (E)	**2,47**	**2,46**	**2,47**	**2,45**	**2,47**	**2,47**	-
ESEER (E)	**3,46**	**3,44**	**3,45**	**3,44**	**3,46**	**3,45**	-
Water flow rate	15,3	16,3	19,1	21,6	24,3	27,3	l/s
Water pressure drop (E)	44	45	51	52	53	57	kPa
Available static head	-	-	-	-	-	-	kPa
Heating capacity (E)	352	373	433	490	547	625	kW
Total power input	113	120	139	158	176	203	kW
COP (E)	**3,13**	**3,10**	**3,12**	**3,10**	**3,10**	**3,08**	-
Water flow rate	16,8	17,8	20,7	23,4	26,1	29,9	l/s
Water pressure drop	53	53	60	61	61	68	kPa
Available static head	-	-	-	-	-	-	kPa
Sound level	**350.5**	**390.6**	**440.6**	**490.6**	**560.6**	**630.6**	
Total - SWL (E)	86	86	87	87	88	88	dB(A)
SPL 1 m	66	66	67	67	68	68	dB(A)
SPL 5 m	58	58	59	59	60	60	dB(A)
SPL 10 m	54	54	55	55	56	56	dB(A)

Common Data	350.5	390.6	440.6	490.6	560.6	630.6	
Supply	400V - 3ph - 50 Hz						V-ph-Hz
Quantity-type compressor	5	6	6	6	6	6	n°
Type compressor-n° circ.	SCROLL - 2						-
Quantity - type evaporator	1 - of brazed stainless steel plates						-
Water content evaporator	7,33	8,27	9,52	10,8	12,0	14,2	l
Quantity-D-Max fan speed	8 - 800 - 900		10 - 800 - 900		12 - 800 - 900		n°-mm-rpm
Water content storage tank	700						l
water connection IN/OUT	3"	3"	4"	4"	5"	5"	"
F.L.A. Full Load Ampere	242	311	367	411	463	509	A

USER INTERFACING

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

- Dynamic Defrost
- Double Set Point
- Demand Limit
- Noise control
- Heating in integration
- ATC function to protect in high ambient air conditions
- Function climate control evolved (temperature scrolling)

		Cooling		Heating		
Operation limits	**Unit type**	**min**	**max**	**min**	**max**	
Ambient air	IR, BR, IP, BP	15 (-10*)	50 (55**)	-7	40	(°C)
Leaving water temperature	IR, IP	5	25	30	55	(°C)
Leaving water temperature	BR, BP	-12	25	30	55	(°C)
Leaving water temperature De-supeheated (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Leaving water temperature Totale Recovery (VR)	IR, BR,	35	50	-	-	(°C)

* with accessories DCC condensation control device ** with ATC regolation for protection high ambient air

* VD unit specifications

These versions are complete with an additional heat exchanger to recover thermal energy otherwise dispersed in the air.

De-supeheated “IR VD”

The cooling only version enables the production of cold water as in the standard version and, at the same time, hot water at temperatures of 30 to 70°C. This is possible by installing a water-refrigerant gas heat exchanger between the compressor and finned coil enabling heat recovery of 15 to 20% of the heating power.

De-supeheated “IP VD”

As in the previous version, but applied to a reversible unit. It enables the production of hot and cold water by the main exchanger, and recovery at the same time.

TOTAL HEAT RECOVERY “IR VR”

Available in the cooling only version, it enables the production of cold water and, at the same time, hot water at temperatures of 35 to 50°C, through the use of a water-refrigerant gas heat exchanger enabling total recovery of the thermal power. The activation and deactivation of total heat recovery occurs by means of a valve on the delivery of the compressors each circuit.

Cooling only (IR) - De-supeheated Version (VD) - Basic Configuration (AB)

_	350.5	390.6	440.6	490.6	560.6	630.6	
Cooling capacity	365	389	457	514	580	650	kW
Total power input	116	124	145	164	183	207	kW
EER	**3,14**	**3,13**	**3,16**	**3,13**	**3,17**	**3,15**	-
Water flow rate	17,4	18,6	21,8	24,6	27,7	31,1	l/s
Water pressure drop	-	-	-	-	-	-	kPa
Heating recovery capacity	94,8	101	119	133	151	169	kW
Water flow rate recovery	4,53	4,82	5,66	6,37	7,20	8,06	l/s
Water pressure drop rec.	-	-	-	-	-	-	kPa

Heat pump (IP) -De-supeheated version (VD) - Basic Configuration (AB)

	350.5	390.6	440.6	490.6	560.6	630.6	
Cooling capacity	355	379	443	499	562	632	kW
Total power input	115	123	143	162	182	204	kW
EER	**3,09**	**3,08**	**3,09**	**3,07**	**3,09**	**3,09**	-
Water flow rate	16,9	18,1	21,2	23,9	26,8	30,2	l/s
Water pressure drop	-	-	-	-	-	-	kPa
Heating recovery capacity	92,1	98,3	115	130	146	164	kW
Water flow rate recovery	4,40	4,70	5,50	6,19	6,97	7,84	l/s
Water pressure drop rec.	-	-	-	-	-	-	kPa

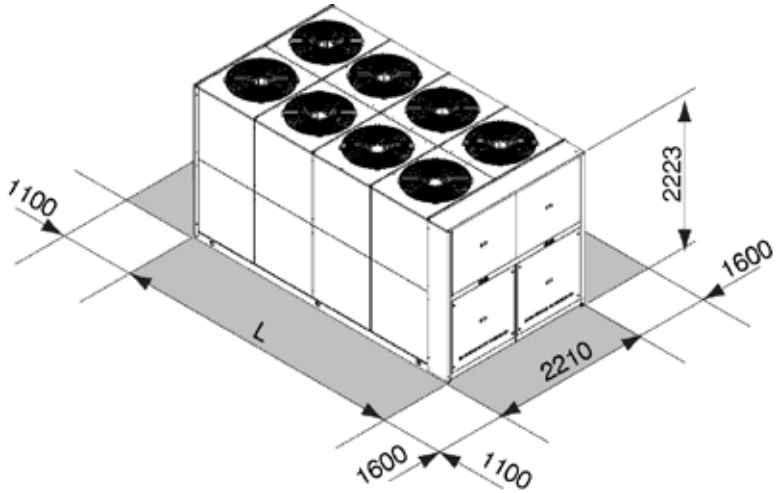
Cooling only (IR) - total Recovery version (VR) - Basic Configuration (AB)

	350.5	390.6	440.6	490.6	560.6	630.6	
Cooling capacity	358	381	448	504	569	638	kW
Total power input	105	114	131	151	168	191	kW
EER	**3,41**	**3,35**	**3,42**	**3,34**	**3,39**	**3,34**	-
Water flow rate	17,1	18,2	21,4	24,1	27,2	30,5	l/s
Water pressure drop	-	-	-	-	-	-	kPa
Heating recovery capacity	435	466	544	616	693	779	kW
Water flow rate recovery	20,8	22,3	26,0	29,4	33,1	37,2	l/s
Water pressure drop rec.	-	-	-	-	-	-	kPa

NOTES:

Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B. during heat recovery operation. Heating recovery capacity: water 40/45°C.

Dimensions and minimun operating space



	350.5	390.6	440.6	490.6	560.6	630.6	
L	5030	5030	5030	5030	5963	5963	mm

> RHV
AIR COOLED WATER CHILLERS

* Units Series

Type
IR chiller
BR chiller brine

Available version
VB Basic
VD and VR on request

Available configuration
AB Basic
AS Low noise

* VB unit specifications

The RHV units are air-cooled water chillers using R407C ecological gas.
When developing the unit, special attention was paid to the issue of noise, in order to comply with increasingly strict laws on noise pollution. In fact, two noise attenuation levels are available (Basic, Low noise).
The range is completed with numerous accessories and options, including the possibility of having units equipped with pumping modules with 2 pumps 2 poles (for Basic Version) and 4 poles (for low noise Version).
The units are carefully built and tested, therefore installation only requires the electrical and hydraulic

Basic Version (VB) and Basic Configuration (AB)

- COMPRESSOR: 2 TWIN-SCREW semihermetic compressors able to modulate the COOLING capacity from 12,5 to 100%, mounted on rubber vibration dampers.
- REFRIGERANT CIRCUIT: 2 independent refrigerant circuits, complete with maximum and minimum pressure switches, PED safety valves, dehydrator filter, liquid/humidity indicator, compressor delivery and liquid shut-off valves, high and low pressure transducers electronic expansion valve which optimises the unit efficiency.
- PLANT SIDE HEAT EXCHANGER: shell and tube evaporator, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, protected to a minimum air temperature of -10°C by means of a water differential pressure switch and an antifreeze heater.
- SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,
- FANS: helical fans with crescent-shaped blades to limit noise
- ELECTRICAL PANEL: control electrical panel with a main door lock disconnecting switch, sequence meter, microprocessor controller with display (4 lines of 20 characters) containing the electrical equipment and all the components with minimum protection rating IP54.

Basic Version (VB) and Low noise Configuration (AS)

In addition to the specification in Basic version (AB), the Low Noise version (AS) provides for the following configurations:

- FANS: reduced speed
- COMPRESSORS: positioned inside a soundproofed cabin, made with profiles and panels insulated with optimum sound-absorbing material.

* Main accessories/Options

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), enables unit operation to outside air temperatures =-10°C
Unit external Storage and Pumping Module complete with insulated tank, single or twin pump and all hydronic components.
Remote Control,
Compressor Soft-starter,
Compressor retiming condensers,
Compressor and fan thermal magnet switches

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
- Noise control
- Heating in integration
- ATC function to protect in high ambient air conditions
- Function climate control evolved (temperature scrolling)

Common Data		360.2	410.2	460.2	520.2	580.2	630.2	680.2	780.2	900.2	1000.2	1150.2	1300.2	1450.2	
Supply		400 V – 3 ph – 50Hz													V-ph-Hz
Quantity-type compressor. N° circ-Part load		2 - TWIN SCREW - 2 - 13/100%													-
Quantity type evaporator		1 - SHELL & TUBE													-
Water content evaporator		106	103	153	148	262	262	262	248	241	413	398	405	543	l
Water connection IN/OUT		4" DN100		5" DN125		6" DN150					8" DN200				DN
Quantity fan	AB - AS	8	8	8	8	10	10	10	12	14	14	16	20	24	n°
Fan speed	AB - AS	900	900	900	900	900	900	900	900	900	900	900	900	900	rpm
Operation weight	AB	3570	3580	3992	4328	4894	5089	5284	5826	6823	7928	8260	9216	9922	kg
	AS	3769	3779	4206	4557	5123	5318	5513	6055	7087	8192	8524	9480	10186	kg
F.L.A. Full Load Ampere		298	336	371	406	458	492	526	534	702	792	878	978	994	A

Basic Configuration (AB)

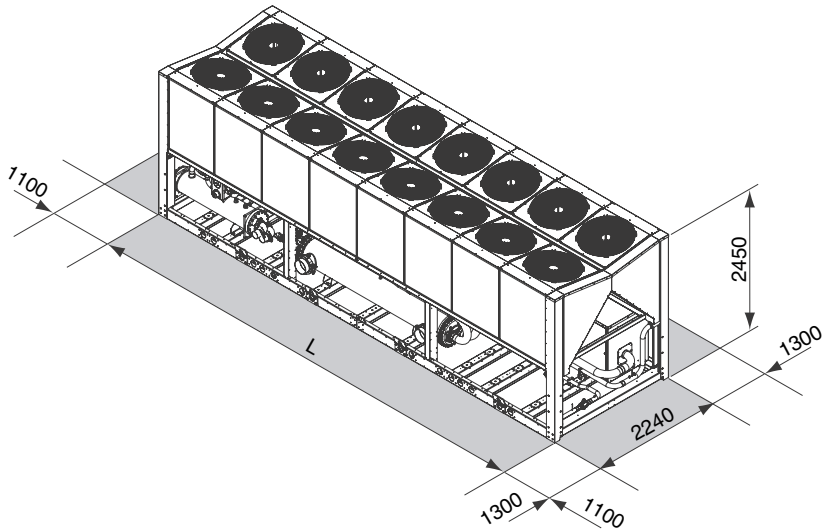
_	360.2	410.2	460.2	520.2	580.2	630.2	680.2	780.2	900.2	1000.2	1150.2	1300.2	1450.2	
Cooling capacity	364	410	452	511	576	621	672	771	882	995	1149	1308	1430	kW
Total power input	145	168	186	205	228	247	261	293	340	391	446	509	494	kW
EER	**2,51**	**2,44**	**2,43**	**2,49**	**2,53**	**2,51**	**2,57**	**2,63**	**2,60**	**2,55**	**2,57**	**2,57**	**2,90**	-
ESEER	**3,28**	**3,21**	**3,20**	**3,30**	**3,35**	**3,33**	**3,41**	**3,53**	**3,46**	**3,40**	**3,46**	**3,47**	**3,95**	-
Water flow rate	17,4	19,6	21,6	24,4	27,5	29,7	32,1	36,8	42,1	47,5	54,9	62,5	68,3	l/s
Water pressure drop	54	50	44	50	39	45	53	43	55	57	46	56	46	kPa
Available static head	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sound level	**360.2**	**410.2**	**460.2**	**520.2**	**580.2**	**630.2**	**680.2**	**780.2**	**900.2**	**1000.2**	**1150.2**	**1300.2**	**1450.2**	
Totale - SWL	99	99	99	100	100	100	100	101	102	102	103	104	105	dB(A)
SPL 1 m	79	79	79	80	80	80	80	80	81	81	82	82	82	dB(A)
SPL 5 m	71	71	71	72	72	72	72	73	74	74	75	75	76	dB(A)
SPL 10 m	67	67	67	68	68	68	68	69	70	69	70	71	72	dB(A)

Low noise Configuration (AS)

_	360.2	410.2	460.2	520.2	580.2	630.2	680.2	780.2	900.2	1000.2	1150.2	1300.2	1450.2	
Cooling capacity	350	396	435	494	555	601	650	743	853	963	1104	1260	1384	kW
Total power input	146	169	188	207	230	249	263	295	342	394	453	515	494	kW
EER	**2,41**	**2,34**	**2,32**	**2,38**	**2,41**	**2,42**	**2,47**	**2,52**	**2,50**	**2,45**	**2,44**	**2,45**	**2,80**	-
ESEER	**3,15**	**3,08**	**3,06**	**3,16**	**3,20**	**3,20**	**3,27**	**3,37**	**3,33**	**3,26**	**3,28**	**3,30**	**3,82**	-
Water flow rate	16,7	18,9	20,8	23,6	26,5	28,7	31,0	35,5	40,7	46,0	52,8	60,2	66,1	l/s
Water pressure drop	50	47	41	47	36	42	50	40	51	53	42	52	43	kPa
Available static head	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sound level	**360.2**	**410.2**	**460.2**	**520.2**	**580.2**	**630.2**	**680.2**	**780.2**	**900.2**	**1000.2**	**1150.2**	**1300.2**	**1450.2**	
Totale - SWL	94	94	94	95	95	95	95	96	97	97	98	99	100	dB(A)
SPL 1 m	74	74	74	75	75	75	75	75	76	76	77	77	77	dB(A)
SPL 5 m	66	66	66	67	67	67	67	68	69	69	70	70	71	dB(A)
SPL 10 m	62	62	62	63	63	63	63	64	64	64	65	66	67	dB(A)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.
ESEER : European seasonal efficiency rating in cooling.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Dimensions and minimun operating space



	360.2	410.2	460.2	520.2	580.2	630.2	680.2	780.2	900.2	1000.2	1150.2	1300.2	1450.2	
L	4070	4070	4070	4070	5000	5000	5000	5950	6900	6900	7850	10000	11900	mm

> RHV
AIR COOLED WATER CHILLERS

* Units Series

Type
IR chiller
BR chiller brine

Available version
VB Basic
VD De-supeheated
VR total Recovery

Available configuration
AB Basic
AS Low noise
AX eXtra Low Noise

* VB unit specifications

The RHV units are air-cooled water chillers using R134a ecological gas.
When developing the unit, special attention was paid to the issue of noise, in order to comply with increasingly strict laws on noise pollution. In fact, three noise attenuation levels are available (Basic, Low noise, Extra Low noise).
The range is completed with numerous accessories and options, including the possibility of having units equipped with pumping modules with 2 pumps 2 poles (for Basic Version) and 4 poles (for Low Noise Version and Extra Low Noise). The units are carefully built and tested, therefore installation only requires the electrical and hydraulic connections.

Basic Version (VB) and Basic Configuration (AB)

■ COMPRESSOR: 2 TWIN-SCREW semihermetic able to modulate the capacity of the unit from 12.5 to 100%,mounted on rubber vibration dampers.

■ REFRIGERANT CIRCUIT: 2 independent refrigerant circuits, complete with electronic expansion valve which optimises unit efficiency at full load and partial loads and enables maximum seasonal efficiency, maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/humidity indicator, compressor delivery and liquid shut-off valves, high and low pressure transducers.

■ PLANT SIDE HEAT EXCHANGER: shell and tube evaporator, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, optimised for R134a with grooved tubes, high efficiency, protected to a minimum air temperature of -10°C by means of a water differential pressure switch and an antifreeze heater.

■ SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,

■ FANS: helical fans with crescent-shaped blades to limit noise

■ ELECTRICAL PANEL: control and command electrical with door lock main disconnecting switch, sequence meter, microprocessor controller with display (4 lines of 20 characters) containing the electrical equipment and all the components with minimum protection IP54.

Low noise Configuration (AS)

In addition to the characteristics given in the Basic version (AB), the Low Noise version (AS) provides for the following configurations:

■ FANS: reduced speed

■ COMPRESSORS: positioned inside a soundproofed cabin, made with profiles and panels insulated with optimum sound-absorbing material.

eXtra low noise Configuration (AX)

In addition to the characteristics given in the Low Noise version (AS), the extra Low Noise version (AX) provides for the following configurations:

■ FANS: further fan speed reduction

■ SOURCE SIDE HEAT EXCHANGER: larger with respect to the basic version, to further increase the heat exchange coefficient.

* Main accessories/Options

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 =-10°C)
Unit external Storage and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.
Remote Control, repeats the functions of the control system (max. 100 m).
Compressor Soft-starter,
Compressor retiming condensers,
Compressor and fan thermal magnet switches

Basic Configuration (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	
Cooling capacity (E)	332	366	415	468	511	594	665	743	802	892	987	1114	kW
Total power input	119	136	151	165	188	210	225	260	281	323	352	379	kW
EER (E)	**2,78**	**2,69**	**2,75**	**2,83**	**2,72**	**2,83**	**2,96**	**2,86**	**2,86**	**2,76**	**2,80**	**2,94**	-
ESEER (E)	**3,63**	**3,51**	**3,62**	**3,74**	**3,60**	**3,76**	**3,85**	**3,82**	**3,81**	**3,72**	**3,78**	**4,01**	-
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
Water pressure drop (E)	49	57	44	56	53	53	44	45	52	60	42	56	kPa
Available static head 2 poles pump	121	96	107	74	115	113	110	147	121	110	152	96	kPa
Available static high-head 2 poles pump	180	148	158	128	160	166	171	198	172	163	213	158	kPa
Available static extra-high-head 2 poles pump	259	229	248	222	212	217	222	252	228	221	262	187	kPa
Sound level	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
Total - SWL (E)	98	98	98	98	100	100	100	101	101	102	102	103	dB(A)
SPL 1 m	79	79	79	79	80	80	80	80	80	81	81	82	dB(A)
SPL 5 m	71	71	71	71	72	72	72	73	73	74	73	74	dB(A)
SPL 10 m	66	66	66	66	67	67	67	69	69	69	69	70	dB(A)

Low noise Configuration (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	
Cooling capacity (E)	321	354	399	447	494	567	642	715	769	856	943	1080	kW
Total power input	118	136	151	167	187	215	235	265	290	327	361	391	kW
EER (E)	**2,72**	**2,61**	**2,63**	**2,68**	**2,64**	**2,64**	**2,73**	**2,70**	**2,65**	**2,62**	**2,61**	**2,76**	-
ESEER (E)	**3,75**	**3,58**	**3,61**	**3,67**	**3,61**	**3,60**	**3,74**	**3,68**	**3,64**	**3,61**	**3,60**	**3,86**	-
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
Water pressure drop (E)	45,9	53,5	40,3	50,7	49,9	48,4	40,9	41,4	47,5	55,3	38,6	52,7	kPa
Available static head 2 poles pump	121	96	107	74	115	113	110	147	121	110	152	96	kPa
Available static high-head 2 poles pump	180	148	158	128	160	166	171	198	172	163	213	158	kPa
Available static extra-high-head 2 poles pump	259	229	248	222	212	217	222	252	228	221	262	187	kPa
Available static head 4 poles pump	114	91	81	110	92	90	156	123	90	155	149	92	kPa
Sound level	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
Total - SWL (E)	93	93	93	93	94	94	94	96	96	97	97	98	dB(A)
SPL 1 m	73	73	73	73	74	74	74	75	75	75	75	76	dB(A)
SPL 5 m	65	65	65	65	67	66	66	67	67	68	68	69	dB(A)
SPL 10 m	61	61	61	61	62	62	62	63	63	64	64	65	dB(A)

eXtra low noise Configuration (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	
Cooling capacity (E)	307	351	391	435	490	551	636	699	754	865	943	1076	kW
Total power input	123	138	155	173	190	226	245	273	298	329	368	403	kW
EER (E)	**2,49**	**2,55**	**2,52**	**2,51**	**2,58**	**2,44**	**2,60**	**2,56**	**2,53**	**2,63**	**2,56**	**2,67**	-
ESEER (E)	**3,50**	**3,58**	**3,50**	**3,48**	**3,56**	**3,37**	**3,61**	**3,56**	**3,52**	**3,69**	**3,59**	**3,78**	-
Water flow rate	14,6	16,8	18,7	20,8	23,4	26,3	30,4	33,4	36,0	41,3	45,1	51,4	l/s
Water pressure drop (E)	42	53	39	48	49	46	40	40	46	56	39	52	kPa
Available static head 4 poles pump	114	91	81	110	92	90	156	123	90	155	149	92	kPa
Sound level	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
Total - SWL (E)	87	87	87	87	88	88	90	91	91	92	92	93	dB(A)
SPL 1 m	67	67	67	67	68	68	69	69	69	70	70	71	dB(A)
SPL 5 m	59	59	59	59	61	60	62	63	63	63	63	65	dB(A)
SPL 10 m	55	55	55	55	56	56	57	58	58	59	59	60	dB(A)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Common data		330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Supply		400 V – 3 ph – 50Hz												V-ph-Hz
Quantity- type compressor		2 - TWIN SCREW - 2 - 13/100%												-
Quantity-type evaporator		1 - SHELL & TUBE												-
Water connection IN/OUT		4" DN100			5" DN125			6" DN150				8" DN200		DN
Quantity fan	AB - AS	8	8	8	8	10	10	10	12	12	14	14	16	n°
	AX	8	8	8	8	10	10	12	14	14	16	16	20	n°
Fan speed	AB - AS	900	900	900	900	900	900	900	900	900	900	900	900	rpm
	AX	650	650	650	650	650	650	650	650	650	650	650	650	rpm
Operation weight	AB	3552	3546	3974	4296	4457	4880	5233	6099	6197	7352	7639	8348	kg
	AS	3751	3745	4188	4525	4686	5109	5462	6363	6461	7573	7860	8568	kg
	AX	3751	3913	4352	4694	4881	5322	5574	6808	6956	7796	8442	9492	kg
F.L.A. Full Load Ampere		164	184	204	220	242	286	286	343	368	416	464	464	A

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
- Noise control
- Heating in integration
- ATC function to protect in high ambient air conditions
- Function climate control evolved (temperature scrolling)

Cooling

Operation limits	Unit type	min	max	
Ambient air	IR, BR	15 (-10*)	50 (55**)	(°C)
Leaving water temperature	IR	5	15	(°C)
Leaving water temperature	BR	-8	5	(°C)
Leaving water temperature De-supeheated (VD)	IR, BR	40	55	(°C)
Leaving water temperature Totale Recovery (VR)	IR, BR,	40	55	(°C)

* with accessories DCC condensation control device

** with ATC regolation for protection high ambient air

* Specification unit VD and VR

These versions come complete with an additional heat exchanger to recover heat energy otherwise wasted in the air.

De-supeheated “IR VD”

Cooling only version, allows the production of cold water as in the standard version and, simultaneously, of hot water at temperatures from 40 to 55 ° 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 HEAT RECOVERY “IR VR”

Available in Cooling only version, 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, either by a valve placed on the outlet of the compressors on each circuit.

De-supeheated Version (VD) - Basic Configuration (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	
Cooling capacity	345	381	432	487	531	618	692	773	834	928	1026	1159	kW
Total power input	115	132	146	160	182	203	218	251	272	313	341	367	kW
EER	**2,99**	**2,89**	**2,96**	**3,04**	**2,92**	**3,04**	**3,18**	**3,08**	**3,07**	**2,97**	**3,01**	**3,16**	-
Water flow rate	16,5	18,2	20,6	23,3	25,4	29,5	33,0	36,9	39,9	44,3	49,0	55,4	l/s
Water pressure drop	53,1	61,9	47,3	60,1	57,7	57,4	47,4	48,3	55,9	64,9	45,8	60,6	kPa
Heating recovery capacity	93	109	122	135	152	171	185	212	231	266	292	313	kW
Water flow rate recovery	4,47	5,19	5,81	6,43	7,24	8,19	8,83	10,15	11,1	12,7	14,0	15,0	l/s
Water pressure drop rec.	10	13	17	10	13	12	14	18	15	12	15	17	kPa

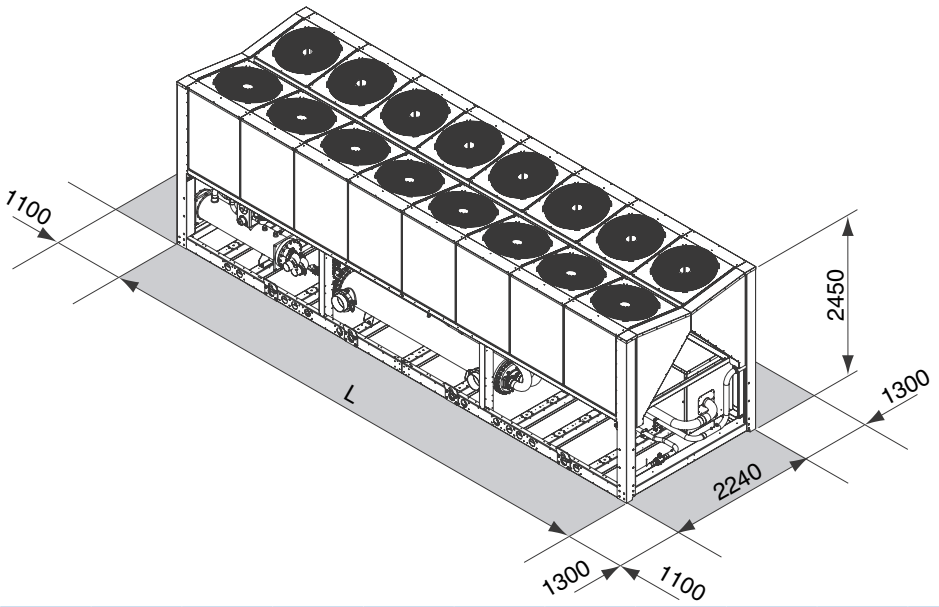
Total Recovery version (VR) - Basic Configuration (AB)

	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Cooling capacity	328	362	416	472	524	598	658	747	806	906	996	1132	kW
Total power input	106	123	136	149	164	188	207	233	256	288	323	342	kW
EER	**3,09**	**2,94**	**3,06**	**3,17**	**3,20**	**3,18**	**3,18**	**3,21**	**3,15**	**3,15**	**3,08**	**3,31**	-
Water flow rate	15,7	17,3	19,9	22,6	25,0	28,6	31,4	35,7	38,5	43,3	47,6	54,1	l/s
Water pressure drop	47,9	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	26,0	29,3	32,5	37,1	40,8	46,3	50,1	56,4	62,2	69,6	l/s
Water pressure drop rec.	27	33	43	45	47	43	47	44	52	47	48	50	kPa

NOTES:

Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B. during heat recovery operation. Heating recovery capacity: water 40/45°C.

Dimensions and minimun operating space



		330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
	AB	4070	4070	4070	4070	5005	5005	5005	5950	5950	6900	6900	7810	mm
L	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

> RHV HE

HIGH EFFICIENCY AIR COOLED WATER CHILLERS

* Units Series

Type

IR	chiller
BR	chiller brine

Available version

VB	Basic
VD	De-supeheated
VR	total Recovery

Available configuration

AB	Basic
AS	Low noise
AX	eXtra Low Noise

Operating range

M	Medium Ambient temperature
A	High Ambient temperature

* VB unit specifications

The **RHV-HE** units are air-cooled water chillers using R134a ecological gas with efficiency at full load (EER) **higher than 3.1 (Max 3.30) according to EUROVENT standards. This efficiency value puts the units in CLASS A.**

The units also feature lower running costs due to high ESEER values (European seasonal efficiency rating in cooling according to Eurovent) and if chosen for High Temperatures , a wide operating range allowing the units to work effectively even in tropical climates.

When developing the unit, special attention was paid to the issue of noise, in order to comply with increasingly strict laws on noise pollution. In fact, three noise attenuation levels are available (Basic, Low noise, Extra Low noise).

The range is completed with numerous accessories and options, including the option of having units equipped with pumping modules with 2 pumps 2 poles (for Basic Version) and 4 poles (for Low noise Version and Extra Low noise). The units are carefully built and tested, therefore installation only requires the electrical and hydraulic

Basic Version (VB) and Basic Configuration (AB)

- COMPRESSOR: 2 TWIN-SCREW semihermetic able to modulate the capacity of the unit from 12.5 to 100%,mounted on rubber vibration dampers.
- REFRIGERANT CIRCUIT: 2 independent refrigerant circuits, an electronic expansion valve which optimises unit efficiency at full load and partial loads and therefore achieves maximum seasonal efficiency, maximum and minimum pressure switches, PED safety valves, dehydrator filter, liquid/humidity indicator, compressor delivery and liquid shut-off valves and high and low pressure transducers.
- PLANT SIDE HEAT EXCHANGER: shell and tube evaporator, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, optimised for R134a with grooved tubes for high efficiency, protected down to a minimum air temperature of -10°C by means of a water differential pressure switch and an antifreeze heater.
- SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,
- FANS: helical fans with crescent-shaped blades to limit noise
- ELECTRICAL PANEL: control and command electrical panel with a main door lock disconnecting switch, sequence meter, microprocessor controller with display (4 lines of 20 characters) containing the electrical equipment and all the components with minimum protection rating IP54.

Low noise Configuration (AS)

In addition to the specification given in the Basic version (AB), the Low Noise version (AS) provides for the following configurations:

- FANS: reduced speed
- COMPRESSORS: positioned inside a soundproofed housing, with panels insulated with optimum sound-absorbing material.

EXtra low noise Configuration (AX)

In addition to the characteristics given in the Low Noise version (AS), the extra Low Noise version (AX) provides for the following configurations:

- FANS: further fan speed reduction
- SOURCE SIDE HEAT EXCHANGER: larger than to the basic version, to further increase the heat exchange coefficient.

* Main accessories/Options

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 =-10°C)

Unit external Storage and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.

Remote Control, repeats the functions of the control system (max. 100 m).

Compressor Soft-starter,

Compressor retiming condensers,

Compressor and fan thermal magnet switches

Basic Configuration (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	
Cooling capacity (E)	359	398	454	506	560	643	692	803	865	978	1090	1182	kW
Total power input	115	127	144	159	174	201	214	250	271	310	338	358	kW
EER (E)	**3,12**	**3,13**	**3,15**	**3,18**	**3,22**	**3,20**	**3,23**	**3,21**	**3,19**	**3,15**	**3,22**	**3,30**	-
ESEER (E)	**3,92**	**3,95**	**3,97**	**4,01**	**4,04**	**4,07**	**4,10**	**4,06**	**4,06**	**4,02**	**4,09**	**4,21**	-
Water flow rate	17,2	19,0	21,7	24,2	26,8	30,7	33,1	38,4	41,3	46,7	52,1	56,5	l/s
Water pressure drop (E)	51	45	40	48	39	49	52	57	50	51	64	53	kPa
Available static head 2 poles pump	105	88	95	65	108	97	90	116	100	90	96	76	kPa
Available static high-head 2 poles pump	159	135	149	122	157	156	155	167	153	146	158	136	kPa
Available static extra-high-head 2 poles pump	240	219	242	218	209	207	206	222	210	207	192	154	kPa
Sound level	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
Total - SWL (E)	97	97	97	97	99	99	99	100	100	101	101	102	dB(A)
SPL 1 m	77	77	77	77	79	78	78	79	79	80	79	80	dB(A)
SPL 5 m	69	69	69	69	71	71	71	72	72	73	72	73	dB(A)
SPL 10 m	65	65	65	65	67	67	67	67	67	68	68	69	dB(A)

Low noise Configuration (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	
Cooling capacity (E)	350	389	441	489	547	623	681	781	838	948	1054	1161	kW
Total power input	112	125	142	159	172	203	221	252	277	311	340	365	kW
EER (E)	**3,13**	**3,11**	**3,11**	**3,08**	**3,18**	**3,07**	**3,08**	**3,10**	**3,03**	**3,05**	**3,10**	**3,18**	-
ESEER (E)	**4,14**	**4,13**	**4,12**	**4,00**	**4,20**	**4,17**	**4,19**	**4,20**	**4,09**	**4,15**	**4,21**	**4,33**	-
Water flow rate	16,7	18,6	21,1	23,4	26,1	29,8	32,5	37,3	40,0	45,3	50,4	55,5	l/s
Water pressure drop (E)	48	42	37	44	37	45	49	53	46	47	58	50	kPa
Available static head 4 poles pump	98	84	60	99	79	69	130	77	51	138	94	64	kPa
Sound level	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
Total - SWL (E)	92	92	92	92	93	93	93	95	95	96	96	97	dB(A)
SPL 1 m	72	72	72	72	73	72	72	74	74	75	74	75	dB(A)
SPL 5 m	64	64	64	64	65	65	65	67	67	68	67	68	dB(A)
SPL 10 m	60	60	60	60	61	61	61	62	62	63	63	64	dB(A)

eXtra low noise Configuration (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	
Cooling capacity (E)	337	378	424	466	532	594	655	747	805	920	1031	1130	kW
Total power input	115	128	147	166	179	214	233	263	288	316	353	385	kW
EER (E)	**2,93**	**2,95**	**2,88**	**2,81**	**2,97**	**2,78**	**2,81**	**2,84**	**2,80**	**2,91**	**2,92**	**2,94**	-
ESEER (E)	**4,01**	**4,03**	**3,98**	**3,96**	**4,09**	**3,94**	**3,96**	**4,01**	**3,98**	**4,09**	**4,06**	**4,11**	-
Water flow rate	16,1	18,1	20,3	22,3	25,4	28,4	31,3	35,7	38,5	44,0	49,3	54,0	l/s
Water pressure drop (E)	44	41	36	41	36	42	48	50	44	48	58	49	kPa
Available static head 4 poles pump	107	92	73	113	89	86	145	100	74	149	104	78	kPa
Sound level	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
Total - SWL (E)	87	87	88	88	90	90	90	91	91	92	92	93	dB(A)
SPL 1 m	67	67	68	68	70	69	69	70	70	71	70	71	dB(A)
SPL 5 m	59	59	60	60	62	62	62	63	63	64	63	64	dB(A)
SPL 10 m	55	55	56	56	58	58	58	58	58	59	59	60	dB(A)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Common data		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 V – 3 ph – 50Hz												V-ph-Hz
Quantity-type compressor-n° circ – Part load		2 - TWIN SCREW - 2 - 13/100%												-
Quantity – type evaporator		1 - SHELL & TUBE												-
Connections IN/OUT		150	150	200	200	200	200	200	200	200	200	200	200	DN
Quantity fan		8	8	10	10	10	12	12	14	14	16	20	20	n°
Max fan speed	AB - AS	900	900	900	900	900	900	900	900	900	900	900	900	rpm
	AX	650	650	650	650	650	650	650	650	650	650	650	650	rpm
FLA Full Load Ampere		274	304	341	369	409	478	478	565	602	693	772	772	A
Operation weight (Basic Version)	AB	3639	3805	4636	4953	5196	5337	5637	6882	6912	8169	9400	9670	kg
	AS	3838	4004	4850	5182	5425	5566	5866	7146	7378	8433	9444	9934	kg
	AX	3950	4116	4971	5303	5546	5687	6004	7345	7176	8589	9494	10220	kg

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
- Noise control
- Heating in integration
- ATC function to protect in high ambient air conditions
- Function climate control evolved (temperature scrolling)

Cooling

Operation limits	Unit type	min	max	
Ambient air	IR, BR	15 (-10*)	50 (55**)	(°C)
Leaving water temperature	IR	5	15	(°C)
Leaving water temperature	BR	-8	5	(°C)
Leaving water temperature De-supeheated (VD)	IR, BR	40	55	(°C)
Leaving water temperature Totale Recovery (VR)	IR, BR,	40	55	(°C)

* with accessories DCC condensation control device

** with ATC regolation for protection high ambient air

* Specification unit VD

These versions come complete with an additional heat exchanger to recover heat energy otherwise wasted in the air.

De-supeheated "IR VD"

Cooling only version, allows the production of cold water as in the standard version and, simultaneously, of hot water at temperatures from 40 to 55 ° 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 HEAT RECOVERY "IR VR"

Available in Cooling only version, 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, either by a valve placed on the outlet of the compressors on each circuit.

De-supeheated Version (VD) - Basic Configuration (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	
Cooling capacity	373	414	472	526	582	669	720	835	900	1017	1134	1229	kW
Total power input	112	124	140	155	169	196	208	243	264	302	329	348	kW
EER	**3,33**	**3,35**	**3,37**	**3,40**	**3,44**	**3,42**	**3,46**	**3,43**	**3,41**	**3,37**	**3,45**	**3,53**	-
Water flow rate	17,8	19,8	22,6	25,1	27,8	31,9	34,4	39,9	43,0	48,6	54,2	58,7	l/s
Water pressure drop	65	58	52	61	51	62	61	72	63	66	84	65	kPa
Heating recovery capacity	93	104	116	130	144	165	177	207	227	259	278	297	kW
Water flow rate recovery	4,4	5,0	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 rec.	10	12	15	9	11	11	13	18	15	11	14	15	kPa

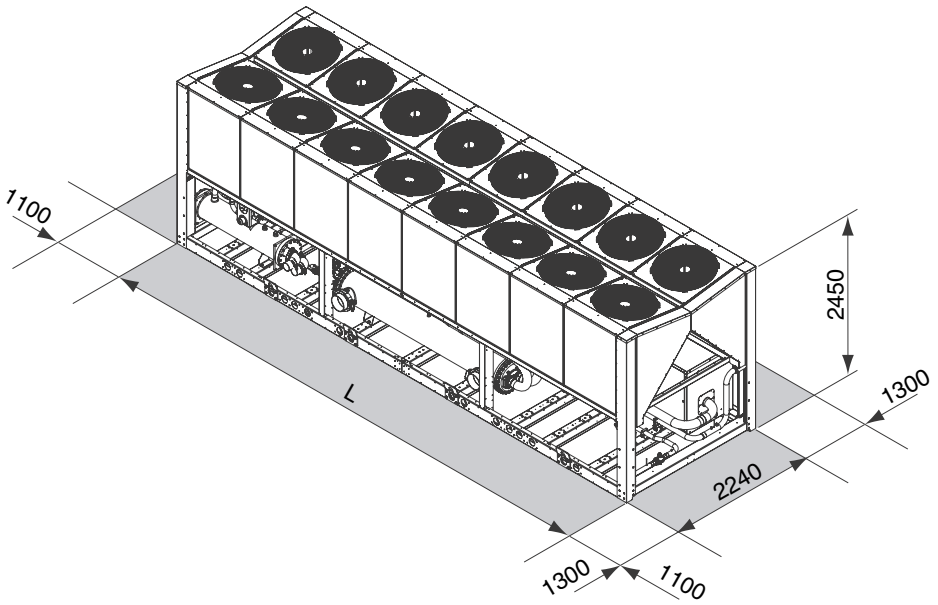
Total Recovery version (VR) - Basic Configuration (AB)

	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Cooling capacity	357	393	450	503	555	640	690	801	872	1000	1093	1179	kW
Total power input	104	118	130	143	158	182	194	226	244	275	302	323	kW
EER	**3,43**	**3,33**	**3,46**	**3,52**	**3,51**	**3,52**	**3,56**	**3,54**	**3,57**	**3,64**	**3,62**	**3,65**	-
Water flow rate	17,1	18,8	21,5	24,0	26,5	30,6	33,0	38,3	41,7	47,8	52,2	56,3	l/s
Water pressure drop	59	52	47	55	46	57	56	66	59	64	78	59	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	71,0	l/s
Water pressure drop rec.	30	37	48	49	51	47	49	49	58	54	54	52	kPa

NOTES:

Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B. during heat recovery operation. Heating recovery capacity: water 40/45°C.

Dimensions and minimun operating space



	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	4070	4070	5005	5005	5005	5950	5950	6900	6900	7810	10000	10000	mm

> RPC

AIR COOLED AIR COOLED WATER CHILLERS AND HEAT PUMPS

* Units Series

Tipologia
IR chiller
IP reversible heat pump

Available version
VB Basic

Available configuration
AB Basic

* Unit specifications

This range of air-water heat pumps and chillers is designed to meet the climate control and air conditioning needs of small capacity systems in the residential sector.
These units are chillers and air/water heat pumps with centrifugal fans suitable for indoor installation.
Compact and highly configurable units, they are built to adapt to the various types of systems and to meet the requirements of highly qualified designers.

■ COMPRESSORS: no. 1 orbiting spiral or rotary vane SCROLL type (depending on the model) mounted on vibration-mounting rubber supports and covered with sound-absorbing material to limit noise.
■ FAN: quantity no. 1 centrifugal type complete with safety grill, with forward wheel blades for greater head and variable rotation speed according to the outside temperature and compressor working pressure.
■ PLANT SIDE HEAT EXCHANGER :: braze-welded plate-type in stainless steel (AISI 316), fitted inside a thermal insulation shell, integrated (standard) with antifreeze heater and differential pressure switch on the water circuit to prevent risk of freezing in case of no water flow.
■ IR REFRIGERANT CIRCUIT, complete with manual-reset high pressure switch and automatic-reset low pressure switch, liquid/humidity indicator, thermostatic valve with external equaliser, gas safety valve and cartridge dehydrator filter
■ IP REFRIGERANT CIRCUIT, in addition to the cooling only components, it is integrated with one-way valves and 4-way reversing valve.
■ SOURCE SIDE HEAT EXCHANGER : of large size, it is a finned pack type in copper aluminium with notched profile to increase the coefficient of thermal exchange. At the bottom it is integrated with a heat pump mode subcooling section to prevent the overflow of condensate during operation and in the defrost stage.
■ ELECTRICAL PANEL: for command and control suitable for outdoor installation (min. protection rating IP 54), positioned inside the unit and complete with all electrical protection devices according to the current regulations. The phase sequence control is provided standard for versions with three-phase power supply.
■ CONTROL ON UNIT: the LCD UNIT CONTROL terminal enables access to all main system functions.

* Main accessories/Options

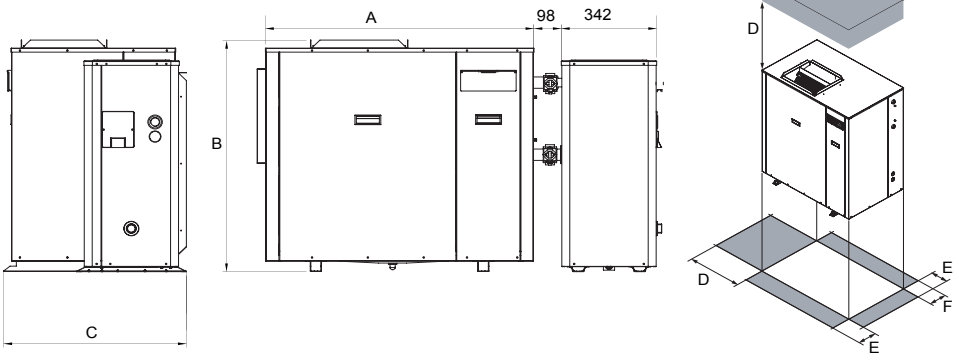
SP Storage and pumping module
Quickly combinable next to the chiller and thermally insulated with polyurethane foams is complete with pressure gauge, safety valve, drain stop valve, connection for antifreeze heater (accessory), automatic air vent (for tank only) and manual (for the pipes and system), metal cartridge water filter and expansion tank. The module is proposed standard in these configurations:
■ Standard version (NP) equipped with 3-speed circulating pump for model RPC 19-30 and multistage pump for model RPC 38-50.
■ High head version (AP) equipped with multistage pump for model RPC 19-30 with high head to meet the majority of particular system requirements.
Rubber vibration dampers,
Victaulic connections,
Flexible tube kit for connection between the unit and SP
Remote control,
Programmer Clock,
Tank antifreeze electric heater,
Electronic controller available for management in sequence of up to 3 or 6 chillers connected in parallel.

Common Data	19.1	30.1	38.1	42.1	50.1	
Supply	230-1-50	230-1-50 400-3-50	230-1-50 400-3-50	400-3-50	400-3-50	V-ph-Hz
Quantity-type compressor-part load	1-Rotary - 0/100%	1-Scroll-0/100%				-
Quantity-type evaporator	1 - of brazed stainless steel plates					-
Water connection IN/OUT	1" M					"GAS
Water content evaporator	0,26		0,46	0,53	0,6	l
Fan	1 - Centrifugal type					-
Water content storage tank	30	33	55	55	55	l
Operation weight	103	127	162	169	178	Kg
F.L.A. Full Load Ampere	21,6	25,6 13,1	33,6 20,1	22,6	24,6	A
Cooling only(IR)	**19.1**	**30.1**	**38.1**	**42.1**	**50.1**	
Cooling capacity (E)	6,23	8,45	10,7	13,1	15,3	kW
Total power input	2,74	3,64	4,82	5,80	6,65	kW
EER (E)	**2,27**	**2,32**	**2,22**	**2,26**	**2,3**	-
Water flow rate	0,3	0,4	0,51	0,62	0,73	l/s
Water pressure drop (E)	34	39	33	37	40	kPa
Available static head (NP/AP)	44/134	35/116	104	78	48	kPa
Heat pump (IP)	**19.1**	**30.1**	**38.1**	**42.1**	**50.1**	
Cooling capacity (E)	5,93	8,15	10,4	12,7	15	kW
Total power input	2,75	3,54	4,64	5,59	6,55	kW
EER (E)	**2,16**	**2,3**	**2,24**	**2,27**	**2,29**	-
Water flow rate	0,28	0,38	0,49	0,6	0,71	l/s
Water pressure drop (E)	31	35	31	35	38	kPa
Available static head (NP/AP)	48/140	40/123	108	84	56	kPa
Heating capacity (E)	6,46	8,84	10,6	13,3	15	kW
Total power input	2,98	3,73	4,82	5,76	6,52	kW
COP (E)	**2,17**	**2,37**	**2,20**	**2,31**	**2,30**	-
Water flow rate	0,31	0,43	0,51	0,64	0,72	l/s
Water pressure drop (E)	37	43	34	40	39	kPa
Available static head (NP/AP)	40/130	28/105	104	72	52	kPa
Sound level	**19.1**	**30.1**	**38.1**	**42.1**	**50.1**	
SWL (E)	74	76	82	82	83	dB(A)
SPL 1 m	60	62	67	67	68	dB(A)
SPL 5 m	48	50	56	56	57	dB(A)
SPL 10 m	43	45	51	51	52	dB(A)

NOTE:
Cooling capacity: water 12/7°C - Ambient air 35°C D.B. **Heating capacity**: water 40/45°C - ambient air 7°C D.B., 6 W.B.
(E): data declared according to LCP EUROVENT certification program
SWL Sound power levels, with reference to 1x10-12 W in dB(A), measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic
SPL Sound pressure levels, with reference to 2x10-5 Pa values calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meters away from the external surface of units operating in the open field with directivity factor 2 and the units operating in nominal conditions in the cooling mode (ambient air T=35°C, water 7/12°C).

Dimensions and minimun operating space

		19 - 30	38 - 50
A	mm	962	1051
B	mm	834	1145
C	mm	642	718
D	mm	2500	2500



> RMC
AIR COOLED WATER CHILLERS AND HEAT PUMPS

* Units Series

Tipologia
IR chiller
IP reversible heat pump

Available version
VB Basic

Available configuration
AB Basic

* VB unit specifications

This range of air-water heat pumps and chillers are designed to meet the climate control and air conditioning needs of medium-small capacity systems in the industrial, residential and commercial sectors.
These units are air/water heat pumps with helical fans suitable for outdoor installation.
When developing the units, special attention was also paid to the problems of noise, in order to comply with increasingly strict laws on noise pollution.
Compact and highly configurable units, they are built to adapt to the various types of system design and meet the requirements of highly qualified designers.

Basic Version (VB) and (AB) Basic Configuration units

- COMPRESSOR: no. 1 SCROLL type, mounted on vibration-mounting rubber supports, complete with high and low pressure switch.
- IR REFRIGERANT CIRCUIT, complete with thermostatic valve with external equaliser, liquid/humidity indicator and cartridge dehydrator filter
- IP REFRIGERANT CIRCUIT, in addition to the cooling only model, is the circuit supplied with a liquid receiver, one-way valves and 4-way reversing valve
- PLANT SIDE HEAT EXCHANGER : braze-welded plate-type exchanger in stainless steel (AISI 316), complete with thermal insulation, antifreeze heater and differential pressure switch.
- SOURCE SIDE HEAT EXCHANGER : finned coil with copper pipes and aluminium fins.
- FAN : quantity no. 2 dual-intake centrifugal fans with forward blades, statically and dynamically balanced. The pulley fitted on the motor has variable diameter and, within certain limits, enables fan speed adjustment to obtain the required air flow-rate and useful head values.
- ELECTRICAL PANEL: for command and control suitable for outdoor installation (min. protection rating IP 54), housed within a sheet metal enclosure complete with all electrical protection devices according to the current regulations.
- CONTROL: the UNIT CONTROL terminal with Display enables access to all the main system functions and the display of alarms.

Basic Version (VB) and Basic Configuration + Low noise kit (AB+KS)

In addition to the characteristics given in the Basic Version (AB), the Basic Version + Low noise Kit (AB+KS) provides for:
- FANS: reduced speed.
- COMPRESSORS: covered with a soundproofing jacket.

To further reduce the noise level, the compartment is covered with sound-absorbing material of suitable thickness.

* Main accessories/Options

Integrated storage and pumping modules available in the configurations :
storage in delivery
standard pump
high head pump
Coil protection grills
Rubber vibration dampers
Compressor soft starter
Antifreeze tank heater
Inverter fan kit
Damper fan kit
Remote control
Serial interface
Programmer clock
Voltage monitor and sequence meter

Common Data	19.1	22.1	26.1	30.1	40.1	51.1	
Supply	400V - 3ph+N - 50 Hz						V-ph-Hz
Quantity-type compressor-n° circ.-part load	1 - Scroll - 1 - 0/100%						-
Quantity-type evaporator	1 - of brazed stainless steel plates						-
Water content evaporator	1,40	1,70	2,00	2,30	3,10	4,20	l
Quantity-type-Max fan speed	1 - pair of dual-intake centrifugal fans						n°-mm-rpm
Water content storage tank	140				180		l
Water connection IN/OUT	1" ¼ - 1" ¼				1" ¼ - 1" ½		"
Operation weight with MAP	483	492	506	512	712	764	Kg
F.L.A. Full Load Ampere	21	26	27	30	40	49	A

Basic Configuration (AB)

Cooling only (IR)	19.1	22.1	26.1	30.1	40.1	51.1	
Cooling capacity (E)	19,2	22,3	26,0	29,1	40,8	51,7	kW
Total power input	8,30	9,00	10,1	11,5	14,7	19,5	kW
EER (E)	2,31	2,48	2,56	2,53	2,78	2,65	-
ESEER (E)	**2,97**	**3,13**	**3,30**	**3,21**	**3,56**	**3,35**	-
Water flow rate	0,92	1,07	1,24	1,39	1,95	2,47	l/s
Water pressure drop (E)	37	33	34	34	47	43	kPa
Available static head	121	112	98	81	97	72	kPa
Heat pump (IP)	**19.1**	**22.1**	**26.1**	**30.1**	**40.1**	**51.1**	
Cooling capacity (E)	18,7	21,9	25,6	28,2	39,1	49,7	kW
Total power input	8,10	8,83	10,00	11,2	14,1	18,8	kW
EER (E)	2,31	2,48	2,56	2,53	2,78	2,65	-
ESEER (E)	**2,92**	**3,25**	**3,25**	**3,20**	**3,80**	**3,36**	-
Water flow rate	0,89	1,05	1,22	1,35	1,87	2,37	l/s
Water pressure drop (E)	35	32	33	32	43	40	kPa
Available static head	126	115	101	87	105	82	kPa
Heating capacity (E)	20,4	23,5	27,6	29,4	41,0	51,3	kW
Total power input	8,20	9,00	10,3	11,0	14,7	18,4	kW
COP (E)	**2,49**	**2,61**	**2,68**	**2,67**	**2,79**	**2,79**	-
Water flow rate	0,97	1,12	1,32	1,40	1,96	2,45	l/s
Water pressure drop (E)	42	37	38	35	47	43	kPa
Available static head	112	104	85	79	95	74	kPa

Basic Configuration (AB)

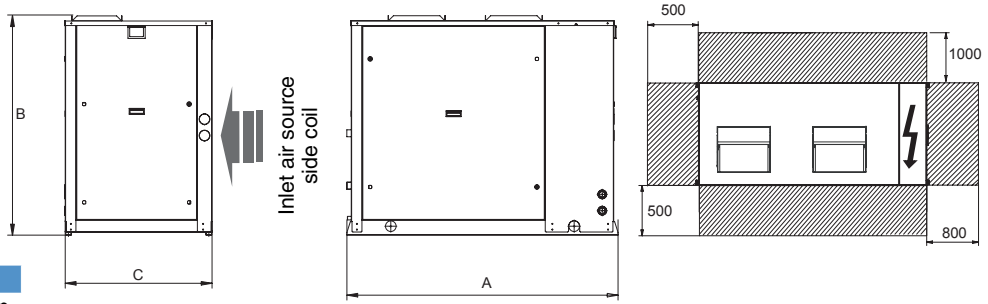
	19.1	22.1	26.1	30.1	40.1	51.1	
Totale - SWL (E)	84	84	84	84	85	85	dB(A)
SPL 1 m	67	67	67	67	68	68	dB(A)
SPL 5 m	57	57	57	57	59	59	dB(A)
SPL 10 m	52	52	52	52	53	53	dB(A)

Basic Configuration + Low noise kit (AB+KS)

	19.1	22.1	26.1	30.1	40.1	51.1	
Totale - SWL	81	81	81	81	82	82	dB(A)
SPL 1 m	65	65	65	65	65	65	dB(A)
SPL 5 m	55	55	55	55	56	56	dB(A)
SPL 10 m	50	50	50	50	50	50	dB(A)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B. Heating performance values measured with EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.
(E): Declared data according to the certification programme LCP EUROVENT ESEER : European seasonal efficiency rating in cooling.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Dimensions and minimun operating space



	19.1	22.1	26.1	30.1	40.1	51.1	
A	1655				2055		mm
B	896				896		mm
C	1474				1674		mm
E	1100				1400		mm

> RGC

AIR COOLED WATER CHILLERS AND HEAT PUMPS

* Units Series

Type

IR	chiller
IP	reversible heat pump
BR	chiller brine
BP	reversible heat pump brine

Available version

VB	Basic
VD	De-supeheated

Available configuration

AB	Basic
AS	Low noise

* VB unit specifications

Industrial chillers and heat pumps designed to meet the requirements of the global markets for medium capacity systems in the industrial and commercial sectors.

Compact and highly configurable units, they are built to adapt to the various types of system design and meet the requirements of highly qualified designers .

When developing the range, special attention has been paid to obtaining high performance enabling efficiency at full load, maximum seasonal efficiency at partial loads, reduced consumption, and low noise levels in order to comply with increasingly strict laws on noise pollution. On request, it is possible to choose from the Basic Version (AB), Low Noise Version (AS). All the units are carefully built in compliance with the current regulations and individually tested. Installation only requires the electrical and hydraulic connections.

Basic Version (VB) and Basic Configuration (AB)

- COMPRESSOR: no. 2 SCROLL type, mounted on vibration-mounting rubber supports, complete with high and low pressure switch.
- IR REFRIGERANT CIRCUIT complete with liquid stop valve and compressor shut-off valve, liquid/humidity indicator, mechanical expansion valve, gas safety valve and dehydrator filter.
- IP REFRIGERANT CIRCUIT integrated with liquid receiver, liquid separator, one-way valves and 4-way reversing valve.
- PLANT SIDE HEAT EXCHANGER: braze-welded plate-type in stainless steel (AISI 316), complete with thermal insulation shell, antifreeze heater and differential pressure switch.
- SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,
- FAN : dual-intake centrifugal fans type, TWIN VERSION or BELT VERSION depending by model, with forward blades, statically and dynamically balanced. On BELT VERSION the pulley fitted on the motor has variable diameter and, within certain limits, enables fan speed adjustment to obtain the required air flow-rate and useful head values.
- ELECTRICAL PANEL: control and command electrical panel with a main door lock disconnecting switch, microprocessor controller containing the electrical equipment and all the components with minimum protection rating IP54.

Low noise Configuration (AS)

In addition to the characteristics given in the Basic version (AB), the Low noise version (AS) provides for the following configurations:

- FANS: reduced speed.
- COMPRESSORS: covered with a soundproofing jacket.

To further reduce the noise level, the compartment is covered with sound-absorbing material of suitable thickness.

* Main accessories/Options

Pumping Modules
available in configurations:
- without storage
- storage in system delivery
- storage prearranged for primary and secondary circuit
- 1 or 2 pumps
- standard or high head pumps
- variable flow pump

Paddle flowswitch
Remote Control repeats the functions of the control system (max. 100 m)
Voltage monitor and sequence meter
Compressor Soft-starter
Compressor retiming condensers
Compressors and fan thermal magnetic switches
Inverter fan kit

Basic Configuration (AB)

Cooling only (IR)	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 (E)	53,5	58,6	68,8	78,7	91,0	102	112	126	143	158	180	200	kW
Total power input	18,0	20,0	23,3	27,3	30,6	34,1	37,9	42,9	52,9	58,7	66,5	73,7	kW
EER (E)	**2,97**	**2,93**	**2,95**	**2,88**	**2,97**	**2,99**	**2,96**	**2,94**	**2,70**	**2,69**	**2,71**	**2,71**	-
ESEER (E)	**4,10**	**4,04**	**4,07**	**3,98**	**4,10**	**4,13**	**4,08**	**4,05**	**3,73**	**3,71**	**3,74**	**3,74**	-
Water flow rate	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
Water pressure drop (E)	42	51	48	40	40	40	40	39	39	39	58	57	kPa
Available static head	135	116	97	75	143	129	113	92	116	95	141	107	kPa
Heat pump (IP)	**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 (E)	52,9	57,5	67,2	74,1	89,2	99,0	110	122	138	154	178	198	kW
Total power input	18,2	19,9	23,4	26,4	28,4	32,0	37,8	42,4	51,8	58,0	65,5	73,4	kW
EER (E)	**2,91**	**2,89**	**2,87**	**2,81**	**3,14**	**3,09**	**2,91**	**2,88**	**2,66**	**2,66**	**2,72**	**2,70**	-
ESEER (E)	**4,01**	**3,99**	**3,96**	**3,87**	**4,33**	**4,27**	**4,02**	**3,97**	**3,68**	**3,66**	**3,75**	**3,72**	-
Water flow rate	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
Water pressure drop (E)	41	49	46	35	38	38	39	37	36	37	57	56	kPa
Available static head	138	120	102	85	149	137	117	98	125	100	144	109	kPa
Heating capacity (E)	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
Total power input	18,2	20,0	23,5	26,8	29,4	32,0	38,8	42,5	53,0	58,2	66,7	73,5	kW
COP (E)	**3,16**	**3,13**	**3,14**	**3,07**	**3,36**	**3,41**	**3,20**	**3,18**	**2,89**	**2,94**	**2,92**	**2,91**	-
Water flow rate	2,75	2,99	3,53	3,93	4,72	5,22	5,92	6,45	7,31	8,17	9,32	10,23	l/s
Water pressure drop (E)	48	58	55	44	47	46	49	45	45	46	68	65	kPa
Available static head	117	102	84	69	121	112	92	80	101	81	120	93	kPa

Basic Configuration (AB)

	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
SWL (E)	89	89	89	89	91	91	96	96	97	97	98	98	dB(A)
SPL 1 m	71	71	71	71	73	73	78	78	79	79	80	80	dB(A)
SPL 5 m	62	62	62	62	65	65	69	69	70	70	71	71	dB(A)
SPL 10 m	57	57	57	57	59	59	64	64	65	65	66	66	dB(A)

Low noise Configuration (AS)

	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
SWL (E)	86	86	86	86	88	88	93	93	94	94	95	95	dB(A)
SPL 1 m	68	68	68	68	70	70	75	75	76	76	77	77	dB(A)
SPL 5 m	59	59	59	59	62	62	66	66	67	67	68	68	dB(A)
SPL 10 m	54	54	54	54	56	56	61	61	62	62	63	63	dB(A)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.
Heating performance values measured with EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Common Data	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	0
Supply	400V - 3ph+N - 50 Hz				400V - 3p - 50 Hz								V-ph-Hz
Quantity-type compressor-n° circ.-part load	2 - Scroll - 2 - 0/50/100												-
Quantity-type evaporator	1 - of brazed stainless steel plates												-
Water content evaporator	3,61	3,61	4,56	5,42	7,56	8,4	9,66	10,92	12,6	14,49	11,1	13	l
Quantity - type fan	1 - twin version				1 - twin version + 1 - Belt Driven		3 - Belt Driven				4 - Belt Driven		n°-mm-rpm
Water content storage tank	200				400						460		l
Water connection IN/OUT	2"				2"1/2								"
Operation weight with 2 pump	1102	1102	1143	1168	1684	1765	1972	2000	2042	2094	2301	2330	Kg
F.L.A. Full Load Ampere	58,9	61,6	69	79,3	86,8	92,4	109	117	146	161	189	204	A

USER INTERFACING

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

- Dynamic Defrost
- Demand Limit
- Economy
- Sound managing
- Heating in integration
- ATC function to protect in high ambient air conditions
- Function climate control evolved (temperature scrolling)

Operation limits	Unit type	Cooling min	Cooling max	Heating min	Heating max	
Ambient air	IR, BR, IP, BP	-10	50	-7	40	(°C)
Leaving water temperature	IR, IP	5	25	30	55	(°C)
Leaving water temperature	BR, BP	-12	25	30	55	(°C)
Leaving water temperature De-supeheated (VD)	IR, BR, IP, BP	30	70	30	70	(°C)

* VD unit specifications

These versions are complete with an additional heat exchanger to recover thermal energy otherwise dispersed in the air.

De-supeheated “IR VD”

The cooling only version enables the production of cold water as in the standard version and, at the same time, hot water at temperatures of 30 to 70°C. This is possible by installing a water-refrigerant gas heat exchanger between the compressor and finned coil enabling heat recovery of 15 to 20% of the heating power.

De-supeheated “IP VD”

As in the previous version, but applied to a reversible unit. It enables the production of hot and cold water by the main exchanger, and recovery at the same time.

Cooling only (IR) - De-supeheated Version (VD) - Basic Configuration (AB)

_	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	55,6	60,9	71,6	81,8	94,6	106	116	131	149	164	187	208	kW
Total power input	17,5	19,4	22,6	26,5	29,7	33,1	36,8	41,6	51,3	56,9	64,5	71,5	kW
EER	**3,19**	**3,14**	**3,17**	**3,09**	**3,19**	**3,21**	**3,17**	**3,15**	**2,90**	**2,89**	**2,90**	**2,91**	-
Water flow rate	2,66	2,91	3,42	3,91	4,52	5,07	5,57	6,26	7,11	7,85	8,94	9,94	l/s
Water pressure drop	45	55	52	43	43	43	43	42	42	42	63	62	kPa
Heating recovery capacity	15,7	17,6	20,0	23,6	27,1	30,4	34,4	38,4	44,0	49,3	55,4	61,3	kW
Water flow rate recovery	0,75	0,84	0,96	1,13	1,29	1,45	1,64	1,83	2,10	2,36	2,65	2,93	l/s
Water pressure drop rec.	9	11	14	19	15	18	11	14	18	22	18	21	kPa

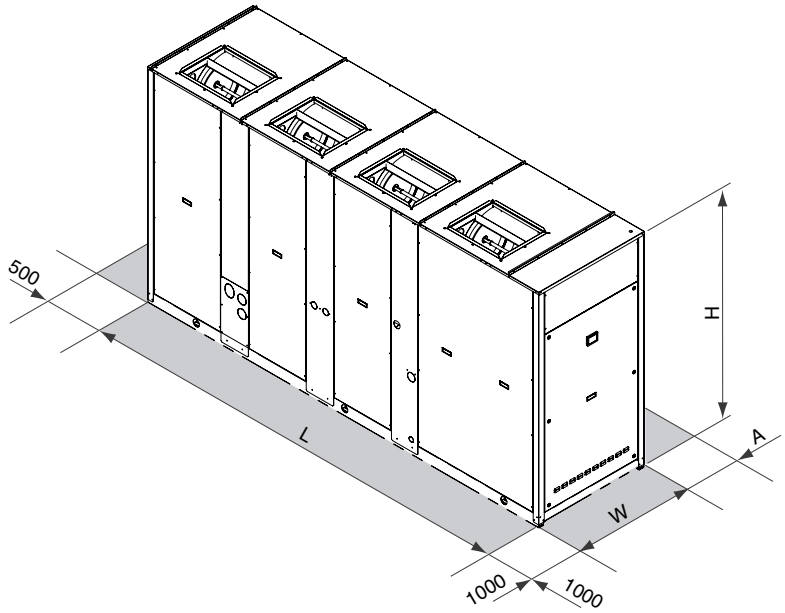
Heat pump (IP) -De-supeheated version (VD) - Basic Configuration (AB)

	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	55,0	59,8	69,9	77,1	92,8	103	114	127	144	160	185	206	kW
Total power input	17,7	19,3	22,7	25,6	27,5	31,0	36,7	41,1	50,2	56,3	63,5	71,2	kW
EER	**3,12**	**3,10**	**3,08**	**3,01**	**3,37**	**3,32**	**3,12**	**3,09**	**2,86**	**2,85**	**2,91**	**2,89**	-
Water flow rate	2,63	2,86	3,34	3,68	4,43	4,92	5,47	6,06	6,86	7,65	8,84	9,84	l/s
Water pressure drop	44	53	49	38	41	41	42	40	39	40	61	60	kPa
Heating recovery capacity	15,2	17,0	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	0,73	0,81	0,93	1,10	1,25	1,39	1,58	1,77	2,03	2,27	2,50	2,78	l/s
Water pressure drop rec.	8	10	13	18	14	17	10	13	17	20	16	19	kPa

NOTES:

Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B. during heat recovery operation. Heating recovery capacity: water 40/45°C.

Dimensions and minimun operating space



	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	2501				3343						4097		mm
W	954				1104								mm
H	1760						2160						mm
A	800						1000						mm

> RGW

WATER COOLED WATER CHILLERS AND HEAT PUMPS

* Units Series

Type

IR	chiller
IW	water side reversible chiller
IP	reversible heat pump
BR	chiller brine
BW	water side reversible chiller brine
BP	reversible heat pump brine

Available version

VB	Basic

Available configuration

AB	Basic
AS	Low noise
AX	eXtra Low noise

* VB unit specifications

RGW units are industrial chillers and heat pumps using R410A ecological gas, designed to meet the requirements of the global markets for medium/small capacity systems in the commercial sectors.

Compact and highly configurable units, they are built to adapt to the various types of systems and to meet the requirements of highly qualified designers.

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.

Attention has also been paid to the problems of noise in order to comply with increasingly strict laws on noise pollution: therefore, on request it is possible to choose from the Basic Version (AB), Low noise Version (AS), featuring the application soundproofing jackets on the compressors, and the Extra Low noise Version (AX), for a further considerable reduction in unit noise thanks to the use of soundproofing materials.

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 system 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 by combined with liquid coolers (dry-coolers), cooling towers, geothermal boreholes or used for water cooling (e.g. water system, well, stratum).

All the units are carefully built in compliance with the current regulations and individually tested. Installation therefore only requires the electrical and hydraulic connections.

Cooling only unit (IR)

- COMPRESSOR: no. 2 SCROLL type, mounted on rubber vibration-mounting supports, complete with high and low pressure switch.
- IR REFRIGERANT CIRCUIT, complete with liquid/humidity indicator, thermostatic expansion valve, gas safety valve and dehydrator filter.
- IP REFRIGERANT CIRCUIT integrated with one-way valves and 4-way reversing valve.
- PLANT SIDE HEAT EXCHANGER: braze-welded plate-type in stainless steel (AISI 316), complete with thermal insulation shell and differential pressure switch.
- SOURCE SIDE EXCHANGER (unit IR): braze-welded plate-type in stainless steel (AISI 316)
- SOURCE SIDE EXCHANGER (unit IW): braze-welded plate-type in stainless steel (AISI 316), complete with thermal insulation shell
- SOURCE SIDE HEAT EXCHANGER (unit IP): braze-welded plate-type in stainless steel (AISI 316), complete with thermal insulation shell and differential pressure switch.
- ELECTRICAL PANEL: for power and control complete with door lock main disconnecting switch, microprocessor controller with keyboard-display, and sequence meter (standard).

* Main accessories/Options

Electronic expansion valve

Pumping Modules

- 1 or 2 pumps on source side
- 1 or 2 pumps on system side
- standard or high head pumps

Plate-type exchangers antifreeze heaters

Paddle flowswitch

Water filter

Remote Control repeats the functions of the control system (max. 100 m)

Voltage monitor and sequence meter

Compressor Soft-starter

Compressor retiming condensers

Compressor thermal magnetic switches

Outdoor installation

2-way valve for condensation control

3-way valve for condensation control

Common Data	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Supply	400V - 3ph - 50Hz											V-ph-Hz
Quantity-type compressor - n° circ - part load	2 - SCROLL - 1 - 0/50/100%											-
Quantity-type heat exchanged plant side	1 - of brazed stainless steel plates											-
Water content heat exchanged plant side	4	4	5	5	6	7	7	9	10	11	13	l
Water connection IN/OUT heat exchanged plant side	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	
Quantity-type heat exchanged source side	1 - of brazed stainless steel plates											n°-mm-rpm
Water content heat exchanged source side	4	4	5	5	6	7	7	9	10	11	13	l
Water connection IN/OUT heat exchanged source side	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	"
F.L.A. Full Load Ampere	45	51	62	68	74	82	90	105	120	142	164	A

Cooling Only (IR)

_	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Cooling capacity (E)	70,0	79,0	92,0	105	118	133	148	170	192	216	240	kW
Total power input	15,0	16,8	20,3	23,3	26,3	29,8	33,3	37,8	42,3	48,4	54,5	kW
EER (E)	**4,67**	**4,70**	**4,53**	**4,51**	**4,49**	**4,46**	**4,44**	**4,50**	**4,54**	**4,46**	**4,40**	-
ESEER (E)	**6,07**	**6,16**	**6,00**	**5,87**	**5,94**	**5,81**	**5,86**	**5,95**	**5,90**	**5,91**	**5,74**	-
Water flow rate source side	3,34	3,77	4,40	5,02	5,64	6,35	7,07	8,12	9,17	10,32	11,47	l/s
Water pressure drop source side (E)	47	38	40	41	44	42	45	46	48	48	49	kPa
Available static head source side	-	-	-	-	-	-	-	-	-	-	-	kPa
Water flow rate plant side	4,03	4,54	5,32	6,07	6,83	7,71	8,58	9,84	11,1	12,5	13,9	l/s
Water pressure drop plant side (E)	68	55	59	60	65	62	66	67	70	71	72	kPa
Available static head plant side	-	-	-	-	-	-	-	-	-	-	-	kPa

Water side reversible heat pump (IW)

_	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Cooling capacity (E)	70,0	79,0	92,0	105	118	133	148	170	192	216	240	kW
Total power input	15,0	16,8	20,3	23,3	26,3	29,8	33,3	37,8	42,3	48,4	54,5	kW
EER (E)	**4,67**	**4,70**	**4,53**	**4,51**	**4,49**	**4,46**	**4,44**	**4,50**	**4,54**	**4,46**	**4,40**	-
ESEER (E)	**6,07**	**6,16**	**6,00**	**5,87**	**5,94**	**5,81**	**5,86**	**5,95**	**5,90**	**5,91**	**5,74**	-
Water flow rate source side	3,34	3,77	4,40	5,02	5,64	6,35	7,07	8,12	9,17	10,3	11,5	l/s
Water pressure drop source side (E)	47	38	40	41	44	42	45	46	48	48	49	kPa
Available static head source side	-	-	-	-	-	-	-	-	-	-	-	kPa
Water flow rate plant side	4,03	4,54	5,32	6,07	6,83	7,71	8,58	9,84	11,1	12,5	13,9	l/s
Water pressure drop plant side (E)	68	55	59	60	65	62	66	67	70	71	72	kPa
Available static head plant side	-	-	-	-	-	-	-	-	-	-	-	kPa
Heating capacity (E)	78,0	87,0	103	117	131	148	165	189	213	240	268	kW
Total power input	19,0	21,0	25,2	28,7	32,2	36,4	40,7	46,3	51,9	58,6	65,4	kW
COP (E)	**4,11**	**4,14**	**4,09**	**4,08**	**4,07**	**4,07**	**4,05**	**4,08**	**4,10**	**4,10**	**4,10**	-
Water flow rate source side	3,73	4,16	4,92	5,59	6,26	7,07	7,88	9,03	10,18	11,47	12,80	l/s
Water pressure drop source side (E)	58	46	50	51	54	52	56	57	59	59	61	kPa
Available static head source side	-	-	-	-	-	-	-	-	-	-	-	kPa
Water flow rate plant side	3,34	3,77	4,40	5,02	5,64	6,35	7,07	8,12	9,17	10,32	11,47	l/s
Water pressure drop plant side (E)	47	38	40	41	44	42	45	46	48	48	49	kPa
Available static head plant side	-	-	-	-	-	-	-	-	-	-	-	kPa

NOTES:
Cooling capacity values measured with plant side water 12/7°C - source side 30/35°C
Heating capacity values measured with plant side water 40/45°C - source side 10°C water flow rate as conditioning.
(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.

Reversible heat pump (IP)

_	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Cooling capacity (E)	68,6	77,4	90,2	103	116	130	145	167	188	212	235	kW
Total power input	14,9	16,6	20,1	23,1	26,0	29,5	33,0	37,4	41,9	47,9	54,0	kW
EER (E)	**4,62**	**4,65**	**4,49**	**4,46**	**4,44**	**4,42**	**4,40**	**4,45**	**4,49**	**4,42**	**4,36**	-
ESEER (E)	**6,01**	**6,10**	**5,94**	**5,81**	**5,88**	**5,75**	**5,80**	**5,89**	**5,84**	**5,85**	**5,68**	-
Water flow rate source side	3,28	3,70	4,31	4,92	5,53	6,23	6,93	7,96	8,99	10,1	11,2	l/s
Water pressure drop source side (E)	45	36	38	39	42	40	43	44	46	46	47	kPa
Available static head source side	-	-	-	-	-	-	-	-	-	-	-	kPa
Water flow rate plant side	3,95	4,45	5,22	5,96	6,71	7,57	8,43	9,66	10,9	12,3	13,7	l/s
Water pressure drop plant side (E)	66	53	56	58	62	60	64	65	68	68	70	kPa
Available static head plant side	-	-	-	-	-	-	-	-	-	-	-	kPa
Heating capacity (E)	77,0	86,0	102	116	130	147	164	187	211	238	265	kW
Total power input	19,1	21,1	25,3	28,9	32,4	36,6	41,0	46,5	52,0	59,0	65,9	kW
COP (E)	**4,03**	**4,08**	**4,03**	**4,01**	**4,00**	**4,00**	**4,00**	**4,02**	**4,06**	**4,03**	**4,03**	-
Water flow rate source side	3,68	4,11	4,87	5,53	6,20	7,00	7,84	8,94	10,1	11,4	12,7	l/s
Water pressure drop source side (E)	57	45	49	50	53	51	55	56	58	58	60	kPa
Available static head source side	-	-	-	-	-	-	-	-	-	-	-	kPa
Water flow rate plant side	3,95	4,45	5,22	5,96	6,71	7,57	8,43	9,66	10,9	12,3	13,7	l/s
Water pressure drop plant side (E)	66	53	56	58	62	60	64	65	68	68	70	kPa
Available static head plant side	-	-	-	-	-	-	-	-	-	-	-	kPa

NOTES:
Cooling capacity values measured with plant side water 12/7°C - source side 30/35°C
Heating capacity values measured with plant side water 40/45°C - source side 10°C water flow rate as conditioning.
(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.

		Cooling		Heating		
Operation limits	**Unit type**	**min**	**max**	**min**	**max**	
Leaving source water temperature	IR, IW, IP, BR, BP	20 (5*)	50	10	25	(°C)
Leaving plant water temperature	IR, IW, IP	5	20	25	55	(°C)
Leaving plant water temperature	BR, BP	-8	5	25	55	(°C)

* with accessories DCC condensation control device

Basic Configuration (AB)

	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
SWL (E)	75	76	77	77	77	78	78	79	79	80	80	dB(A)
SPL 1 m	59	60	61	61	61	62	62	63	63	64	64	dB(A)
SPL 5 m	49	50	51	51	51	52	52	53	53	54	54	dB(A)
SPL 10 m	44	45	46	46	46	47	47	48	48	49	49	dB(A)

Low noise Configuration (AS)

	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
SWL (E)	71	72	73	73	73	74	74	75	75	76	76	dB(A)
SPL 1 m	55	56	57	57	57	58	58	59	59	60	60	dB(A)
SPL 5 m	45	46	47	47	47	48	48	49	49	50	50	dB(A)
SPL 10 m	40	41	42	42	42	43	43	44	44	45	45	dB(A)

eXtra low noise Configuration (AX)

	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
SWL (E)	67	68	69	69	69	70	70	71	71	72	72	dB(A)
SPL 1 m	51	52	53	53	53	54	54	55	55	56	56	dB(A)
SPL 5 m	41	42	43	43	43	44	44	45	45	46	46	dB(A)
SPL 10 m	36	37	38	38	38	39	39	40	40	41	41	dB(A)

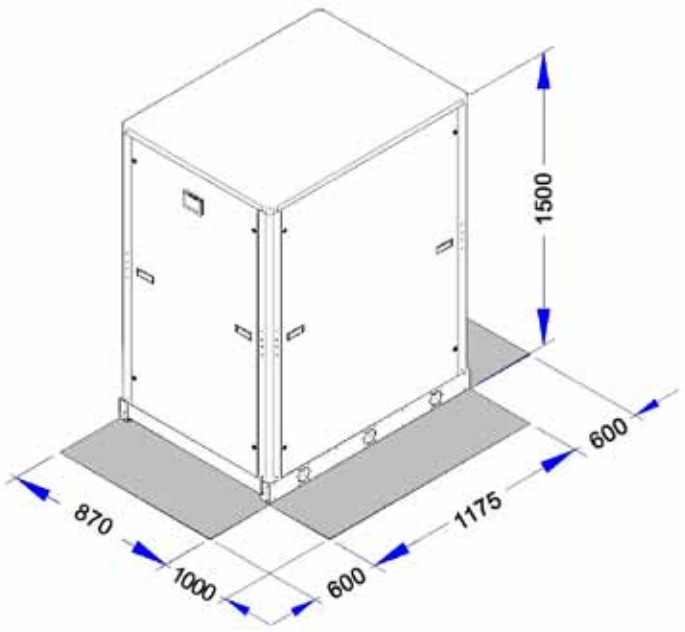
NOTE:
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

USER INTERFACING

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

- Double Set Point
- Heating in integration

Dimensions and minimun operating space



> RVW

WATER COOLED WATER CHILLERS

* Units Series

Type

IR	chiller
IW	water side reversible chiller
BR	chiller brine
BW	water side reversible chiller brine

Available version

VB	Basic
VD	De-supeheated
VR	total Recovery

Available configuration

AB	Basic
AS	Low noise

* VB unit specifications

This new range of water-cooled water chillers are designed to meet the climate control and air conditioning needs of large capacity systems in the industrial, commercial sectors.

Compact and highly configurable units, they are built to adapt to the various types of system design and meet the requirements of highly qualified designers.

The arrangement of the main unit components ensures even distribution of the unit's weight and easy service access.

When developing the range special attention was paid to the choice of heat exchangers 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 therefore by combined with liquid coolers (dry-coolers), cooling towers, geothermal boreholes or used for water cooling (e.g. water system, well, stratum).

All the units are carefully built in compliance with current regulations and individually tested. Installation therefore only requires the electrical and hydraulic connections.

Cooling only unit (IR)

- COMPRESSOR: TWIN-SCREW type, mounted on vibration-mounting rubber supports, with variable capacity from 25 to 100%.
- REFRIGERANT CIRCUIT IR, complete with maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/humidity indicator, compressor delivery and liquid shut-off valves, compressor oil heaters and electronic expansion valve complete with regulator located in the electrical panel.
- SYSTEM SIDE EXCHANGER: high efficiency shell and tube type with grooved tubes, optimised for R134a, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, complete with water side differential pressure switch, insulation, Victaulic connections and antifreeze heater.
- SOURCE SIDE HEAT EXCHANGER (unit IR): high efficiency shell and tube type with grooved tubes, optimised for R134a, complete with water side differential pressure switch and Victaulic connections. For the IW version it is supplied complete with insulation.
- SOURCE SIDE HEAT EXCHANGER (unit IW): high efficiency shell and tube type with grooved tubes, optimised for R134a, complete with insulation to prevent heat exchange with the outside, differential pressure switch and Victaulic connections.
- ELECTRICAL PANEL: for power and control complete with door lock main disconnecting switch, microprocessor controller with keyboard-display, and sequence meter (standard).

* Main accessories/Options

Unit external Storage and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.
Compressor inlet shutt-off valves
Spring vibration dampers
Paddle flowswitch
Water filter
Remote Control repeats the functions of the control system (max. 100 m)
Voltage monitor and sequence meter
Compressor Soft-starter
Compressor retiming condensers
Compressor thermal magnetic switches

Common 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	
Supplòy	400V - 3ph - 50Hz												V-ph-Hz
Quantity-type compressor - n° circ - part load	1 - TWIN SCREW- 1 - 25/100%							2 - TWIN SCREW- 1 - 13/100%					-
Quantity-type heat exchanged plant side	1 - SHELL & TUBE												-
Water content heat exchanged plant side	115	110	106	165	159	153	270	200	353	343	325	315	l
Water connection IN/OUT heat exchanged plant side	DN 125			DN 150					DN 200				
Quantity-type heat exchanged source side	1 - SHELL & TUBE							2 - SHELL & TUBE					
Water content heat exchanged source side	27	31	34	37	37	53	59	68	74	74	106	118	l
Water connection IN/OUT heat exchanged source side	DN 100					DN 125							"
F.L.A. Full Load Ampere	162	181	211	232	270	309	340	422	464	540	618	680	A

Cooling Only (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	
Cooling capacity (E)	282	317	356	412	478	536	592	704	818	935	1066	1167	kW
Total power input	59,0	67,0	75,0	86,0	100	114	125	150	172	200	228	249	kW
EER (E)	**4,78**	**4,73**	**4,75**	**4,79**	**4,78**	**4,70**	**4,74**	**4,69**	**4,76**	**4,68**	**4,68**	**4,69**	-
ESEER (E)	**5,55**	**5,49**	**5,50**	**5,56**	**5,56**	**5,50**	**5,56**	**5,54**	**5,63**	**5,55**	**5,58**	**5,6**	-
Water flow rate source 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
Water pressure drop source side (E)	46	37	46	44	55	43	54	52	45	57	59	45	kPa
Water flow rate plant 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 plant side (E)	29	25	26	28	38	27	25	26	28	38	27	25	kPa

Water side reversible heat pump (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	
Cooling capacity (E)	282	317	356	412	478	536	592	704	818	935	1066	1167	kW
Total power input	59,0	67,0	75,0	86,0	100	114	125	150	172	200	228	249	kW
EER (E)	**4,78**	**4,73**	**4,75**	**4,79**	**4,78**	**4,70**	**4,74**	**4,69**	**4,76**	**4,68**	**4,68**	4,69	-
ESEER (E)	**5,55**	**5,49**	**5,50**	**5,56**	**5,56**	**5,50**	**5,56**	**5,54**	**5,63**	**5,55**	**5,58**	5,60	-
Water flow rate source 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
Water pressure drop source side (E)	46	37	46	44	55	43	54	52	45	57	59	45	kPa
Water flow rate plant 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 plant side (E)	29	25	26	28	38	27	25	26	28	38	27	25	kPa
Heating capacity (E)	299	338	381	435	512	569	634	754	870	1010	1133	1253	kW
Total power input	69,0	79,0	90,0	101	121	133	149	179	204	243	265	298	kW
COP (E)	**4,33**	**4,28**	**4,23**	**4,31**	**4,23**	**4,28**	**4,26**	**4,21**	**4,26**	**4,16**	**4,28**	**4,20**	-
Water flow rate source side	14,3	16,1	18,2	20,8	24,5	27,2	30,3	36,0	41,6	48,3	54,1	59,8	l/s
Water pressure drop source side (E)	22	19	20	21	30	21	20	20	22	30	21	20	kPa
Water flow rate plant side	11,0	12,3	13,9	16,0	18,7	20,9	23,1	27,5	31,8	36,7	41,5	45,6	l/s
Water pressure drop plant side (E)	30	25	31	29	37	29	36	35	30	38	39	30	kPa

NOTES:
Cooling capacity values measured with plant side water 12/7°C - source side 30/35°C
Heating capacity values measured with plant side water 40/45°C - source side 10°C water flow rate as conditioning.
(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.

Basic Configuration (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	
SWL (E)	97	97	97	98	98	98	98	99	100	100	100	100	dB(A)
SPL 1 m	79	79	79	80	80	80	80	80	81	81	81	81	dB(A)
SPL 5 m	70	70	70	72	72	72	71	72	73	73	73	73	dB(A)
SPL 10 m	65	65	65	67	67	67	66	67	68	68	68	68	dB(A)

Low noise Configuration (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	
SWL (E)	92	93	92	93	93	94	94	94	95	95	96	96	dB(A)
SPL 1 m	74	75	74	75	75	76	76	75	76	76	77	77	dB(A)
SPL 5 m	65	66	65	66	66	67	67	67	68	68	69	69	dB(A)
SPL 10 m	60	61	60	61	61	62	62	62	63	63	64	64	dB(A)

NOTE:
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

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
- Heating in integration

		Cooling		Heating		
Operation limits	**Unit type**	**min**	**max**	**min**	**max**	
Leaving source water temperature	IR, IW, IP, BR, BP	20 (5*)	50	10	25	(°C)
Leaving plant water temperature	IR, IW, IP	5	20	25	55	(°C)
Leaving plant water temperature	BR, BP	-8	5	25	55	(°C)

* with accessories DCC condensation control device

* VD unit specifications

These versions are complete with an additional heat exchanger to recover thermal energy otherwise dispersed in the air.

De-supeheated “IR VD”

The cooling only version enables the production of cold water as in the standard version and, at the same time, hot water at temperatures of 30 to 70°C. This is possible by installing a water-refrigerant gas heat exchanger between the compressor and finned coil enabling heat recovery of 15 to 20% of the heating power.

De-supeheated “IP VD”

As in the previous version, but applied to a reversible unit. It enables the production of hot and cold water by the main exchanger, and recovery at the same time.

Cooling only (IR) - De-supeheated Version (VD) - Basic Configuration (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	
Cooling capacity	293	330	370	428	497	557	616	732	851	972	1109	1214	kW
Total power input	57,2	65	72,8	83,4	97,0	111	121	146	167	194	221	242	kW
EER	**5,12**	**5,07**	**5,09**	**5,14**	**5,12**	**5,04**	**5,08**	**5,03**	**5,10**	**5,01**	**5,01**	**5,02**	-
Water flow rate	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	50	40	50	48	60	47	58	56	49	62	64	49	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	10,00	10,90	l/s
Water pressure drop rec.	6	8	7	10	9	7	9	7	10	9	7	9	kPa

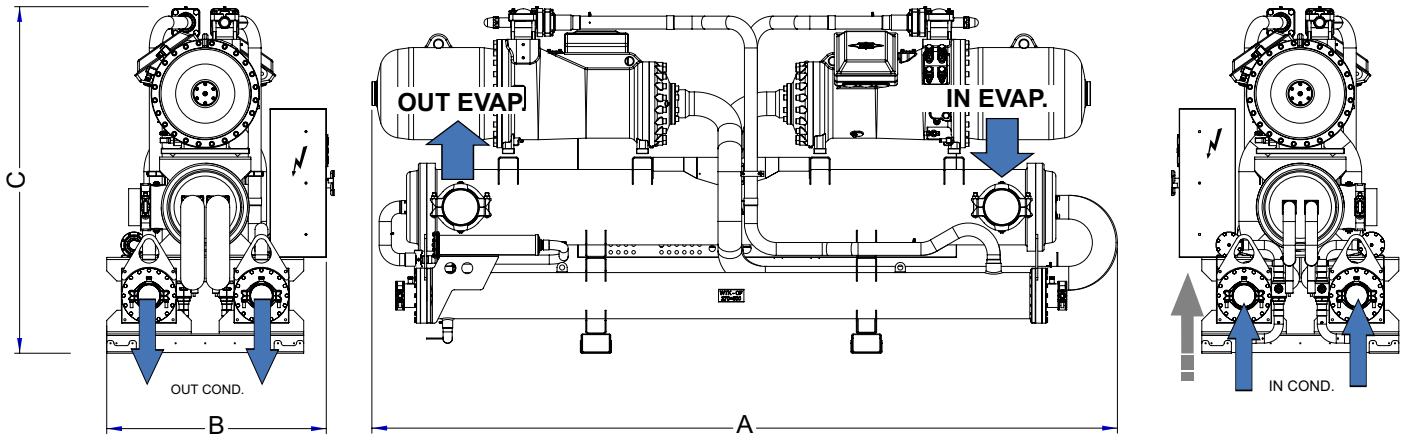
Heat pump (IP) -De-supeheated version (VD) - Basic Configuration (AB)

	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Cooling capacity	288	323	363	420	488	547	604	718	834	954	1087	1190	kW
Total power input	58,4	66,3	74,3	85,1	99,0	113,0	124	149	171	198	226	247	kW
EER	**4,92**	**4,87**	**4,89**	**4,94**	**4,92**	**4,84**	**4,88**	**4,84**	**4,90**	**4,82**	**4,82**	**4,83**	-
Water flow rate	13,7	15,4	17,30	20,1	23,3	26,1	28,9	34,3	39,9	45,6	51,9	56,9	l/s
Water pressure drop	48	39	48	46	57	45	56	54	47	59	61	47	kPa
Heating recovery capacity	329	370	416	480	557	627	691	823	954	1094	1247	1365	kW
Water flow rate recovery	15,7	17,7	19,9	22,9	26,6	29,9	33,0	39,3	45,6	52,3	59,6	65,2	l/s
Water pressure drop rec.	27	23	24	26	35	26	23	24	26	35	26	23	kPa

NOTES:

Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B. during heat recovery operation. Heating recovery capacity: water 40/45°C.

Dimensions and minimun operating space



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	3900	3900	3900	3900	3900	3900	3900	4320	4400	4400	4400	4400	mm
B	1100	1100	1100	1100	1100	1100	1100	1190	1190	1190	1230	1230	mm
C	1845	1845	1845	1880	1880	2045	2045	1845	1880	1880	2045	2045	mm
IN - OUT EVAP.	DN125	DN125	DN125	DN150	DN150	DN150	DN200	DN150	DN200	DN200	DN200	DN200	VIC.
IN - OUT COND.	DN100	DN100	DN100	DN100	DN100	DN125	DN125	DN100	DN100	DN100	DN125	DN125	VIC.

> CMA

CONDENSING UNIT COOLING ONLY AND HEAT PUMPS

* Units Series

Tipologia

SR condensing unit for Splitted installation cooling only.

SP condensing unit for Splitted installation heat pump reversible unit

Available version

VB Basic

Available configuration

AB Basic

* Unit specifications

The series of industrial condenser units available in the Cooling Only (SR) and Heat Pump (SP) versions, has been designed to meet the particular and specific air conditioning needs of the service and business sector where solutions with a remote controlled evaporator/condenser are required. These units cannot operate on their own as they must be used in conjunction with a system that evaporates/condenses in air or water. Certain typical applications for this type of unit are used in conjunction with coils with extended surfaces installed within an air treatment system and used in together with a water evaporator/condenser in order to build split hydronic systems.

These units are equipped with axial fans suited for outdoor installation

Compact and highly configurable units, they are built to adapt to the various types of systems and to meet the requirements of highly qualified designers.

All the units are carefully built and tested one by one. Installation merely requires the electrical and hydraulic connections.

NB: units are provided free of charge of refrigerant gas and loaded with nitrogen pressure

Basic Version (VB) and (AB) Basic Configuration units

- COMPRESSOR: no. 1 SCROLL type, mounted on vibration-mounting rubber supports, complete with high and low pressure switch.
- IR REFRIGERANT CIRCUIT, complete with liquid/humidity indicator and cartridge dehydrator filter
- IP REFRIGERANT CIRCUIT, in addition to the cooling only components, it is integrated with liquid receiver, one-way valves and 4-way reversing valve
- SOURCE SIDE HEAT EXCHANGER : finned coil with copper pipes and aluminium fins.
- FAN : variable rotation speed axial-flow fans complete with safety grill.
- ELECTRICAL PANEL: for command and control suitable for outdoor installation (min. protection rating IP 54), in a sheet metal enclosure complete with all electrical protection devices according to the current regulations.
- CONTROL: the UNIT CONTROL terminal with Display enables access to all the main system functions and the display of alarms.

Basic Version (VB) and Basic Configuration + Low noise kit (AB+KS)

In addition to the characteristics given in the Basic Version (AB), the Basic Version + Low noise Kit (AB+KS) provides for:

- FANS: reduced speed.
- COMPRESSORS: covered with a soundproofing jacket.

To further reduce the noise level, the technical compartment is covered with sound-absorbing material of suitable thickness.

* Main accessories/Options

Coil protection grills
Rubber vibration dampers
Compressor soft starter
Remote control
Serial interface
Programmer clock
Voltage monitor and sequence meter

Common Data	19.1	22.1	26.1	30.1	40.1	51.1	
Supply	400V - 3ph+N - 50 Hz						V-ph-Hz
Quantity-type compressor-n° circ.-part load	1 - Scroll - 1 - 0/100 %						-
Quantity-D-Max fan speed	1 - 630 - 900				2 - 630 - 900		n°-mm-rpm
Gas connection	22	28	28	28	35	35	mm
Fluid connection	15,8	15,8	15,8	15,8	15,8	18	mm
Operation weight	483	492	506	512	712	764	Kg
F.L.A. Full Load Ampere	21,2	26,2	27,2	30,2	40,1	49,1	A

Basic Configuration (AB)

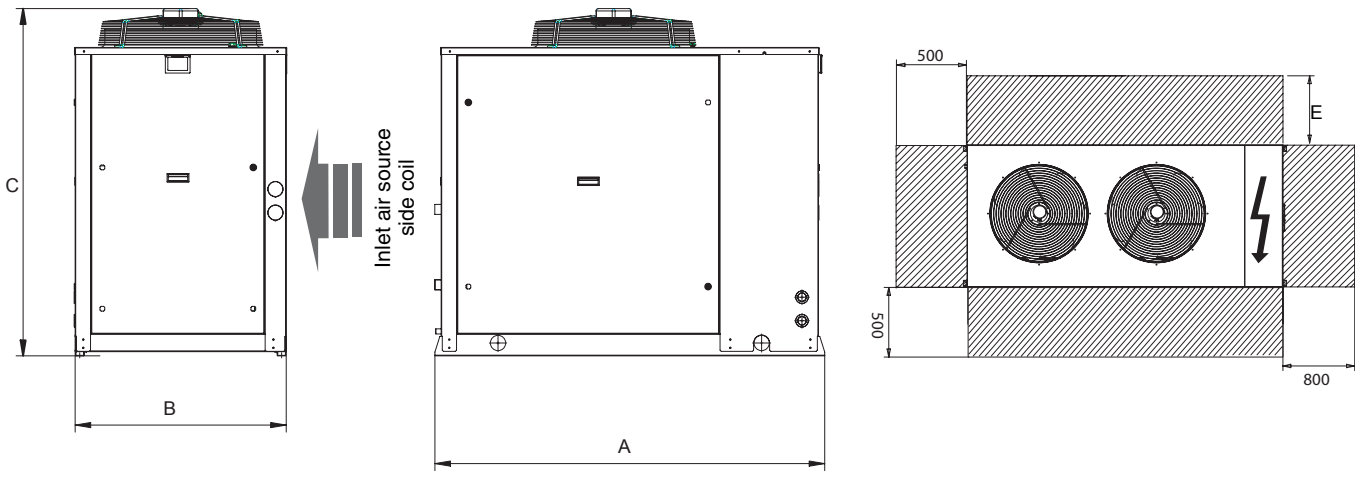
Cooling only (IR)	19.1	22.1	26.1	30.1	40.1	51.1	
Cooling capacity	20,9	24,2	28,3	31,6	44,5	56,4	kW
Total power input	7,25	8,00	9,15	10,6	13,5	18,5	kW
EER	2,88	3,03	3,10	2,99	3,30	3,04	-
Heat pump (IP)	**19.1**	**22.1**	**26.1**	**30.1**	**40.1**	**51.1**	
Cooling capacity	20,7	24,0	28,1	30,8	42,7	54,9	kW
Total power input	7,05	7,8	8,95	10,3	13,0	18,1	kW
EER	2,93	3,08	3,14	2,99	3,29	3,03	-
Heating capacity	20,1	23,2	27,2	29,1	40,5	50,8	kW
Total power input	7,30	8,10	9,50	10,1	13,6	17,4	kW
COP	2,75	2,88	2,87	2,87	2,98	2,92	-
Sound level	**19.1**	**22.1**	**26.1**	**30.1**	**40.1**	**51.1**	
SWL (E)	78	78	79	79	81	81	dB(A)
SPL 1 m	61	62	62	63	64	65	dB(A)
SPL 5 m	51	52	52	52	54	55	dB(A)
SPL 10 m	46	47	47	47	49	49	dB(A)

Basic Configuration + low noise kit (AB+KS)

Cooling only (IR)	19.1	22.1	26.1	30.1	40.1	51.1	
Cooling capacity	20,1	23,0	26,5	29,4	41,6	52,1	kW
Total power input	7,30	8,12	9,41	11,0	13,8	19,2	kW
EER	2,75	2,83	2,82	2,68	3,02	2,71	-
Heat pump (IP)	**19.1**	**22.1**	**26.1**	**30.1**	**40.1**	**51.1**	
Cooling capacity	19,8	22,8	26,3	28,7	40,0	50,8	kW
Total power input	7,09	7,91	9,20	10,7	13,2	18,8	kW
EER	2,80	2,89	2,86	2,69	3,02	2,70	-
Heating capacity	20,1	23,2	27,2	29,1	40,5	50,8	kW
Total power input	7,30	8,10	9,50	10,1	13,6	17,4	kW
COP	2,70	2,90	2,90	2,90	3,00	2,90	-
Sound level	**19.1**	**22.1**	**26.1**	**30.1**	**40.1**	**51.1**	
SWL (E)	73	73	73	73	75	76	dB(A)
SPL 1 m	56	56	57	57	59	59	dB(A)
SPL 5 m	46	46	47	47	49	49	dB(A)
SPL 10 m	41	41	42	42	43	44	dB(A)

NOTES:
Cooling capacity measured with Evaporation temperature (dew point) 5°C ÷ Superheating 5 K ÷ Subcooling 5 K ÷ AT 35°C D.B.
Heating capacity measured with Condensation temperature (dew point) 50°C ÷ Superheating 5 K ÷ Subcooling 5 K ÷ AT 7°C D.B. 6°C W.B.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Dimensions and minimun operating space



	19.1	22.1	26.1	30.1	40.1	51.1	
L	1655				2055		mm
W	896				896		mm
H	1474				1674		mm
A	1100				1400		mm

> CGA

CONDENSING UNIT COOLING ONLY AND HEAT PUMPS

* Units Series

Tipologia

SR condensing unit for Splitted installation cooling only.

SP condensing unit for Splitted installation heat pump reversible unit

Available version

VB Basic

VD De-supeheated

Available configuration

AB Basic

AS Low noise

AX eXtra Low Noise

* VB unit specifications

The new series of industrial condensing units are available in the Cooling Only (SR) and Heat Pump (SP) versions, has been designed to meet the particular and specific air conditioning needs of the service and business sector where solutions with a remote controlled evaporator/condenser are required. These units cannot operate on their own as they must be used in conjunction with a system that evaporates/condenses in air or water. Certain typical applications for this type of unit are used in conjunction with coils with extended surfaces installed within an air treatment system and used in together with a water evaporator/condenser in order to build split hydronic systems.

Compact and highly configurable units, they are built to adapt to the various types of systems and to meet the requirements of qualified designers, equipped with axial fans suited for outdoor installation.

On request, it is possible to choose from the Basic Version (AB), Low noise Version (AS) and Extra Low noise Version (AX).

All the units are carefully built and tested one by one. Installation merely requires the electrical and hydraulic connections.

Basic Configuration (AB)

- COMPRESSOR: no. 2 SCROLL type, mounted on vibration-mounting rubber supports, complete with high and low pressure switch.
- IR REFRIGERANT CIRCUIT complete with liquid and compressor shut-off valves, liquid/humidity indicator, gas safety valve and dehydrator filter.
- IP REFRIGERANT CIRCUIT integrated with mechanical expansion valve, fluid receiver, fluid separator, one-way valves and 4-way reversing valve.
- SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,
- FANS: helical fans with crescent-shaped blades to limit noise
- ELECTRICAL PANEL: control and command electrical panel with door lock main disconnecting switch, microprocessor controller with display containing the electrical equipment and all the components with minimum protection rating IP54.

Low noise Configuration (AS)

In addition to the characteristics given in the Basic version (AB), the Low noise version (AS) provides for the following configurations:

- FANS: reduced speed.
- COMPRESSORS: covered with a soundproofing jacket.

To further reduce the noise level, the technical compartment is covered with sound-absorbing material of suitable thickness.

EXtra low noise Configuration (AX)

In addition to the characteristics given in the Low noise version (AS), the extra Low noise version (AX) provides for the following configurations:

- FANS: further fan speed reduction.
- CONDENSING COILS: larger with respect to the basic version, to further increase the heat exchange coefficient.

* Main accessories/Options

Liquid line kit : It consists of a solenoid valve with coil, dehidrator filter, Liquid and moinsture indicator, thermostatic expansion valve,
one-way valve (only IP version).

Plate heat exchanger kit : It consists of a remote plate heat exchanger, complete with thermal insulation shell, differential pressure switch, probe well and antifreeze electrical heater.

Remote Control repeats the functions of the control system (max. 100 m)

Voltage monitor and sequence meter

Compressor Soft-starter

Compressor retiming condensers

Compressors and fan thermal magnetic switches

USER INTERFACING

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

- Dynamic Defrost
- Heating in integration
- ATC function to protect in high ambient air conditions
- Function climate control evolved (temperature scrolling)
- Demand Limit
- Economy

Common data	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Supply	400V - 3ph+N - 50 Hz				400V - 3p - 50 Hz								V-ph-Hz
Quantity-type compressor-n° circ.-part load	2 - Scroll - 2 - 0/50/100												-
Quantity-D-Max fan speed	3 - 630 - 900				2 - 800 - 900				3 - 800 - 900		4 - 800 - 900		n°-mm-rpm
Ø x thickness Gas side SR unit	42x1,5	42x1,5	42x1,5	42x1,5	54x2	54x2	54x2	54x2	54x2	54x2	54x2	54x2	mm
Ø x thickness Fluid side SR unit	22x1	22x1	22x1	22x1	28x1	28x1	28x1	28x1	28x1	28x1	28x1	28x1	mm
Ø x thickness Gas side SP unit	35x1,5	35x1,5	35x1,5	35x1,5	42x1,5	42x1,5	42x1,5	42x1,5	42x1,5	42x1,5	54x2	54x2	mm
Ø x thickness Fluid side SP unit	22x1	22x1	22x1	22x1	22x1	22x1	22x1	22x1	22x1	22x1	22x1	22x1	mm
Operation weight	623	624	663	688	932	1012	1126	1153	1210	1260	1407	1451	Kg
F.L.A. Full Load Ampere	48,2	50,9	58,3	68,6	76	81,5	89,9	98,3	117	131	150	165	A

Basic Configuration (AB)

Cooling only (IR)	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	53,5	58,6	68,8	78,7	91,0	102	112	126	143	158	180	200	kW
Total power input	18,3	20,3	23,5	27,4	31,8	35,2	39,1	44,1	50,4	55,9	63,2	70,0	kW
EER	**2,92**	**2,89**	**2,93**	**2,87**	**2,86**	**2,90**	**2,86**	**2,86**	**2,84**	**2,83**	**2,85**	**2,86**	-
Heat pump (IP)	**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	52,9	57,5	67,2	74,1	89,2	99,0	110	122	138	154	178	198	kW
Total power input	18,5	20,2	23,6	26,5	31,6	35,0	39,0	43,6	49,3	55,2	62,2	69,7	kW
EER	**2,86**	**2,85**	**2,85**	**2,80**	**2,82**	**2,83**	**2,82**	**2,80**	**2,80**	**2,79**	**2,86**	**2,84**	-
Heating capacity	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
Total power input	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	**3,11**	**3,09**	**3,11**	**3,06**	**3,03**	**3,12**	**3,10**	**3,09**	**3,03**	**3,09**	**3,08**	**3,07**	-
Sound level	**50.2**	**60.2**	**70.2**	**80.2**	**90.2**	**100.2**	**115.2**	**130.2**	**145.2**	**160.2**	**180.2**	**200.2**	
SWL (E)	83	83	84	84	85	85	85	86	87	87	88	88	dB(A)
SPL 1 m	65	65	66	66	67	67	66	67	68	68	69	69	dB(A)
SPL 5 m	56	56	57	57	58	58	57	58	59	59	60	60	dB(A)
SPL 10 m	51	51	52	52	53	53	53	54	55	55	56	56	dB(A)

NOTES:
Cooling performance values measured with Evaporation temperature 3°C (Dew point) - AT 35°C D.B. - Super-heating and sub-cooling 5°K
Heating performance values measured with Condensation temperature 50°C (Dew point) - AT 7°C D.B. 6°C W.B. - Super-heating and sub-cooling 5°K EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.

SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Low noise Configuration (AS)

Cooling only (IR)	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	51,9	56,8	66,7	76,3	88,2	98,5	109	122	139	153	174	194	kW
Total power input	19,0	21,1	24,4	28,6	33,1	36,6	40,7	45,9	52,4	58,1	65,7	72,8	kW
EER	2,73	2,69	2,73	2,67	2,66	2,69	2,68	2,66	2,65	2,63	2,65	2,66	-
Heat pump (IP)	**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	50,8	55,2	64,5	71,1	85,6	95,0	106	117	132	148	171	190	kW
Total power input	19,6	21,4	25,0	28,1	33,5	37,1	41,3	46,2	52,3	58,5	65,9	73,9	kW
EER	2,59	2,58	2,58	2,53	2,56	2,56	2,57	2,53	2,52	2,53	2,59	2,57	-
Heating capacity	56,0	61,1	71,9	80,2	96,2	106	121	132	149	167	190	209	kW
Total power input	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	3,16	3,15	3,18	3,12	3,09	3,17	3,17	3,17	3,09	3,16	3,14	3,13	-
Sound level	**50.2**	**60.2**	**70.2**	**80.2**	**90.2**	**100.2**	**115.2**	**130.2**	**145.2**	**160.2**	**180.2**	**200.2**	
SWL (E)	80	80	81	81	82	82	82	83	84	84	85	85	dB(A)
SPL 1 m	62	62	63	63	64	64	63	64	65	65	66	66	dB(A)
SPL 5 m	53	53	54	54	55	55	54	55	56	56	57	57	dB(A)
SPL 10 m	48	48	49	49	50	50	50	51	52	52	53	53	dB(A)

eXtra low noise Configuration (AX)

Cooling only (IR)	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	50,7	55,5	65,2	74,5	86,2	96,2	106	119	135	150	170	189	kW
Total power input	19,4	21,7	24,9	29,4	32,2	37,7	41,9	47,3	53,4	59,3	67,6	74,9	kW
EER	2,61	2,56	2,62	2,53	2,68	2,55	2,53	2,52	2,53	2,53	2,51	2,52	-
Heat pump (IP)	**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	49,7	54,1	63,2	69,7	83,8	93,1	103	115	130	145	167	186	kW
Total power input	20,7	22,6	26,4	29,7	35,4	39,2	43,7	48,8	55,2	61,8	69,7	78,1	kW
EER	2,40	2,39	2,39	2,35	2,37	2,38	2,36	2,36	2,36	2,35	2,40	2,38	-
Heating capacity	54,0	58,9	69,4	77,4	92,8	103,0	117	127	144	161	183	201	kW
Total power input	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	3,21	3,18	3,21	3,16	3,12	3,23	3,21	3,19	3,13	3,19	3,17	3,17	-
Sound level	**50.2**	**60.2**	**70.2**	**80.2**	**90.2**	**100.2**	**115.2**	**130.2**	**145.2**	**160.2**	**180.2**	**200.2**	
SWL (E)	78	78	79	79	80	80	80	81	82	82	83	83	dB(A)
SPL 1 m	60	60	61	61	62	62	61	62	63	63	64	64	dB(A)
SPL 5 m	53	53	54	54	55	55	54	55	56	56	57	57	dB(A)
SPL 10 m	46	46	47	47	48	48	48	49	50	50	51	51	dB(A)

		Cooling		Heating		
Operation limits	**Unit type**	**min**	**max**	**min**	**max**	
Ambient air	SR, SP	15 (-10*)	50 (55**)	-7	40	(°C)
Temperature refrigerant gas (Dew point)	SR, SP	1	20	35	60	(°C)
Leaving water temperature De-supeheated (VD)	IR, BR, IP, BP	30	70	30	70	(°C)

* with accessories DCC condensation control device ** with ATC regolation for protection high ambient air

NOTES:
Cooling performance values measured with Evaporation temperature 3°C (Dew point) - AT 35°C D.B. - Super-heating and sub-cooling 5°K
Heating performance values measured with Condensation temperature 50°C (Dew point) - AT 7°C D.B. 6°C W.B. - Super-heating and sub-cooling 5°K EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.

SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

* VD unit specifications

These versions are complete with an additional heat exchanger to recover thermal energy otherwise dispersed in the air.

De-supeheated “IR VD”

The cooling only version enables the production of cold refrigerant gas as in the standard version and, at the same time, hot water at temperatures of 30 to 70°C. This is possible by installing a water-refrigerant gas heat exchanger between the compressor and finned coil enabling heat recovery of 15 to 20% of the heating power.

De-supeheated “IP VD”

As in the previous version, but applied to a reversible unit. It enables the production of hot and cold refrigerant gas by the main exchanger, and recovery at the same time.

Cooling only (IR) - De-supeheated Version (VD) - Basic Configuration (AB)

Cooling only (IR)	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	55,6	60,9	71,6	81,8	94,6	106	116	131	149	164	187	208	kW
Total power input	17,8	19,7	22,8	26,6	30,8	34,1	37,9	42,8	48,9	54,2	61,3	67,9	kW
EER	**3,13**	**3,10**	**3,14**	**3,08**	**3,07**	**3,11**	**3,07**	**3,06**	**3,04**	**3,03**	**3,05**	**3,06**	-
Heating recovery capacity	15,7	17,6	20,0	23,6	27,1	30,4	34,4	38,4	44,0	49,3	55,4	61,3	kW
Water flow rate recovery	0,75	0,84	0,96	1,13	1,29	1,45	1,64	1,83	2,10	2,36	2,65	2,93	l/s
Water pressure drop rec.	9	11	14	19	15	18	11	14	18	22	18	21	kPa

Heat pump (IP) -De-supeheated version (VD) - Basic Configuration (AB)

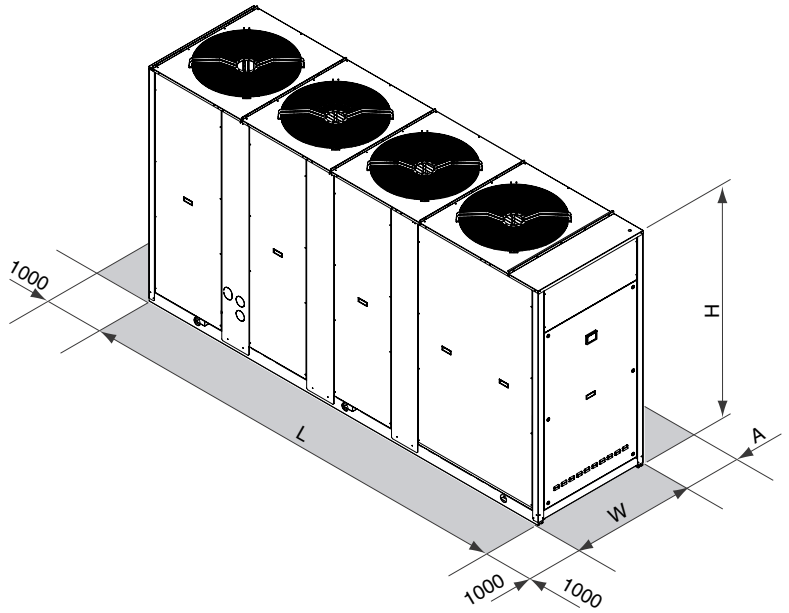
Heat pump (IP)	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Cooling capacity	55,0	59,8	69,9	77,1	92,8	103	114	127	144	160	185	206	kW
Total power input	17,9	19,6	22,9	25,7	30,7	34,0	37,8	42,3	47,8	53,5	60,3	67,6	kW
EER	**3,07**	**3,05**	**3,05**	**3,00**	**3,03**	**3,03**	**3,02**	**3,00**	**3,00**	**2,99**	**3,07**	**3,05**	-
Heating recovery capacity	15,2	17,0	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	0,73	0,81	0,93	1,10	1,25	1,39	1,58	1,77	2,03	2,27	2,50	2,78	l/s
Water pressure drop rec.	8	10	13	18	14	17	10	13	17	20	16	19	kPa

NOTES:

Cooling performance values measured with Evaporation temperature 3°C (Dew point) - AT 35°C D.B. - Super-heating and sub-cooling 5°K during heat recovery operation.

Heating recovery capacity: water 40/45°C.

Dimensions and minimun operating space



	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	2501				3343		3343				4097		mm
W	954				1104		1104				1104		mm
H	1930				1793		2193				2193		mm
A	1600						2000						mm

> CGC

CONDENSING UNIT COOLING ONLY AND HEAT PUMPS

* Units Series

Type

SR condensing unit for Splitted installation cooling only.

SP condensing unit for Splitted installation heat pump reversible unit

Available version

VB Basic

VD De-supeheated

Available configuration

AB Basic

AS Low noise

* VB unit specifications

Condensing units designed to meet the requirements of the global markets for medium capacity systems in the industrial and commercial sectors.

Compact and highly configurable units, they are built to adapt to the various types of system design and meet the requirements of highly qualified designers .

When developing the range, special attention has been paid to obtaining high performance enabling efficiency at full load, maximum seasonal efficiency at partial loads, reduced consumption, and low noise levels in order to comply with increasingly strict laws on noise pollution. On request, it is possible to choose from the Basic Version (AB), Low Noise Version (AS). All the units are carefully built in compliance with the current regulations and individually tested. Installation only requires the electrical and hydraulic connections.

Basic Version (VB) and Basic Configuration (AB)

- COMPRESSOR: no. 2 SCROLL type, mounted on vibration-mounting rubber supports, complete with high and low pressure switch.
- IR REFRIGERANT CIRCUIT complete with liquid stop valve and compressor shut-off valve, liquid/humidity indicator, mechanical expansion valve, gas safety valve and dehydrator filter.
- IP REFRIGERANT CIRCUIT integrated with liquid receiver, liquid separator, one-way valves and 4-way reversing valve.
- SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,
- FAN : dual-intake centrifugal fans type, TWIN VERSION or BELT VERSION depending by model, with forward blades, statically and dynamically balanced. On BELT VERSION the pulley fitted on the motor has variable diameter and, within certain limits, enables fan speed adjustment to obtain the required air flow-rate and useful head values.
- ELECTRICAL PANEL: control and command electrical panel with a main door lock disconnecting switch, microprocessor controller containing the electrical equipment and all the components with minimum protection rating IP54.

Low noise Configuration (AS)

In addition to the characteristics given in the Basic version (AB), the Low noise version (AS) provides for the following configurations:

- FANS: reduced speed.
- COMPRESSORS: covered with a soundproofing jacket.

To further reduce the noise level, the compartment is covered with sound-absorbing material of suitable thickness.

* Main accessories/Options

Liquid line kit : It consists of a solenoid valve with coil, dehidrator filter, Liquid and moinsture indicator, thermostatic expansion valve,
one-way valve (only IP version).

Plate heat exchanger kit : It consists of a remote plate heat exchanger, complete with thermal insulation shell, differential pressure switch, probe well and antifreeze electrical heater.

Remote Control repeats the functions of the control system (max. 100 m)

Voltage monitor and sequence meter

Compressor Soft-starter

Compressor retiming condensers

Compressors and fan thermal magnetic switches

Inverter fan kit

Basic Configuration (AB)

Cooling only (IR)	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 (E)	53,5	58,6	68,8	78,7	91,0	102	112	126	143	158	180	200	kW
Total power input	18,0	20,0	23,3	27,3	30,6	34,1	37,9	42,9	52,9	58,7	66,5	73,7	kW
EER (E)	**2,97**	**2,93**	**2,95**	**2,88**	**2,97**	**2,99**	**2,96**	**2,94**	**2,70**	**2,69**	**2,71**	**2,71**	-
ESEER (E)	**4,10**	**4,04**	**4,07**	**3,98**	**4,10**	**4,13**	**4,08**	**4,05**	**3,73**	**3,71**	**3,74**	**3,74**	-
Heat pump (IP)	**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 (E)	52,9	57,5	67,2	74,1	89,2	99,0	110	122	138	154	178	198	kW
Total power input	18,2	19,9	23,4	26,4	28,4	32,0	37,8	42,4	51,8	58,0	65,5	73,4	kW
EER (E)	**2,91**	**2,89**	**2,87**	**2,81**	**3,14**	**3,09**	**2,91**	**2,88**	**2,66**	**2,66**	**2,72**	**2,70**	-
ESEER (E)	**4,01**	**3,99**	**3,96**	**3,87**	**4,33**	**4,27**	**4,02**	**3,97**	**3,68**	**3,66**	**3,75**	**3,72**	-
Heating capacity (E)	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
Total power input	18,2	20,0	23,5	26,8	29,4	32,0	38,8	42,5	53,0	58,2	66,7	73,5	kW
COP (E)	**3,16**	**3,13**	**3,14**	**3,07**	**3,36**	**3,41**	**3,20**	**3,18**	**2,89**	**2,94**	**2,92**	**2,91**	-

Basic Configuration (AB)

	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
SWL (E)	89	89	89	89	91	91	96	96	97	97	98	98	dB(A)
SPL 1 m	71	71	71	71	73	73	78	78	79	79	80	80	dB(A)
SPL 5 m	62	62	62	62	65	65	69	69	70	70	71	71	dB(A)
SPL 10 m	57	57	57	57	59	59	64	64	65	65	66	66	dB(A)

Low noise Configuration (AS)

	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
SWL (E)	86	86	86	86	88	88	93	93	94	94	95	95	dB(A)
SPL 1 m	68	68	68	68	70	70	75	75	76	76	77	77	dB(A)
SPL 5 m	59	59	59	59	62	62	66	66	67	67	68	68	dB(A)
SPL 10 m	54	54	54	54	56	56	61	61	62	62	63	63	dB(A)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.
Heating performance values measured with EWT/LWT 40/45°C - AT 7°C D.B. 6°C W.B.

(E): Declared data according to the certification programme LCP EUROVENT
ESEER : European seasonal efficiency rating in cooling.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Common Data	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Supply	400V - 3ph+N - 50 Hz				400V - 3p - 50 Hz								V-ph-Hz
Quantity-type compressor-n° circ.-part load	2 - Scroll - 2 - 0/50/100												-
Quantity - type fan	1 - twin version				1 - twin version + 1 - Belt Driven			3 - Belt Driven			4 - Belt Driven		n°-mm-rpm
Operation weighT	-	-	-	-	-	-	-	-	-	-	-	-	Kg
F.L.A. Full Load Ampere	58,9	61,6	69	79,3	86,8	92,4	109	117	146	161	189	204	A

USER INTERFACING

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

- Dynamic Defrost
- Demand Limit
- Economy
- Sound managing
- Heating in integration
- ATC function to protect in high ambient air conditions
- Function climate control evolved (temperature scrolling)

		Cooling		Heating		
Operation limits	Unit type	min	max	min	max	
Ambient air	SR, SP	15 (-10*)	50 (55**)	-7	40	(°C)
Temperature refrigerant gas (Dew point)	SR, SP	1	20	35	60	(°C)
Leaving water temperature De-supeheated (VD)	IR, BR, IP, BP	30	70	30	70	(°C)

* with accessories DCC condensation control device

** with ATC regolation for protection high ambient air

* VD unit specifications

These versions are complete with an additional heat exchanger to recover thermal energy otherwise dispersed in the air.

De-supeheated “IR VD”

The cooling only version enables the production of cold water as in the standard version and, at the same time, hot water at temperatures of 30 to 70°C. This is possible by installing a water-refrigerant gas heat exchanger between the compressor and finned coil enabling heat recovery of 15 to 20% of the heating power.

De-supeheated “IP VD”

As in the previous version, but applied to a reversible unit. It enables the production of hot and cold water by the main exchanger, and recovery at the same time.

Cooling only (IR) - De-supeheated Version (VD) - Basic Configuration (AB)

_	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	55,6	60,9	71,6	81,8	94,6	106	116	131	149	164	187	208	kW
Total power input	17,5	19,4	22,6	26,5	29,7	33,1	36,8	41,6	51,3	56,9	64,5	71,5	kW
EER	**3,19**	**3,14**	**3,17**	**3,09**	**3,19**	**3,21**	**3,17**	**3,15**	**2,90**	**2,89**	**2,90**	**2,91**	-
Water flow rate	2,66	2,91	3,42	3,91	4,52	5,07	5,57	6,26	7,11	7,85	8,94	9,94	l/s
Water pressure drop	45	55	52	43	43	43	43	42	42	42	63	62	kPa
Heating recovery capacity	15,7	17,6	20,0	23,6	27,1	30,4	34,4	38,4	44,0	49,3	55,4	61,3	kW
Water flow rate recovery	0,75	0,84	0,96	1,13	1,29	1,45	1,64	1,83	2,10	2,36	2,65	2,93	l/s
Water pressure drop rec.	9	11	14	19	15	18	11	14	18	22	18	21	kPa

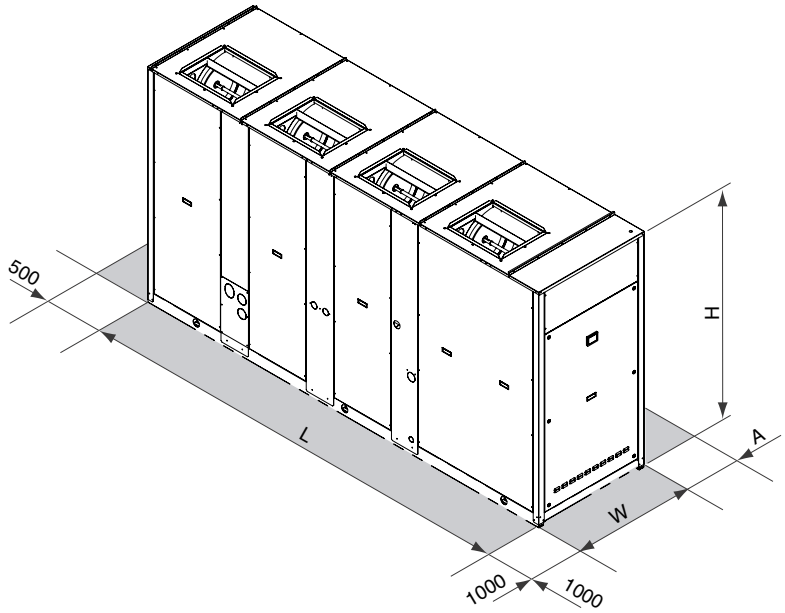
Heat pump (IP) -De-supeheated version (VD) - Basic Configuration (AB)

	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	55,0	59,8	69,9	77,1	92,8	103	114	127	144	160	185	206	kW
Total power input	17,7	19,3	22,7	25,6	27,5	31,0	36,7	41,1	50,2	56,3	63,5	71,2	kW
EER	**3,12**	**3,10**	**3,08**	**3,01**	**3,37**	**3,32**	**3,12**	**3,09**	**2,86**	**2,85**	**2,91**	**2,89**	-
Water flow rate	2,63	2,86	3,34	3,68	4,43	4,92	5,47	6,06	6,86	7,65	8,84	9,84	l/s
Water pressure drop	44	53	49	38	41	41	42	40	39	40	61	60	kPa
Heating recovery capacity	15,2	17,0	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	0,73	0,81	0,93	1,10	1,25	1,39	1,58	1,77	2,03	2,27	2,50	2,78	l/s
Water pressure drop rec.	8	10	13	18	14	17	10	13	17	20	16	19	kPa

NOTES:

Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B. during heat recovery operation. Heating recovery capacity: water 40/45°C.

Dimensions and minimun operating space



	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	2501				3343						4097		mm
W	954				1104								mm
H	1760						2160						mm
A	800						1000						mm

> EVW
CONDENSERLESS UNITS

NEW

* Units Series

Type
IR chiller
IW water side reversible chiller
BR chiller brine
BW water side reversible chiller brine

Available version
VB Basic
VD De-supeheated
VR total Recovery

Available configuration
AB Basic
AS Low noise

Source
R with remote condenser

* VB unit specifications

This new range of evaporating units is designed to meet the climate control and air conditioning needs of large capacity systems in the industrial, commercial sectors.
These units are suitable for indoor installation, very compact and highly configurable. They are built to adapt to the various types of system design and meet the requirements of highly qualified designers. The arrangement of the main refrigeration components enables even distribution of the unit's weight and easy service access.
When developing the range special attention has been paid to the choice of heat exchangers 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 combined with the remote condenser selected according to the characteristics.
All the units are carefully built in compliance with the current regulations and individually tested. Installation therefore only requires the electrical and hydraulic connections.

cooling only units (IR)
- COMPRESSOR: TWIN-SCREW type, mounted on vibration-mounting rubber supports, with variable capacity from 25 to 100%.
- REFRIGERANT CIRCUIT IR, complete with maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/humidity indicator, compressor delivery and liquid shut-off valves, compressor oil heaters and electronic expansion valve complete with regulator located in the electrical panel.
- SYSTEM SIDE EXCHANGER: high efficiency shell and tube type with grooved tubes, optimised for R134a, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, complete with water side differential pressure switch, insulation, Victaulic connections and antifreeze heater.
- ELECTRICAL PANEL: for power and control complete with door lock main disconnecting switch, microprocessor controller with keyboard-display, and sequence meter (standard).

* Main accessories/Options

Unit external Storage and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.
Compressor inlet stop valves Spring vibration dampers
Paddle flowswitch
Water filter
Remote Control repeats the functions of the control system (max. 100 m)
Voltage monitor and sequence meter
Compressor Soft-starter
Compressor retiming condensers
Compressor thermal magnetic switches

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
- Heating in integration

Common 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	
Supply	400V - 3ph - 50Hz												V-ph-Hz
Quantity-type compressor-n° circ-part load	1 - TWIN SCREW- 1 - 25/100%							2 - TWIN SCREW- 1 - 13/100%					-
Quantity-type heat exchanged plant side	1 - SHELL & TUBE												-
Water content heat exchanged plant side	115	110	106	165	159	153	270	200	353	343	325	315	l
Water connection IN/OUT heat exchanged plant side	DN 125			DN 150			DN 200	DN 150	DN 200				Vic
Ø x thickness Gas connection	67	67	67	67	67	76	76	67	67	67	76	76	mm
Ø x thickness Fluid connection	42	42	42	42	42	54	54	42	42	42	54	54	mm
Operation weight	1501	1514	1527	2103	2136	2185	2483	2857	4098	4105	4257	4326	kg
F.L.A. Full Load Ampere	162	181	211	232	270	309	340	422	464	540	618	680	A

Cooling only (IR)

Cooling only (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	
Cooling capacity (E)	249	276	314	361	423	475	524	627	723	846	950	1048	kW
Total power input	72,0	79,0	90,0	103	121	137	151	181	207	243	274	301	kW
EER (E)	**3,46**	**3,49**	**3,49**	**3,5**	**3,48**	**3,47**	**3,48**	**3,46**	**3,5**	**3,48**	**3,47**	**3,48**	-
ESEER (E)	**4,02**	**4,05**	**4,04**	**4,06**	**4,05**	**4,06**	**4,09**	**4,09**	**4,15**	**4,13**	**4,14**	**4,16**	-
Water flow rate plant side	11,9	13,2	15,0	17,3	20,2	22,7	25,0	30,0	34,5	40,4	45,4	50,1	l/s
Water pressure drop plant side (E)	36	28	36	34	43	34	42	41	35	47	47	36	kPa

Cooling only (IR) - De-supeheated Version (VD) - Basic Configuration (AB)

Cooling only (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	
Cooling capacity	259	287	327	375	440	494	545	652	752	880	988	1090	kW
Total power input	69,8	76,6	87,3	99,9	117	133	146	176	201	236	266	292	kW
EER	**3,71**	**3,75**	**3,74**	**3,76**	**3,75**	**3,72**	**3,72**	**3,71**	**3,74**	**3,73**	**3,72**	**3,73**	-
Water flow rate plant side	12,4	13,7	15,6	17,9	21	23,6	26	31,2	35,9	42	47,2	52,1	l/s
Water pressure drop plant side (E)	39	30	39	37	47	37	46	44	38	51	51	39	kPa
Heating recovery capacity	66,3	72,8	82,9	94,9	112	126	139	167	191	224	252	277	kW
Water flow rate recovery	3,2	3,5	4,0	4,5	5,3	6,0	6,7	8,0	9,1	10,7	12,1	13,3	l/s
Water pressure drop rec.	9	11	11	14	13	10	13	11	14	13	10	13	kPa

Basic Configuration (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	
SWL (E)	97	97	97	98	98	98	98	99	100	100	100	100	dB(A)
SPL 1 m	79	79	79	80	80	80	80	80	81	81	81	81	dB(A)
SPL 5 m	70	70	70	72	72	72	71	72	73	73	73	73	dB(A)
SPL 10 m	65	65	65	67	67	67	66	67	68	68	68	68	dB(A)

Basic Configuration + Low noise kit (AB+KS)

	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
SWL (E)	92	93	92	93	93	94	94	94	95	95	96	96	dB(A)
SPL 1 m	74	75	74	75	75	76	76	75	76	76	77	77	dB(A)
SPL 5 m	65	66	65	66	66	67	67	67	68	68	69	69	dB(A)
SPL 10 m	60	61	60	61	61	62	62	62	63	63	64	64	dB(A)

NOTES:

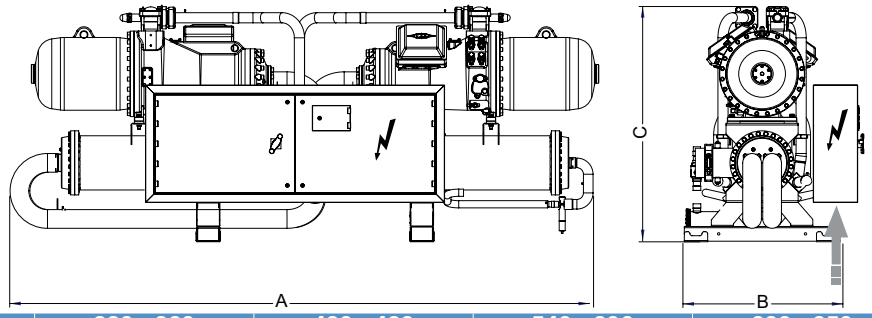
Cooling capacity values measured with plant side water 12/7°C - Condensation temperature 50°C (Dew point) - sub-cooling 5°K.

Cooling capacity De-superheating Version values measured with plant side water 12/7°C - Condensation temperature 50°C (Dew point) - sub-cooling 5°K during heat recovery operation. .

SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.

SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Dimensions and minimun operating space



		280 - 360	420 - 480	540 - 600	820 - 950	1100 - 1200
A	mm	3900	3900	3900	4400	4400
B	mm	1100	1100	1100	1190	1230
C	mm	1845	1880	2045	1880	2045
IN - OUT Evap.	VIC.	DN125	DN150	DN150	DN200	DN200

> CR
REMOTE CONDENSERS

NEW

* Units Series

Configurations

Tipo 1 horizontal flow
Tipo 2 vertical flow
Tipo 3 vertical flow

Available suond configurations

AB Basic
AS Low Noise
AX eXtra Low Noise

* VB unit specifications

This series of remote condensers are designed for combination with Condenserless unit EVW. The units in question are suitable for outdoor installation. When developing the unit, particular attention was paid to problems of noise in order to meet increasingly more stringent in terms of noise pollution. Are available three levels of sound attenuation (Base, Low noise, eXtra Low noise.)
All units are carefully constructed in compliance with current regulations and are individually tested.

Basic Configuration (AB)

- STRUCTURE: made of sturdy galvanized steel sheet.
- SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,
- FANS: helical fans with crescent-shaped blades to limit noise

Low noise Configuration (AS)

- FANS: reduced speed

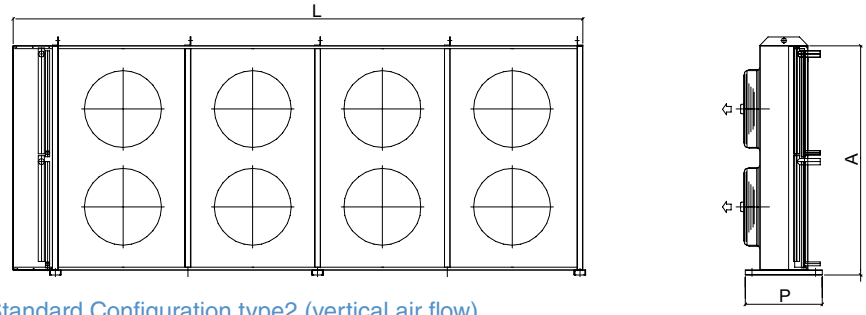
EXtra Low noise Configuration (AX)

- FANS: further fan speed reduction
- SOURCE SIDE HEAT EXCHANGER: larger than the basic version, to further increase the heat exchange coefficient.

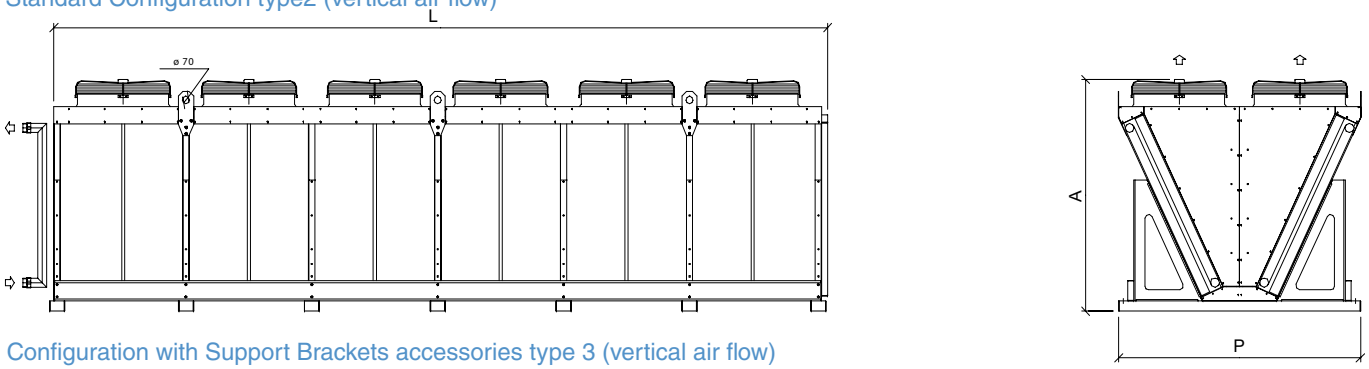
* Main accessories/Options

Condensation Control
Junction box, consists of control and power wiring in a waterproof box (IP54) with terminal block,
Electric panel EC, similar to the junction box but complete with a main disconnecting switch General section, fuses and contactor, fans, transformer auxiliary, alarm relays, terminals for ON-OFF from Condenserless
Rubber dampers
Brackets

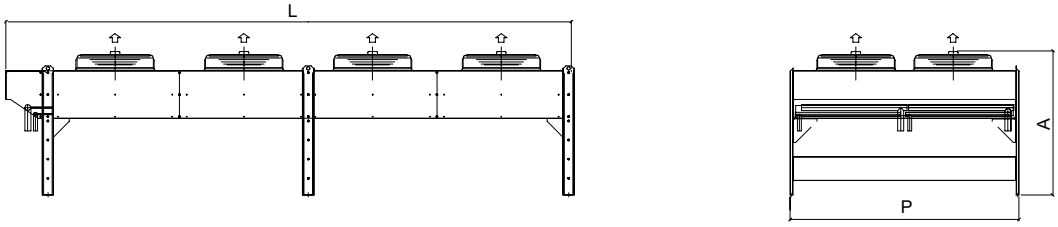
Standard Configuration type 1 (horizontal air flow)



Standard Configuration type2 (vertical air flow)



Configuration with Support Brackets accessories type 3 (vertical air flow)



Basic Configuration (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	
Gas connection	2x42	2x54	2x54	2x54	2x54	2x54	2x64	2x64	2x76	2x76	2x76	2x76	n° x Ø
Fluid connection	2x35	2x42	2x42	2x42	2x35	2x42	2x42	2x42	2x42	2x54	2x54	2x54	n° x Ø
n° 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
Total power	8	12	12	12	16	16	20	20	24	28	32	43,2	kw
Standard Configuration						Type 1						Type 2	
Lenght [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
Width [P]	800	800	800	800	800	800	800	800	800	800	800	2400	mm
Configuration						Type 3						-	-
Lenght [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
Width [P]	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	-	mm
Weight	543	742	742	804	982	1065	1222	1325	1585	1845	2106	2879	kg
SPL	86	88	88	88	89	89	90	90	91	91	93	99	dB(A)
SWL 1mt	70	72	72	72	73	73	74	74	74	74	76	82	dB(A)
SWL 5mt	59	61	61	61	62	62	63	63	63	63	65	71	dB(A)
SWL 10mt	54	56	56	56	57	57	58	58	58	58	60	66	dB(A)

Low noise Configuration (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	
Gas connection	2x54	2x54	2x54	2x54	2x54	2x64	2x64	2x76	2x76	2x76	2x76	2x76	n° x Ø
Fluid connection	2x42	2x42	2x42	2x35	2x42	2x42	2x42	2x42	2x54	2x54	2x54	2x54	n° x Ø
n° 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
Total power	12	12	7,62	10,16	10,16	12,7	12,7	15,24	17,78	20,32	29,4	29,4	kw
Total input current	25,8	25,8	15	20	20	25	25	30	35	40	62,4	62,4	A
Standard Configuration						Type 1						Type 2	-
Lenght [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
Width [P]	800	800	800	800	800	800	800	800	800	800	2400	2400	mm
Configuration						Type 3					-	-	-
Lenght [L]	4580	4580	4580	5930	5930	7280	7280	8630	9980	11330	-	-	mm
Height [A]	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	-	-	mm
Width [P]	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	-	-	mm
Weight	742	742	804	982	1065	1222	1325	1585	1845	2106	2879	3056	kg
SPL	81	81	81	82	82	83	83	84	84	86	90	90	dB(A)
SWL 1mt	65	65	65	66	66	67	67	67	67	69	73	73	dB(A)
SWL 5mt	54	54	54	55	55	56	56	56	56	58	62	62	dB(A)
SWL 10mt	49	49	49	50	50	51	51	51	51	53	57	57	dB(A)

eXtra low noise Configuration (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	
Gas connection	2x42	2x54	2x54	2x64	2x64	2x76	2x76	2x76	2x76	2x76	2x76	2x76	n° x Ø
Fluid connection	2x35	2x35	2x42	2x42	2x42	2x42	2x54	2x54	2x64	2x64	2x64	2x64	n° x Ø
n° 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
Total power	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
Total input current	10	10	10	12,5	12,5	15	17,5	20	19	19	37,8	37,8	A
Standard Configuration						Type 1						Type 2	
Lenght [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
Width [P]	800	800	800	800	800	800	800	800	800	2400	2400	2400	mm
Configuration						Type 3						-	-
Lenght [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
Width [P]	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	-	-	mm
Weight	900	982	1065	1222	1325	1585	1702	1942	3309	3515	3515	3515	kg
SPL	74	74	74	75	75	76	76	77	76	76	83	83	dB(A)
SWL 1mt	58	58	58	59	59	59	59	60	59	59	66	66	dB(A)
SWL 5mt	47	47	47	48	48	48	48	49	48	48	55	55	dB(A)
SWL 10mt	42	42	42	43	43	43	43	44	43	43	50	50	dB(A)

NOTE:
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

> Main characteristics terminal units

FAN COIL
CEILING CONCEALED
DUCTED FAN COIL
AQUASEL

> 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.

CASSETTE-TYPE FAN COIL

Series **FCS** features 2 versions:
- standard systems with 2 pipes FCS-2T
- systems with 4 pipes FCS-4T

Range include 6 sizes with two pipes and 3 with four pipes and air flow-rates up to 1,750 m3/h.

WALL-MOUNTED FAN COIL

Series **FCP** supplied with remote control and three-way valve. The range comprises 3 sizes with air flow-rates up to 730 m3/h.

> CEILING CONCEALED

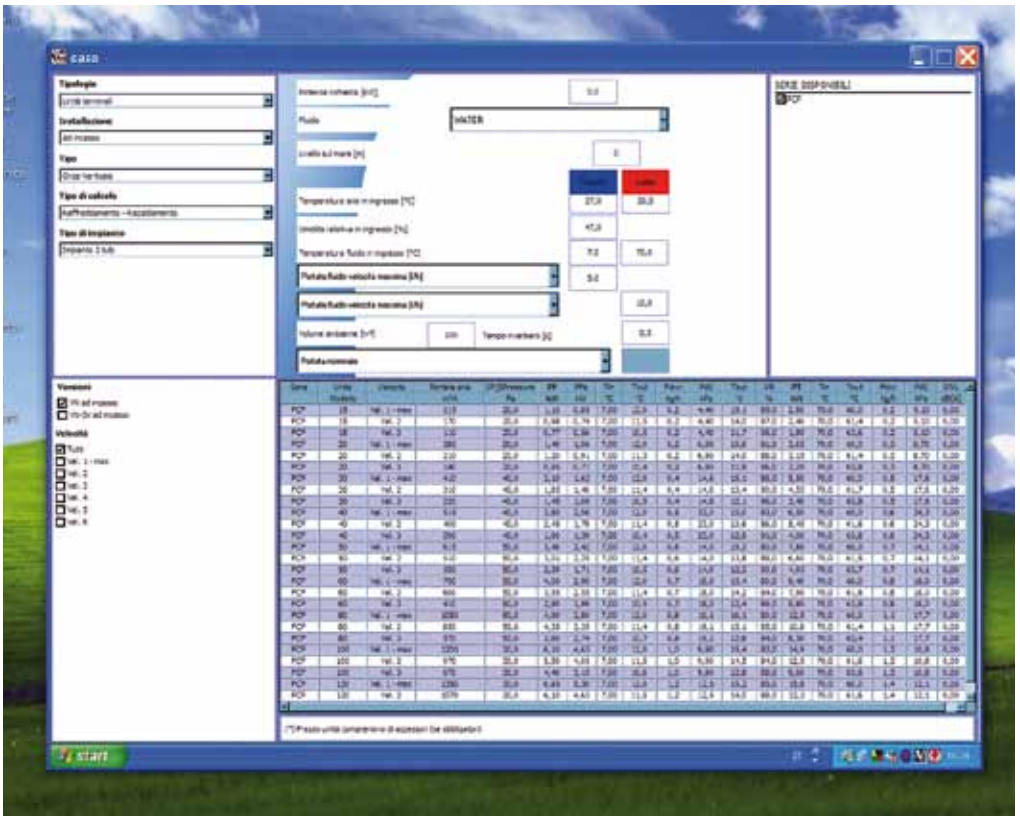
FAN COIL TYPE

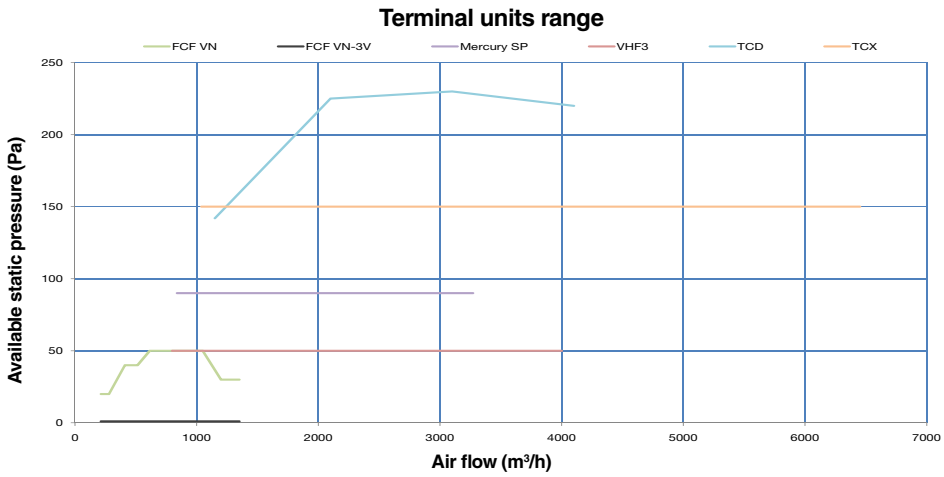
Fan coil series **TOP FAN** PLUS features 2 versions:
- without cabinet, ceiling concealed, with six-speed motor
- without cabinet, ceiling concealed, with three-speed motor
- with 3-rows and 4-rows coil

Range include 9 sizes with air flow-rates up to 1,350 m3/h.

FAN COIL TYPE

VHF3 series units have centrifugal fans, low head, structure complete with soundproofing, condensate tray and air filter.
Range include 8 sizes with air flow rate up to 4,000 m3/h and head 50 Pa.





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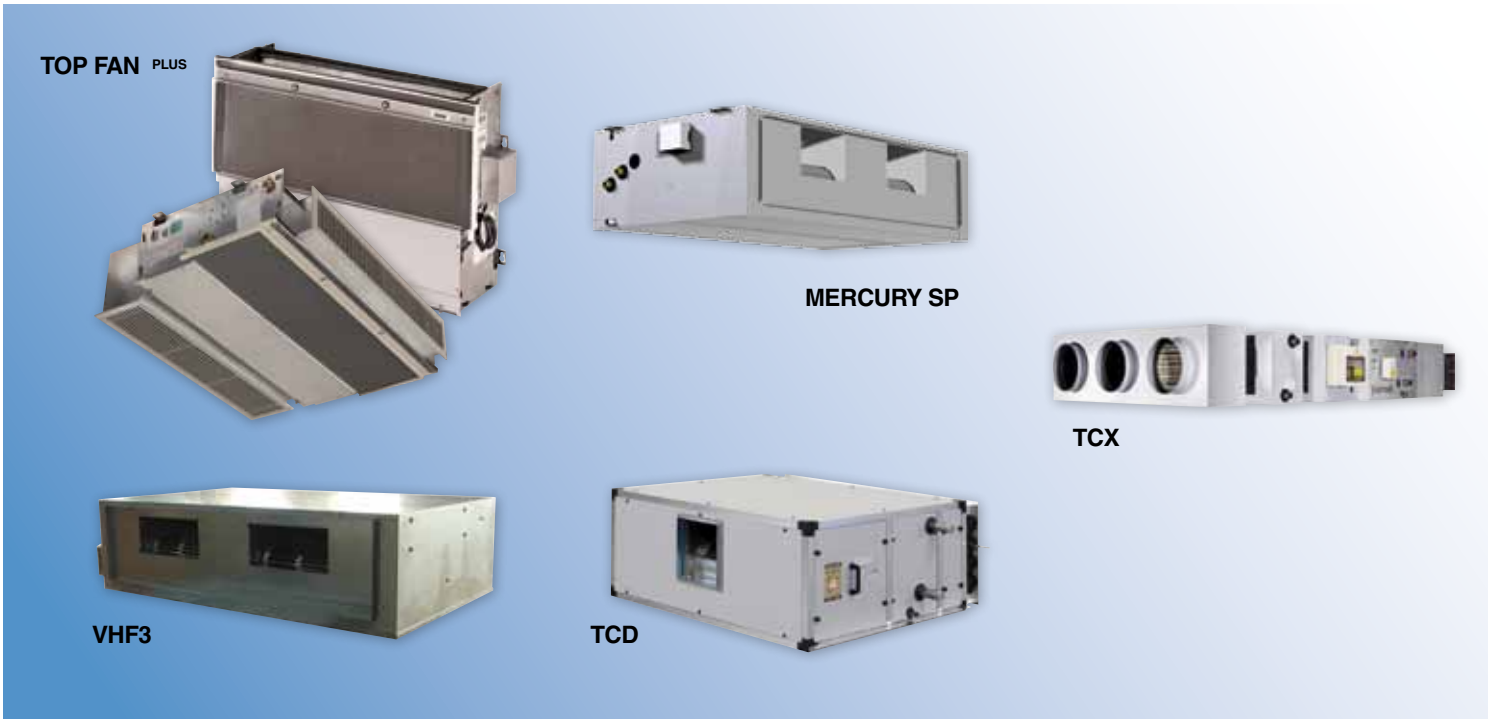


> DUCTED FAN COIL

FAN COIL IN SINGLE PANEL

MERCURY SP series with centrifugal fans, medium head.
Range include 8 sizes with air flow-rates up to 3,270 m3/h and head 90 Pa

FAN COILS IN DOUBLE PANEL

TCD series units with centrifugal fans, high pressure, structure in double panel, featuring versions:
- Vertical with 2, 4 and 6-row exchanger
- Horizontal with 2, 4 and 6-row exchanger

Range include 5 sizes with air flow-rates up to 5,400 m3/h, medium head 200 Pa.

FAN COILS IN DOUBLE PANEL

TCX series with centrifugal fans, high head, structure in double panel, featuring the following versions:
- systems with 2 pipes, heating only, 2 rows
- systems with 2 pipes, heating and cooling, 4 or 6 rows
- systems with 4 pipes, 2, 4 or 6 rows
- systems with 2 pipes, 4 or 6 rows+electric post-heating section or + drip separator section

Range include 7 sizes with air flow-rates up to 6,450 m3/h and head 150 Pa

> AQUASEL

The Ferroli design staff has developed software for choosing the right FERROLI terminal unit for your system needs. FERROLI software calculates the performance values according to the inlet air temperature/humidity, the water Dt/temperature and, in the case of celiling 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 Ferroli Industrial Climate Control Branch.

> Main characteristics terminal units

4XUT TERMINAL UNIT MANAGEMENT

The Ferroli team has developed a relay card enabling the management of up to 4 terminal units with a single control.

This is a relay card complete with single multiple contacts to feed the three speeds of the load with the option of controlling the valves for systems with 2 or 4 pipes through another two relays.

* Technical characteristics

■ ENCLOSURE BOX : made in plastic suitable for indoor installation.

■ ELECTRONIC BOARD : positioned on a base, the relay card consists of 2 +3 relays, 6 terminal blocks and cable glands.

■ RELAYS :

• 2 single-contact relays for controlling valves (systems with 2 pipes and systems with 4 pipes),

• 3 multiple-contact type relays for controlling the three fan speeds.

■ TERMINAL BLOCKS : made in plastic and are complete with a spring device for clamping the electrical wires.

To prevent installation errors, the names of the single contacts are given on the board (fig. b).

■ FIXING BRACKET : The box comes complete with a bracket suitable for fixing to the structure of the Fan Coil TOP FAN (fig. a). Not suitable for other loads or uses.

* 4XUT System Operation

A 4XUT System card can control

- 2, 3, 4 exposed fan coil units VM-B,VM-F with 2 or 4 pipes,
- 2, 3, 4 recessed-mounted units VN-3V, VN or VHF3 with 2 or 4 pipes,
- 2, 3, 4 cassette-type fan coil units FCS with 2 or 4 pipes
- 2, 3, 4 Ducted-type fan coils MERCURY SP, or TCX type.

Each output terminal block must be used for a single load.

The control voltage signal from the control, is repeated for a max. of 4 and sent to the loads connected.

The electrical connections between control-card and card-terminal units (indicated with dashes in the diagram opposite) are the installer's responsibility.

Fig.a

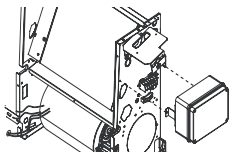
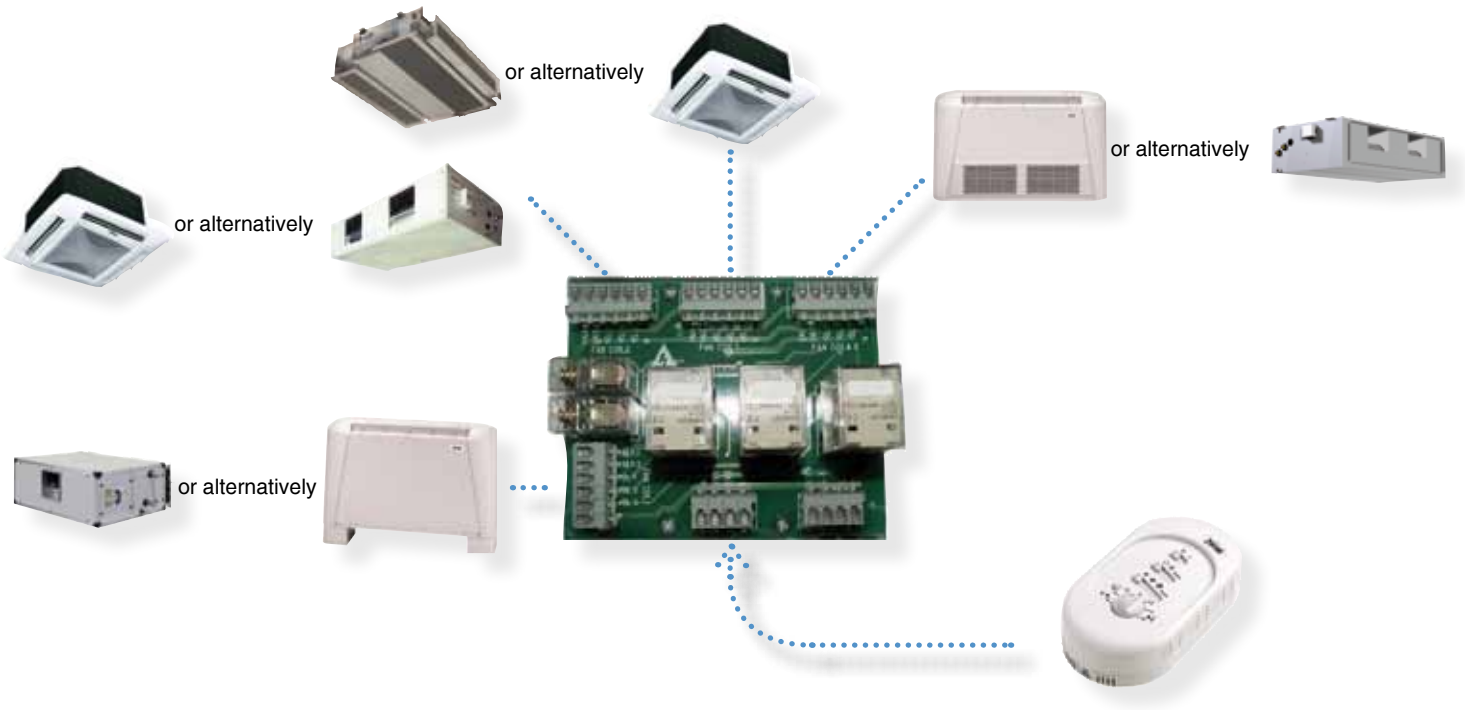


Fig.b



NB: To connect more than 4 units, several 4XUT SYSTEM cards must be used. In this case the cards will be connected in parallel, and not the units. For more than 2 cards, the valve control must be taken from the relay of the first card

> Main characteristics terminal units

8SF MASTER - SLAVE UNIT MANAGEMENT

The electronic thermostat 8SF is widely used in residential and commercial type applications due to the clear adjustment logic and the quick connection between various modules (only 2 wires in dedicated channel).
The 8SF system consists of a room MASTER terminal, a power module to be installed in each unit, an expansion for systems with 4 pipes or with electrical resistance and a further expansion for including a group of 8 units in a central system through KNX language.

* Technical characteristics of components

ROOM MASTER

The thermostat 8SF is the UNIT CONTROL and performs the function of MASTER (fig. a).
Wall-mounting is provided for and it is suitable for combining with wall electrical boxes normally available on the market.
Its careful design features a display, showing the manually programmable functions. Using the side buttons the following operations are possible:
• Room set point adjustment,
• Operation mode (heat-cool-Auto) management,
• Fan speed selection (max-med-min-Auto),
• Display of date and time and weekly timer setting.

The connection to the MAIN board is via two screened wires.
Attention must be paid to the installation of these wires and the polarity of the connection terminals.

MAIN POWER MODULE

This is the main control of the system and must be installed on every unit (fig. b).
The setting of the parameters done from the wall control is analysed by each power board for a maximum of 8 units.
Using Dip-switches the fan coil units can be configured for:
• System with 2 pipes (and thermostatting on valve),
• System with 2 pipes (and thermostatting on fan),
• System with 2 pipes + electrical resistance,
• System with 4 pipes.

The functions managed by the power module are:
• Control of 3-speed fan,
• Control of electrothermal-type valves in on/off mode,
• Control of electrical resistance in PWM to optimise energy consumption,
• Monitoring water temperature to define summer/winter change over,
• On/st-by switching via the door/window digital input.

Automatic adjustment Set points
• systems with 2 pipes and seasonal S/W change- over; set point 20°C in heating and 25°C in cooling,
• systems with 4 or 2 pipes + resistance and seasonal S/W change over; set point 21°C in heating and 23°C in cooling,
• antifreeze protection (set point 8°C).
An expansion (Fig. c) can be included in the MAIN power module, for configuration in systems with 4 or 2 pipes+Electrical resistance.
The system can be integrated with a further expansion (fig. d), enabling the exchange of information with a centralised plant management system through KNX protocol language.
The electrical connections between modules are made with quick connectors, whereas screw-type connections are minimised.

LOCAL UNIT

This thermostat, for installation on the unit or wall mounting (to be connected at a max. distance of 3 m) is the SLAVE terminal (fig. e).
It enables modification of the parameters set from the MASTER only on the unit to which it is connected, making it partly independent for the choice of Set Point or fan speed with respect to the others.
The functions managed are:
• Fan On/off/ speed selection Auto-Low-Medium-High; Auto speed is equivalent to the speed selected by the MASTER,
• Set Point variation cursor (+ or -6°C with respect to the value set in the Master),
• Standby/ON indicator LED
• Availability LEDs for heating (red) and cooling (blue).

Fig.a

Fig.d

Fig.c

Fig.b

Fig.e

* Technical characteristics of components

AIR PROBE and WATER PROBE

The PROBES (NTC type) read the air or water temperature, depending on where they are placed. They are connected to the MAIN power module by a quick connector. In detail:

Air PROBE:

• Enables the room temperature of the fan coil on which it is placed to be controlled locally, whereas the others refer to the value read by the MASTER. It is supplied with the SLAVE control.

Water PROBE:

• It performs the automatic change-over and HOT START function. It is supplied with the MASTER control (one probe is sufficient for the entire group).

* Operation

SINGLE UNIT

In OPTION A indicated below, the system is complete with:

- no.1 MASTER control that defines the Set Point values and fan speeds,
- no.1 MAIN power module, installed on the fan coil, which manages the information coming from the control by means of a PI type adjustment algorithm.
- no.1 Water probe, supplied with the MASTER control for the Hot Start function.

SETTING MAIN BOARD ON EACH SINGLE UNIT

In OPTION B indicated below, the system is complete with

no.1 - MASTER control that defines the Set Point values and fan speeds,

no.8 - MAIN power module, installed on the fan coil, which manages the information coming from the control by means of a PI type adjustment algorithm.

Using the Dip-Switches on the MAIN power board it is possible to configure each fan coil in a univocal way:

- FCF 01 configured for system with 2 pipes and thermostatting on fan;
- FCF 02 configured for system with 2 pipes and thermostatting on valve;
- FCF 03 configured for system with 2 pipes and electrical resistance;
- FCF 04 configured for system with 4 pipes and thermostatting on valve;
- FCF 05 configured for system with 2 pipes and thermostatting on valve;
- FCF 06 configured for system with 2 pipes and thermostatting on valve;
- FCF07 configured for working independently thanks to the connection with the SLAVE control (air probe supplied standard);
- FCF 08 configured for working independently thanks to the connection with the SLAVE control (supplied standard with air probe).

NB: The electrical connection between modules (indicated in dashes and the installer's responsibility) is made with a two-core cable.

Pay attention to the installation of this line and the polarity of the connection terminals.

Option A

Option B

* System management

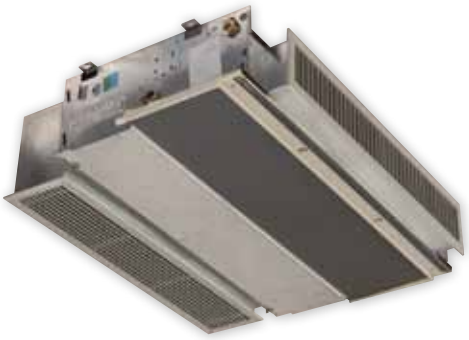
8SF can be integrated with a further expansion. A group of 8 fan coils can be managed as a single node in a system under a SYSTEM MASTER for receiving signals up to a max. of 63 nodes.

Through a SYSTEM MASTER TERMINAL the 63 nodes can be managed and a heating and air conditioning source can be activated.

The SYSTEM MASTER receiver and the SYSTEM MASTER TERMINAL are the installer's responsibility.
The communication language between the group of 8 fan coils and the components must be the KNX protocol.

> 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 costomer 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 ONUNIT
Cabinet switch
Cabinet standard thermostat
Cabinet advanced thermostat

REMOTE INSTALLATION
Remote switch
Remote standard thermostat
Remote advanced thermostat

COMMON ACCESSORIES

Hot-start consent thermostat
4XUT system
8SF Zone Master control
8SF main power module
8SF Local unit
Expansion for systems with 4 pipes
Expansion electrical heater management
KNX expansion
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

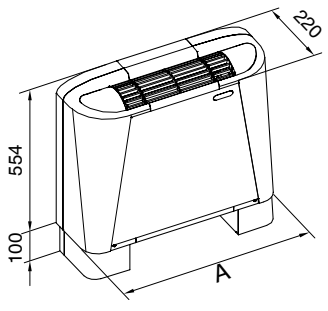
Support feet (VM-B only)
Adjustable fins
Outside air inlet damper with front grill (VM-B only)
Damper motor with single-phase power supply (VM-B only)
Rear closing panel

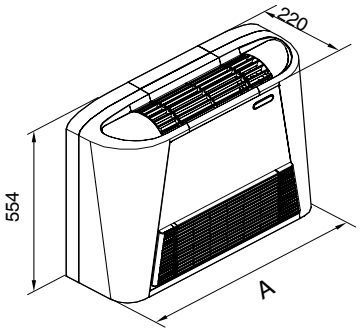
VN and VN-3V ACCESSORIES

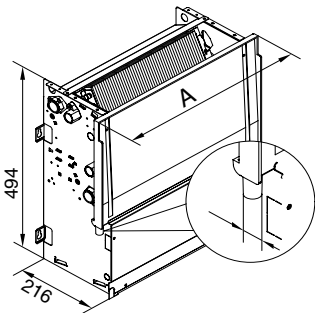
Inlet grill
Straight inlet flange
Perpendicular inlet flange
Straight outlet flange
Perpendicular outlet flange
Inlet plenum
Outlet plenum
Outlet grill

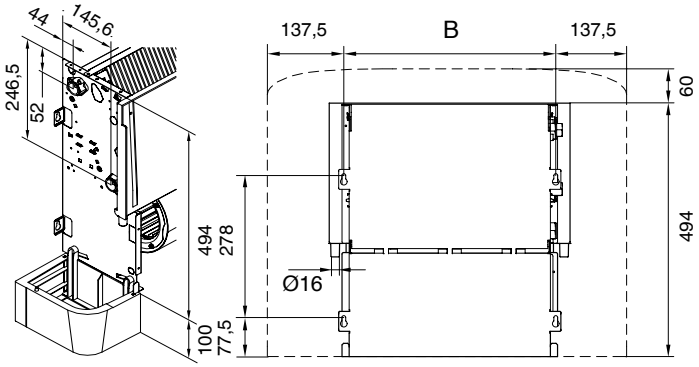
Common Data		15	20	30	40	50	60	80	100	120	
N° fan		1	1	1	1	2	2	2	2	2	N°
	max.	215	280	410	515	615	750	1050	1200	1350	m³/h
Air flow rate	med.	170	210	310	400	510	600	850	970	1070	m³/h
	min	110	140	220	290	350	410	570	670	720	m³/h
VN-3V external static pressure		0	0	0	0	0	0	0	0	0	Pa
VN external static 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 e VN-3V 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

Dimensions









Mod		15 - 20	30 - 40	50 - 60 - 80	100 - 120
A	mm	690	940	1190	1440
B	mm	415	665	915	1165

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"	3/4"	Ø
Water connection 1R	F	1/2"	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

NEW

4 rows coil data

		15-4	20-4	30-4	40-4	50-4	60-4	80-4	100-4	120-4	
	max.	1400	1760	2790	3580	4050	4890	6450	7450	8200	W
Total Cooling Capacity *	med.	1220	1460	2290	2940	3510	4020	5680	6620	7160	W
	min	900	1090	1700	2200	2500	2980	4000	5020	5250	W
	max.	1050	1305	2060	2580	2950	3540	4950	5580	6210	W
Sensible Cooling Capacity *	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
	max.	3050	3950	5880	6950	8350	10100	13200	15800	16900	W
Heating Capacity **	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
	max.	45	48	52	54	53	55	61	63	65	dB(A)
Sound power level	med.	39	42	45	47	46	50	58	59	60	dB(A)
	min	32	35	39	41	37	39	48	51	52	dB(A)
	max.	36	39	43	45	44	46	52	54	56	dB(A)
Sound pressure level	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 connecttion 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.

> FCS
FAN COIL CASSETTE TYPE

* Units Series

Unit type
FCS 2T 2 pipes systems
FCS 4T 4 pipes systems

* Unit specifications

Fan coil cassette type 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 cassette 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 amply 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.

Installation therefore only requires the electrical and hydraulic connections.

Construction characteristics of versions

- SUPPORT STRUCTURE: in galvanised steel sheet, insulated externally and internally to prevent heat loss and condensation.
- HEAT EXCHANGE COIL: made with copper pipes arranged in staggered rows and with corrugated aluminium finning, locked by mechanical expansion of the pipes.
- FRONT GRILL: in thermoplastic material, consisting of an attractively designed inlet grill complete with filter and four airflow diverting fins. Intake occurs in the middle part of the grill, whereas delivery occurs through the manually-adjustable perimeter slots.
- AIR FILTER: situated inside the inlet grill and easily removed, it is made from regenerable materials, cleanable simply by washing.
- CONDENSATE TRAY: in plastic material, of considerable capacity complete with condensate drain pipe sized for elimination of the water even in critical conditions. A device that raises the condensate from the collection tray to the drain level is fitted standard.
- FAN MOTOR: no.1 directly coupled type, the unit is equipped with a three-speed motor with internal thermal protection and a mixed flow fan (axial-centrifugal) in plastic material. Single-phase power supply T=230V.
- ELECTRIC BOARD: fitted inside the unit for easy access during installation, complete with connectors for quick electrical connections.

INSTALLATION OPTIONS

The units have pre-cut side openings allowing the unit to be connected by means of a intake duct to a grill for external air change, or conveying treated air to an adjoining room.

* Main accessories/Options

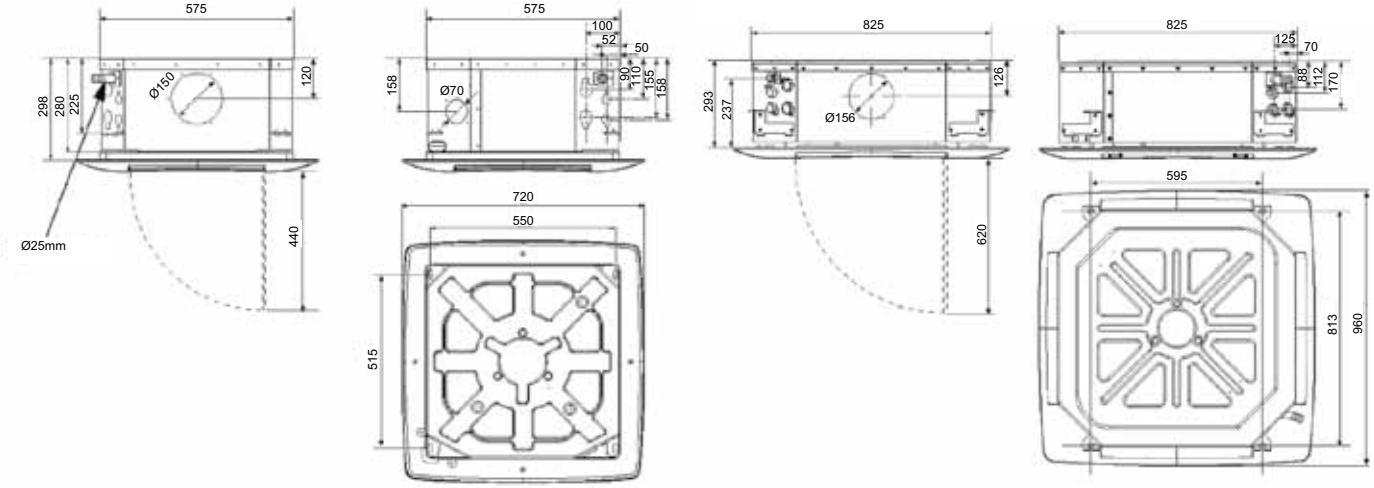
Remote switch
Remote standard thermostat
Remote advanced thermostat
Hot-start consent thermostat
4XUT system
Supplementary tray
Main coil 3-way valve
Heating only supplementary coil
Supplementary coil 3-way valve

NB: USE OF THE VALVE/TRAY IS COMPULSORY WHEN THE UNIT IS USED FOR COOLING.

		04	08	10	12	16	20	04-4T	10-4T	20-4T	
Version				2 Pipe					4 Pipe		
	max	2400	4000	4700	6300	7600	10000	1900	4000	9800	W
Cooling Capacity (*) (E)	med	1800	2850	3500	4500	5100	7100	1430	3050	7300	W
	min	1550	1900	2850	3400	3170	3900	1230	2500	4100	W
Water flow rate (*)		0,11	0,19	0,22	0:30	0:36	0:48	0,09	0,19	0,47	l\s
Water pressure drop(E) (*)		9	12	20	22	14	24	10,8	19,7	30	kPa
	max	3800	5000	6600	8700	10800	13900	-	-	-	W
Heating Capacity (**) (E)	med	3000	4090	4800	6300	7300	10000	-	-	-	W
	min	2600	2410	4050	4700	4300	5400	-	-	-	W
Water flow rate (**)		0,11	0,19	0,22	0:30	0:36	0:48	-	-	-	l\s
	max	7110	9770	11760	14600	18000	24500	1900	4610	9000	W
Heating Capacity (***)	med	5600	8000	8500	10800	13200	17500	1440	3500	7900	W
	min	4850	4700	7200	8200	8400	9850	1240	2730	5100	W
Water flow rate (***)		0,17	0,23	0,28	0,35	0,43	0,6	0:05	0:11	0:22	l/s
Supply						230-1-50					
	max	660	700	850	1100	1300	1750	660	850	1750	m3\h
Air flow rate	med	450	490	600	770	910	1220	450	600	1220	m3\h
	min	360	300	470	550	550	700	360	470	700	m3\h
	max	49	54	57	49	56	63	49	58	63	dB(A)
Sound power level (SWL) (E)	med	38	45	48	40	49	55	38	50	55	dB(A)
	min	33	32	42	34	40	42	33	42	42	dB(A)
	max	41	46	49	41	48	55	41	50	55	dB(A)
Sound pressure level (SPL)	med	30	37	40	32	41	47	30	42	47	dB(A)
	min	25	24	34	26	32	34	25	34	34	dB(A)
	max	70	85	95	85	120	200	70	110	200	W
Motor input power	med	45	55	75	51	75	140	45	75	140	W
	min	35	35	55	33	40	70	35	55	70	W
N° fan		1	n°								
Unit weight + kit grille		21,5	22,5	22,5	46	48	51	21,5	22,5	51	kg
Water connection		3/4	3/4	3/4	1	1	1	3/4	3/4	1	"
Condensation draining connections		25	25	25	25	25	25	25	25	25	mm

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

Dimensions



* TOP FAN 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

* 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.

* Ceiling concealed TOP FAN 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.

* FCS 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 valve accessory is present)
Ventilation speed
- Max, Med, Min, Auto
Set-Point
Air Sweep for air flow adjustment
Timer

The remote control display shows:
Operation mode
Selected fan speed
Set point value
Timer activation
Time setting
Signal sent symbol
Fin position

> FCP
HI-WALL TYPE FAN COIL

* Units Series

Unit type

FCP-V with three-way valve and remote control

* Unit specifications

Hi-Wall type fan coil, 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, and very compact 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.

Installation therefore only requires the electrical and hydraulic connections.

Construction characteristics of versions

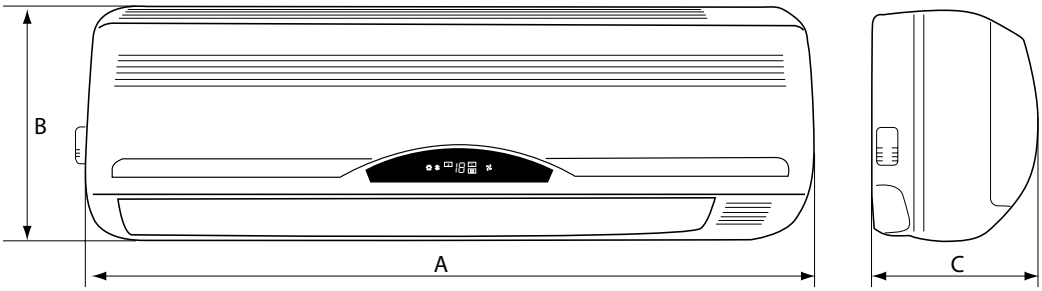
- SUPPORT STRUCTURE: in ABS material to ensure high mechanical characteristics and resistance to ageing.
- HEAT EXCHANGE COIL: in copper pipes and with aluminium fins, complete with air vent and condensate tray in ABS with drain.
- WATER SIDE CONNECTIONS: the unit is equipped with a pair of flexible hydraulic pipes to facilitate connections to the system.

- AIR FILTER: regenerable type.
- VENTILATING UNIT: it consist of a tangential fan coupled to a three-speed electric motor.
- ELECTRONIC BOARD: positioned inside the unit, it manages the settings sent from the remote control.
- REMOTE CONTROL: complete with LCD display, for quick setting of parameters necessary for correct use of the unit.
- 3-WAY VALVE: fitted standard inside the unit (picture of detail opposite).

		20	30	40	
	max.	1800	2700	3700	[W]
Cooling Capacity (*)	med.	1400	2250	3100	[W]
	min	1200	2000	2700	[W]
Water flow rate (*)		310	464	636	[l/h]
Dehumidifying max speed (*)		400	850	1110	[g/h]
Sensible Cooling Capacity max speed (*)		1530	2100	2960	[W]
Water pressure drop (*)		17	21	37	[Kpa]
	max.	3400	4500	6600	[W]
Heating Capacity (**)	med.	2900	3800	5500	[W]
	min	2550	3300	4800	[W]
Water flow rate (**)		292	387	568	[l/h]
Water pressure drop **		14	17	24	[Kpa]
Heating Capacity (***)	max.	2500	3400	5000	[W]
Water flow rate (***)		14	18	31	[Kpa]
	max.	380	500	730	[m³/h]
Air flow rate	med.	260	410	600	[m³/h]
	min	200	350	520	[m³/h]
N° fans		1	1	1	N°
	max.	41	42	47	[dB(A)]
Sound pressure level (SPL)	med.	35	40	45	[dB(A)]
	min	32	37	43	[dB(A)]
Motor input power		30	36	46	[W]
Water connection	F	1/2" F	1/2" F	1/2" F	["]
Condensation draining connections	F	16	16	16	[mm]
Three way valve	Type		ON-OFF		
	Connection	1/2"	1/2"	1/2"	["]
Unit weight		8	14	14	kg

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.
SPL : sound pressure in a 100 m3 place with reverberation time of 0.5 seconds.

Dimensions



Mod		20	30	40
A	mm	790	1030	1030
B	mm	270	310	310
C	mm	190	205	205

> VHF3

CEILING CONCEALED FAN COIL

NEW

* Units Series

Type unit

VHF3 2T	2 pipes systems
VHF3 4T	4 pipes systems

* Unit specifications

Ceiling concealed fan coil, 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 ceiling concealed fan coil unit 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 are built to adapt to the various types of system design and meet the requirements of highly qualified designers.

The careful design of the main components, refined styling and the flexibility of the product make it suitable for any type of installation in residential, commercial or industrial applications.

Installation therefore only requires the electrical and hydraulic connections.

Construction characteristics of versions

SUPPORT STRUCTURE: in aluzink sheet, lined with a suitable thickness of polyethylene and polyester to prevent heat loss, condensation and for soundproofing.

AIR FILTER: easily removed from bottom or side, it can be cleaned simply by washing with water.

HEAT EXCHANGE COIL: made with copper pipes arranged in staggered rows to increase heat exchange efficiency along with aluminium fins, locked by the expansion of the pipes during production. Complete with water inlet/outlet manifolds.

CONDENSATE TRAY: made in galvanised sheet steel, complete with section for connection to the discharge line.

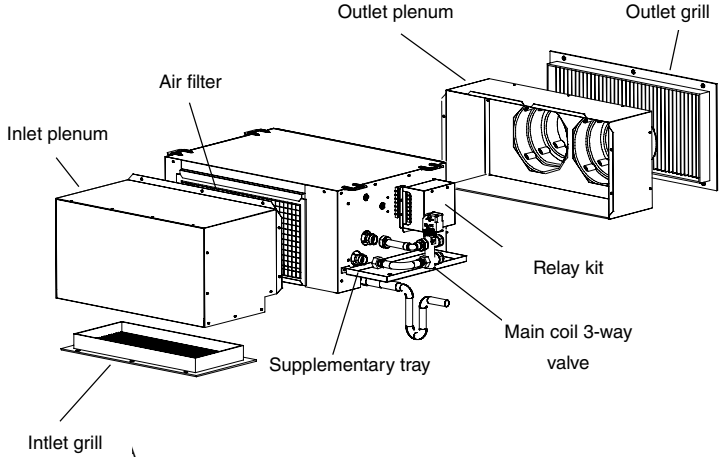
FAN MOTOR: direct drive type, the unit is equipped with a three-speed fan motor assembly with internal thermal protection and a startup capacitor always on, with a blade that is statically and dynamically balanced to minimise noise and vibration.

ELECTRICAL CONNECTIONS: The unit comes complete with a protected electrical terminal block for making the connection to the various available adjustment controls.

* Main accessories/Options

Remote switch
Remote standard thermostat
Remote advanced thermostat
Hot-start consent thermostat
4XUT system
Relay Kit
8SF Zone Master control
8SF main power module
8SF local unit
Expansion for systems with 4 pipes
Expansion for electrical resistance management
KNX expansion
Supplementary tray
Main coil 3-way valve
Outlet plenum
Inlet grill
Inlet plenum
Outlet grill
Standard air filter
Air filter Class G2

NB: In case of electrical connection of the unit to Ferroli thermostats, the unit must be fitted with the relay kit accessory (KR).



Common data			05	08	10	12	14	19	21	28	
			2T - 4T	2T - 4T	2T - 4T	2T - 4T	2T - 4T	2T - 4T	2T - 4T	2T - 4T	
		Max	800	1.100	1.300	1.750	1.800	2.700	3.400	4.000	m³/h
Air flow rate		Med	630	850	950	1.100	1.150	2.250	2.700	3.400	m³/h
		Min	430	630	730	750	800	1.700	2.100	2.900	m³/h
External static pressure****			50	50	50	50	50	50	50	50	Pa
Supply			230-1-50								V-Ph-Hz
N° fans			1	2	2	2	2	2	2	2	N°
N° motor			1	1	1	1	1	1	1	1	N°
n° speed			3	3	3	3	3	3	3	3	N°
Power input motor			100	109	115	220	225	345	450	730	W
2 - PIPES			**05-2T**	**08-2T**	**10-2T**	**12-2T**	**14-2T**	**19-2T**	**23-2T**	**28-2T**	
		Max	5.800	9.900	10.900	14.300	16.100	22.300	27.200	32.600	W
Heating Capacity *		Med	4.850	7.850	8.550	9.650	10.500	19.200	23.400	29.900	W
		Min	3.600	6.050	6.700	6.900	7.200	15.700	20.200	26.200	W
Water flow rate*		Max	826	1.393	1.703	2.116	2.356	3.285	3.922	4.799	l/h
Water pressure drop *			29	32	40	46	34	42	37	38	kPa
	Total	Max	4.800	8.100	9.900	12.300	13.700	19.100	22.800	27.900	W
	Sensible	Max	3.460	5.600	6.800	8.590	9.540	13.400	16.400	19.700	W
Cooling Capacity ***	Total	Med	4.200	7.150	7.800	9.100	9.800	16.800	20.100	25.600	W
	Sensible	Med	2.950	4.830	5.240	6.100	6.650	11.550	14.100	17.900	W
	Total	Min	3.250	5.700	6.150	6.500	6.950	14.200	17.800	23.700	W
	Sensible	Min	2.200	3.780	4.050	4.280	4.550	9.560	12.250	16.330	W
Wtare flow rate		Max	826	1.393	1.703	2.116	2.356	3.285	3.922	4.799	l/h
Water pressure drop			35	39	49	56	42	52	45	47	kPa
N° Rows coil			3	4	4	4	4	4	4	4	N°
Water content			1,11	2,63	3,11	3,34	4,45	4,67	6	7,51	l
Water connection		F	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Weight unit			20	32	35	48	52	61	68	81	Kg
4 - PIPES			**05-4T**	**08-4T**	**10-4T**	**12-4T**	**14-4T**	**19-4T**	**23-4T**	**28-4T**	
		Max	4.050	6.100	7.450	9.450	11.550	14.000	17.900	21.300	W
Heating Capacity **		Med	3.400	4.950	5.800	6.700	8.200	12.300	15.400	18.800	W
		Min	2.600	3.900	4.600	4.800	5.900	10.100	12.600	16.800	W
Water flow rate **		Max	348	525	641	813	993	1.204	1.539	1.832	l/h
Water pressure drop **			34	11	20	10	24	11	30	24	kPa
	Total	Max	3.450	6.700	7.950	9.850	11.700	14.800	18.400	22.100	W
	Sensible	Max	2.850	5.180	6.050	7.700	9.050	11.750	14.520	17.250	W
Cooling Capacity ***	Total	Med	3.100	5.700	6.500	7.500	9.000	13.300	16.200	20.300	W
	Sensible	Med	2.450	4.300	4.840	5.540	6.700	10.350	12.480	15.520	W
	Total	Min	2.500	4.720	5.400	5.500	6.900	11.250	14.050	18.600	W
	Sensible	Min	1.940	3.450	3.940	4.100	4.980	8.450	10.450	14.050	W
Water flow rate***		Max	593	1.152	1.367	1.694	2.012	2.546	3.165	3.801	l/h
Water pressure drop **			36	38	28	48	34	34	36	34	kPa
N° Rows heating coil			1	1	1	1	1	1	1	1	N°
Water content heating coil			0,37	0,66	0,78	0,84	1,11	1,17	1,5	1,88	l
Water connection heating coil		F	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
N° Rows cooling coil			2	3	3	3	3	3	3	3	N°
Water content cooling coil			0,74	1,97	2,33	2,51	3,34	3,5	4,5	5,63	l
Water connection cooling coil		F	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Weight unit			21	33	36	49	53	63	70	83	Kg

NOTES:

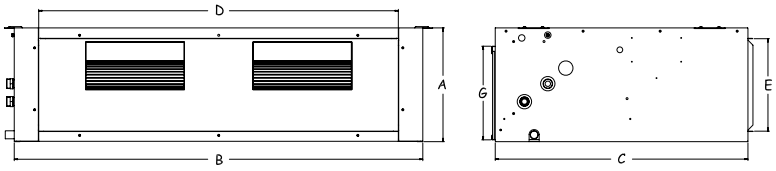
*** Room Air T=27°C D.B. / 19°C W.B. , IN/OUT water 7°/12°C, nominal air flow-rate; For medium and minimum fan speed, water delivery as in maximum speed.

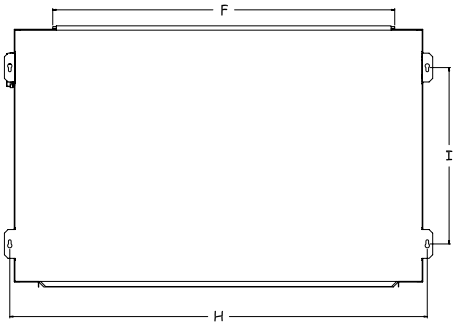
** Room Air T=20°C D.B. , IN/OUT water 70°/60°C, nominal air flow-rate; for medium and minimum fan speed, water delivery as in maximum speed.

* Room Air T=20°C D.B. , inlet water 50°C, water delivery as in cooling; Values referred to nominal air flow-rate.

**** Units at various speeds without filter

Dimensions





Mod		A	B	C	D	E	F	G	H	I
05	mm	290	640	475	550	235	475	260	665	320
08 - 10	mm	290	1005	650	915	235	950	260	1030	430
12 - 14	mm	315	1135	700	1000	260	950	260	1160	480
19 - 23	mm	360	1330	765	1200	300	1300	320	1355	540
28	mm	360	1635	765	1200	300	1300	320	1660	540

> MERCURY SP
DUCTED FAN COIL

NEW

* Units Series

Type unit
MERCURY SP horizontal unit

* Unit specifications

Ducted fan coil 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 ducted 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 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.

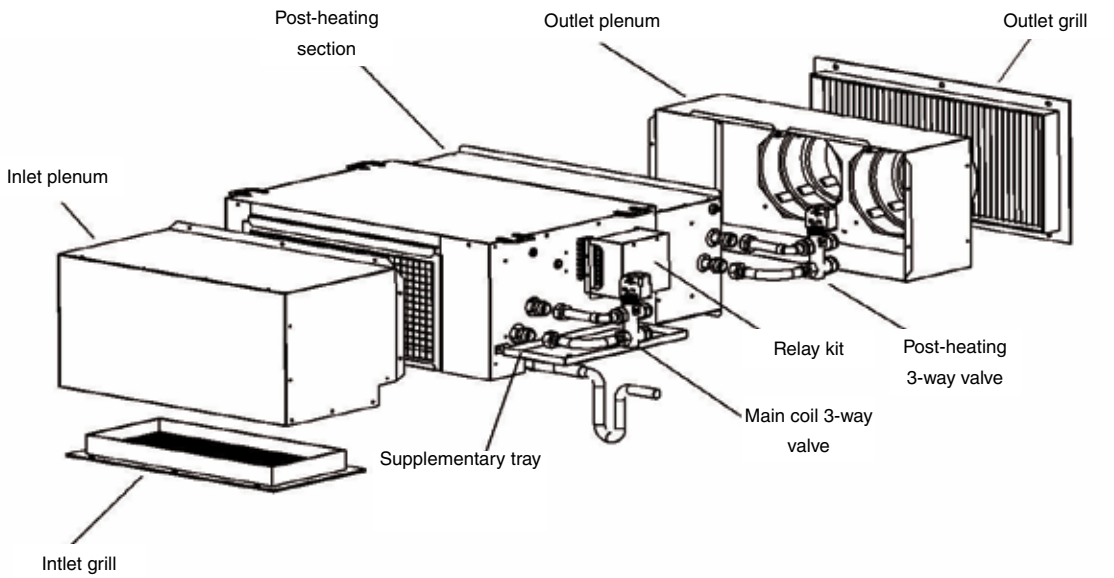
Construction characteristics

- SUPPORT STRUCTURE: in aluzink sheet, lined with a suitable thickness of polyethylene and polyester to prevent heat loss, condensation and for soundproofing.
- AIR FILTER: easily removed from bottom or side, it can be cleaned simply by washing with water.
- HEAT EXCHANGE COIL: made with copper pipes arranged in staggered rows to increase heat exchange efficiency along with aluminium fins, locked by the expansion of the pipes during production. Complete with water inlet/outlet manifolds.
- CONDENSATE TRAY: made in galvanised sheet steel, complete with section for connection to the discharge line.
- FAN MOTOR: direct drive type, the unit is equipped with a three-speed fan motor assembly with internal thermal protection and a startup capacitor always on, with a blade that is statically and dynamically balanced to minimise noise and vibration.
- ELECTRICAL CONNECTIONS: The unit comes complete with protected electrical terminal block for making the connection to the various available adjustment controls.

* Main accessories/Options

Remote switch
Remote standard thermostat
Remote advanced thermostat
Hot-start consent thermostat
4XUT system
Relay Kit
8SF Zone Master control
8SF main power module
8SF local unit
Expansion for systems with 4 pipes
Expansion for electrical resistance management
KNX expansion
Supplementary tray
Main coil 3-way valve
Post heating section
Post-heating 3-way valve
Outlet plenum
Inlet grill
Inlet plenum
Outlet grill
Standard air filter
Air filter Class G2

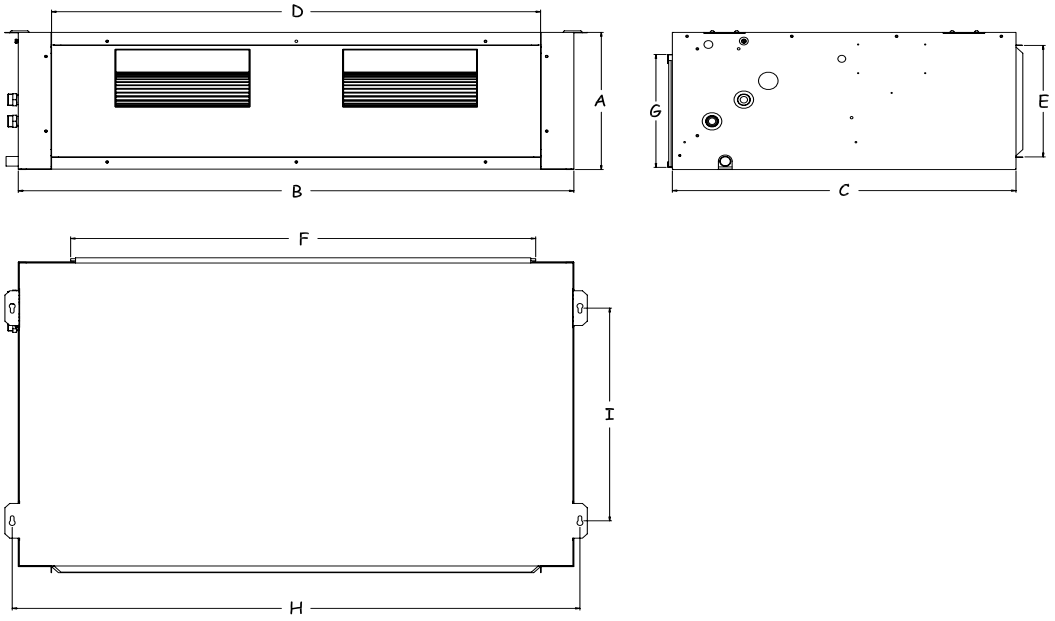
NB: In case of electrical connection of the unit to Ferroli thermostats, the unit must be fitted with the relay kit accessory (KR).



		05	07	11	13	17	19	21	23	
Cooling Capacity *	Max.	5.042	7.909	9.111	10.326	13.327	16.375	20.943	23.118	W
	Med.	4.882	7.423	8.667	9.393	11.847	12.839	20.472	22.502	W
	Min.	4.478	6.208	7.171	8.302	10.163	9.369	19.355	21.063	W
Water flow rate*		870	1.364	1.573	1.782	2.304	2.826	3.613	3.988	L/h
Water pressure drop *		39	38	34	40	40	39	38	34	Kpa
Heating Capacity **	Max.	5.598	8.158	9.379	10.598	13.571	17.222	22.037	23.950	W
	Med.	5.330	7.643	8.766	9.403	11.769	12.440	21.376	23.095	W
	Min.	4.981	6.330	6.855	7.984	9.634	8.508	19.784	21.178	W
Water flow rate **		963	1.404	1.614	1.823	2.335	2.963	3.791	4.120	L/h
Water pressure drop **		36	34	28	36	35	35	34	28	Kpa
Heating Capacity ***	Max.	11.460	16.444	18.906	21.357	27.348	34.741	44.455	48.277	W
	Med.	10.843	15.399	17.660	18.931	23.693	25.033	43.111	46.542	W
	Min.	10.201	12.736	13.785	16.057	19.367	17.082	39.876	42.652	W
Water flow rate ***		986	1.414	1.626	1.837	2.352	2.988	3.823	4.152	L/h
Water pressure drop ***		33	28	26	33	32	33	29	26	Kpa
Nº row coil		3	4	4	4	4	4	4	4	N
Supply		230/1/50								V-F-Hz
Air flow rate	Max.	840	1.200	1.260	1.430	1.700	2.400	3.050	3270	m3/h
	Med.	780	1.016	1.153	1.233	1.436	1.606	2.932	3115	m3/h
	Min.	724	807	868	1.015	1.130	1.039	2.667	2790	m3/h
External static pressure	Max.	90	90	90	90	90	90	90	90	Pa
Nº fans		1				2				n°
n° fan speed					3					n°
Power input motor		230	240	290	332	348	652	683	698	W
Max input current		1,8	1,8	1,8	2,1	2,1	3,7	4,8	4,8	A
SPL - Sound pressure level	Max.	46	49	50	52	53	55	57	58	dB(A)
	Med.	42	45	46	47	48	50	52	53	dB(A)
	Min.	36	38	39	41	41	43	45	45	dB(A)
Water connection		3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	"
Water content		1,11	2,63	3,11	3,34	4,45	4,67	6	7,51	l
Weight		24	44	47	52	56	66	73	81	Kg

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.
SPL : sound pressure in a 100 m3 place with reverberation time of 0.5 seconds.

Dimensions



Mod		A	B	C	D	E	F	G	H	I
05	mm	290	640	475	550	235	475	260	665	320
07 - 11	mm	290	1005	650	915	235	950	260	1030	430
13 - 17	mm	315	1135	700	1000	260	950	260	1160	480
19 - 21	mm	360	1330	765	1200	300	1300	320	1355	540
23	mm	360	1635	765	1200	300	1300	320	1660	540

> TCD

HIGH HEAD, DOUBLE PANEL DUCTED FAN COIL

NEW

* Units Series

Unit type

TCD-H horizontal unit
TCD-V vertical unit

Configuration

2R	with 2-row coil
4R	with 4-row coil
6R	with 6-row coil
4-2R	for 4 pipes system with 4+2-row coil
6-2R	for 4 pipes system with 6+2-row coil

* Unit specifications

High head, double panel ducted fan coil units, 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.

Unit 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 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 of versions

- SUPPORT STRUCTURE: the frame of the units is in UNI9006/1 Anticorodal 63 extruded aluminium alloy profiles, connected with three-way joints in preloaded nylon and sandwich closure panels, with exposed side in white-grey pre-painted steel and internal side in galvanised steel sheet; unit thermal insulation/soundproofing is obtained through the injection of polyurethane of density not less than 45 kg/m3.
- AIR FILTER: easily removed from side, it can be cleaned simply by washing with water, and is G3 efficiency class.
- HEAT EXCHANGE COIL: made with copper pipes arranged in staggered rows to increase heat exchange and aluminium fins, locked by mechanical expansion of the pipes. Complete with water inlet/outlet manifolds.
- CONDENSATE TRAY: in stainless steel sheet, complete with section for connection to the discharge line.
- FAN MOTOR: a directly coupled type, the unit is equipped with dual-intake centrifugal fans and directly coupled three-speed motor with internal thermal protection and startup capacitor always on, with wheel statically and dynamically balanced to minimise noise and vibration. All the electric fans are removable by removing the side panel.
- ELECTRICAL CONNECTIONS: The unit comes complete with protected electrical terminal block for making the connection to the various available adjustment controls.

* Main accessories/Options

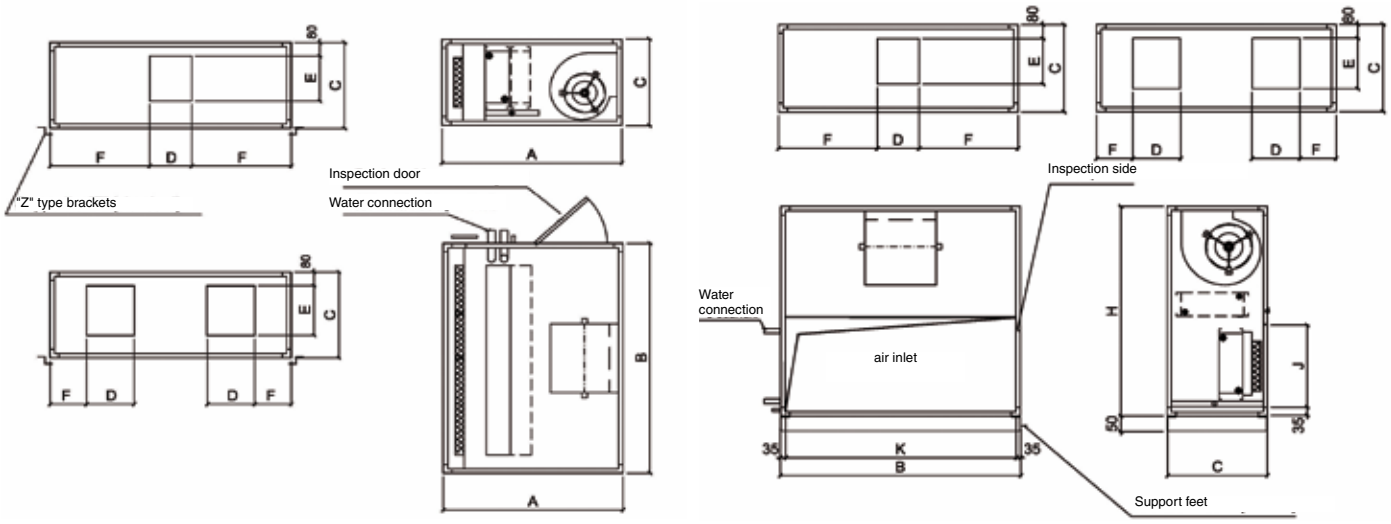
Remote switch
Remote standard thermostat
Remote advanced thermostat
Hot-start consent thermostat
4XUT system
Relay Kit
Air inlet damper
Inlet plenum for vertical execution
Inlet grill
Plenum with 1 damper
Plenum with 2 damper
Outlet plenum
Remote COM3 switch
Remote PCO thermostat

NB: In case of electrical connection of the unit to Ferroli thermostats, the unit must be fitted with the relay kit accessory (KR).

Model	11	21	31	41	
Air flow rate (max speed)	1150	2100	3100	4100	m3/h
External static pressure (Δ)	185	320	330	280	Pa
Sound presssure level (***)	45	55	51	67	dB(A)
Horizontal unit weight TCD-H	97	102	129	168	Kg
Vertical unit weight TCD-V	102	106	134	173	Kg
Fan					
Power input	240	370	550	550	W
Max input current	2,3	3,5	4,7	4,7	A
n° speed / poles/ Poli	3 / 4	3 / 4	3 / 4	3 / 4	n°
Enclosure protection / Insulation class		20 - B			IP
Power supply		230 / 1 / 50			V / ph / Hz
Filter	G3	G3	G3	G3	classe
Filter medium pressure drop	25	35	40	30	Pa
TCD 2R	**11**	**21**	**31**	**41**	
Heating capacity (**)	8,64	13,8	20,9	27,7	kW
Water flow rate	0,76	1,21	1,84	2,44	m3/h
Water pressure drop	9,4	4,5	4,7	9,8	kPa
Air pressure drop	17	27	25	27	Pa
Water connections	1/2”	3/4”	3/4”	1”	Gas
TCD 4R	**11**	**21**	**31**	**41**	
Heating mode					
Heating capacity (**)	13,3	21,5	32,9	43,9	kW
Water flow rate	1,17	1,89	2,9	3,86	m3/h
Water pressure drop	5,9	3,2	3,6	6,5	kPa
Air pressure drop	35	56	51	55	Pa
Cooling mode					
Cooling capacity total/sensible	6,40 / 4,73	8,54 / 7,25	14,4 / 11,5	20,1 / 15,7	kW
Water flow rate	1,1	1,46	2,47	3,44	m3/h
Water pressure drop	7,3	3	3,2	7,3	kPa
Air pressure drop	42	60	60	62	Pa
Water connections	3/4”	1”	1”	1” 1/4	Gas
TCD 6R	**11**	**21**	**31**	**41**	
Cooling capacity total/sensible	8,18/ 5,72	13,2 / 9,63	19,2 / 14,2	26,5 / 19,0	kW
Water flow rate	1,4	2,26	3,29	4,54	m3/h
Water pressure drop	5,5	4,4	2,6	5,9	kPa
Air pressure drop	49	78	72	83	Pa
Water connections	1”	1”1/4”	1”1/4	1”1/2	Gas

NOTE:
(*) Cooling capacity Room air 27°C D.B. RH 48% - water IN/OUT 7/12°C - Nominal air flow rate
(**) Heating capacity Room air 20°C D.B. - water IN/OUT 70/60°C - Nominal air flow rate
(***) Sound pressure level referred to 1 metre from inlet in free field

Dimensions



Modell		A	B	C	D	E	F	Model		B	C	D	E	F	H	K	J
TCD-H 11	mm	1000	850	500	232	261	309	**TCD-H 11**	mm	850	500	232	261	309	1100	780	430
TCD-H 21	mm	1000	1100	500	232	261	434	**TCD-H 21**	mm	1100	500	232	261	434	1100	1030	430
TCD-H 31	mm	1100	1350	560	265	289	542	**TCD-H 31**	mm	1350	560	265	289	542	1200	1280	490
TCD-H 41	mm	1100	1700	560	232	261	320	**TCD-H 41**	mm	1700	560	232	261	309	1200	1630	490
TCD-H 54	mm	1100	1700	560	265	289	292	**TCD-H 54**	mm	1700	560	265	289	292	1200	1630	490

> TCX

MODULAR HIGH HEAD DUCTED FAN COIL

* Units Series

Unit type

TCX horizontal unit

Configuration

TCX 2R only heat with 2-row coil (fig. A)
TCX 4R heat and cool with 4-row coil (fig. A)
TCX 6R heat and cool with 6-row coil (fig. A)
TCX 4+2R 4 pipes systems with 4+2-row coil (fig. B)
TCX 6+2R 4 pipes systems with 6+2-row coil (fig. B)
*TCX 6+4R** 4 pipes systems with 6+4-row coil (fig. B)
TCX 4R+S* with 4-row coil + drop separator (fig. C)

* Unit specifications

Modular high head ducted fan coil, 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.

Fan coil unit 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 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 of versions

- STRUCTURE: in steel profiles and panels with double shell in prepainted steel sheet, insulated internally with 10 mm thick sound-absorbing material for versions 10 to 40 and 20 mm thick for versions 50 and 60. Inspection and servicing are guaranteed by the door located in the bottom part of the unit.
- FILTER: made with corrugated synthetic septum cells class G3 (ponderal efficiency 85% - EU3).
- HEAT EXCHANGER: copper/aluminium type and copper manifolds.
- CONDENSATE TRAY: in galvanised steel, equipped with a system enabling very easy removal directly from the inspectionable side, without having to disassemble the unit.
- FANS: dual-intake centrifugal and forward wheel blades, statically and dynamically balanced, directly coupled to three-speed single-phase motor and mounted on vibration-mounting hard rubber supports.
- ELECTRICAL CONNECTION PANEL: positioned on the unit, it comes fully wired and complete with relay card for power control of electric fans.

* Main accessories/Options

Remote COM3 switch
Remote PE+PC thermostat
Inlet grill
Air inlet damper
Mixing chamber 2 dampers
Air inlet silencer
Soft pocket filter
Pack humidification thick. 100 mm, complete with water distributor and drip separator
Prearrangement for steam humidification
Water post-heating coil
Electric post-heating coil
Air outlet silencer
Air outlet plenum with circular connections
Air outlet plenum

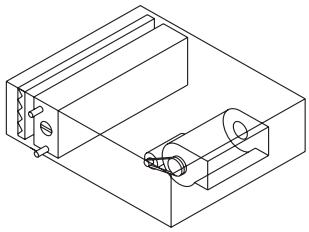


fig.A

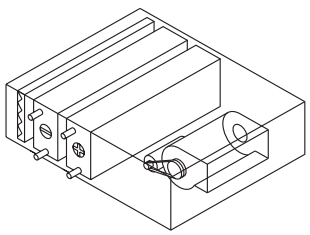


fig. B

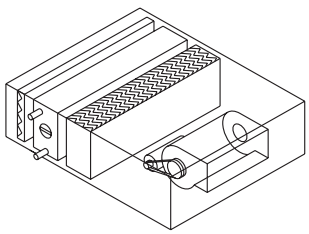


fig. C

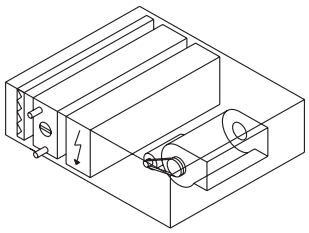
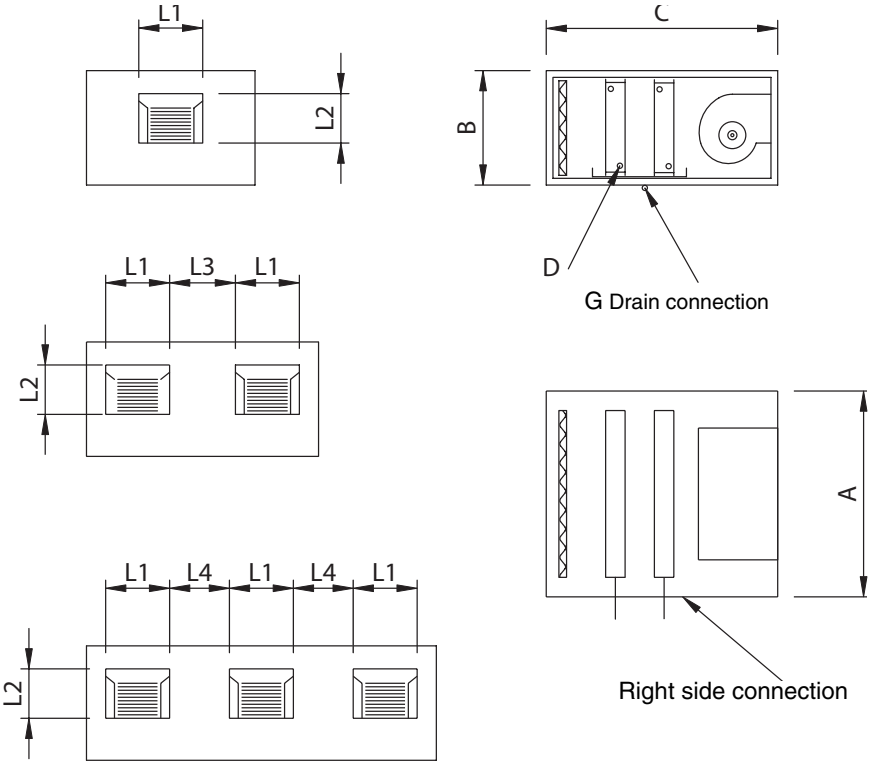


fig. D

	10	20	25	30	40	50	60	
Air flow rate	1040	2150	2740	3360	3950	5070	6450	m3/h
Sound pressure level(****)	51	55	55	57	58	57	59	dB(A)
Power input motor	147	350	700	700	700	840	1260	W
Power supply				230 / 1 / 50				V/ph/Hz
Fan speed / Poles	3/4	3/4	3/4	3/4	3/4	3/4	3/4	
Enclosure protection / Insulation class	20 / B	55 / F	55 / F	55 / F	55 / F	20 / B	20 / B	IP /
TCX 2R	**10**	**20**	**25**	**30**	**40**	**50**	**60**	
Air flow rate	1040	2150	2740	3360	3950	5070	6450	m3/h
External static pressure	174	183	179	191	188	175	181	Pa
Heating								
Heating Capacity (**)	9,5	18,5	24,2	27,7	33,3	34,9	41,2	kW
TCX 4R	**10**	**20**	**25**	**30**	**40**	**50**	**60**	
Air flow rate	1040	2150	2740	3360	3950	5070	6450	m3/h
External static pressure	150	150	150	150	150	150	150	Pa
Cooling								
Cooling capacity Total(*)	6,04	12,1	15,7	18,2	21,6	24,1	32,5	kW
Sensible cooling capacity (*)	4,45	8,9	11,6	13,6	16,1	19,7	25,6	kW
Heating								
Heating Capacity (**)	13,8	27,7	35,8	42,5	50,3	58,1	71,3	kW
Heating Capacity (***)	8,04	16,1	20,9	24,6	29,2	33,4	41,5	kW
TCX 6R	**10**	**20**	**25**	**30**	**40**	**50**	**60**	
Air flow rate	1040	2150	2740	3360	3950	5070	6450	m3/h
External static pressure	125	119	125	115	121	128	123	Pa
Cooling								
Cooling capacity Total(*)	7,08	14,3	18,5	21,9	26,2	34,3	42,1	kW
Sensible cooling capacity (*)	5,04	10,2	13,2	15,7	18,7	24,6	30,6	kW
Heating								
Heating Capacity (**)	14,9	30,5	39,1	47,1	55,7	67	83,3	kW
Heating Capacity (***)	8,85	18	23,2	27,8	33	39,7	49,4	kW

NOTE:
(*) Cooling capacity Room air 27°C D.B. RH 48% - water IN/OUT 7/12°C - Nominal air flow rate
(**) Heating capacity Room air 20°C D.B. - water IN/OUT 70/60°C - Nominal air flow rate
(***) Heating capacity Room air 20°C D.B. - water IN/OUT 50°C wtare flow rate like cooling mode - Nominal air flow rate
(***) Sound pressure level referred to 1 metre from inlet in free field

Dimensions



Model	10	20	25	30	40	50	60
A	710	1070	1400	1400	1680	1780	2000
B	390	390	390	390	390	480	480
C	850	850	850	850	850	960	960
D 2 R	3/4"	3/4"	3/4"	3/4"	1"	1"	1"
D 4 R	3/4"	3/4"	1"	1"	1"	1"	1 1/4"
D 6 R	3/4"	1"	1"	1"	1 1/4"	11/4"	1 1/4"
G	20	20	20	20	20	20	20
L1	240	306	240	240	306	306	306
L2	216	270	216	270	270	270	270
L3	-	-	400	300	400	435	-
L4	-	-	-	-	-	-	285
N1	670	1030	1360	1360	1640	1720	1940
N2	350	350	350	350	350	420	420

> TCT
LARGE CAPACITY FAN COIL

NEW

* Units Series

Unit type

TCT-H horizontal unit
TCT-V vertical unit

Configuration

2R	with 2-row coil
4R	with 4-row coil
6R	with 6-row coil
4-2R	4 pipes systems with 4+2-row coil
6-2R	4 pipes systems with 6+2-row coil

* Unit specifications

Large capacity fan coil, 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.

Fan coil unit 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 careful design of the main components, refined styling and the versatility of the product make it suitable for any type of installation in commercial or industrial context.

Installation therefore only requires the electrical and hydraulic connections.

Construction characteristics of versions

- SUPPORT STRUCTURE: the frame of the units is in UNI9006/1 Anticorodal 63 extruded aluminium alloy profiles, connected with three-way joints in preloaded nylon and sandwich closure panels, with exposed side in white-grey pre-painted steel and internal side in galvanised steel sheet; unit thermal insulation/soundproofing is obtained through the injection of polyurethane of density not less than 45 kg/m3.
- AIR FILTER: removable sideways, it can be regenerated simply by washing, and is G3 efficiency class.
- HEAT EXCHANGE COIL: made with copper pipes arranged in staggered rows and with corrugated aluminium finning, locked by mechanical expansion of the pipes. Complete with water inlet/outlet manifolds. The coil holding section provided for on the TCT units is arranged to house heating and/or cooling coils: the section is designed to hold two coils in horizontal and vertical models. The hot water coils are 2-row or 4-row whereas for cooling they can be 4-row or 6-row with chilled water. The standard executions provide for oblique fitting of the cooling coil in vertical models and horizontal fitting of the heating coil, and vertical fitting of both coils in horizontal models.
- CONDENSATE TRAY: in stainless steel sheet, complete with section for connection to the discharge line.
- FAN MOTOR: ventilating section designed to limit fan noise as much as possible. The motor-fan assembly is isolated from the structure by means of suitable shock-absorbers on the base and is complete with neoprene vibration-mounting joint. The centrifugal fans installed are dual-intake with forward blades, statically and dynamically balanced. Coupled-type fans are installed for sizes 100, 130 and 175. Motor-fan coupling is by means of variable-pitch pulleys and V belts for all sizes. Careful selection has enabled high efficiencies to be obtained. The electric motors are 4-pole, externally ventilated and class F isolated with IP55 protection rating, fixed on special guides enabling belt tension adjustment. The use of variable-pitch drive pulleys enables the number of revolutions and therefore the pressure to be adjusted to system requirements.

* Main accessories/Options

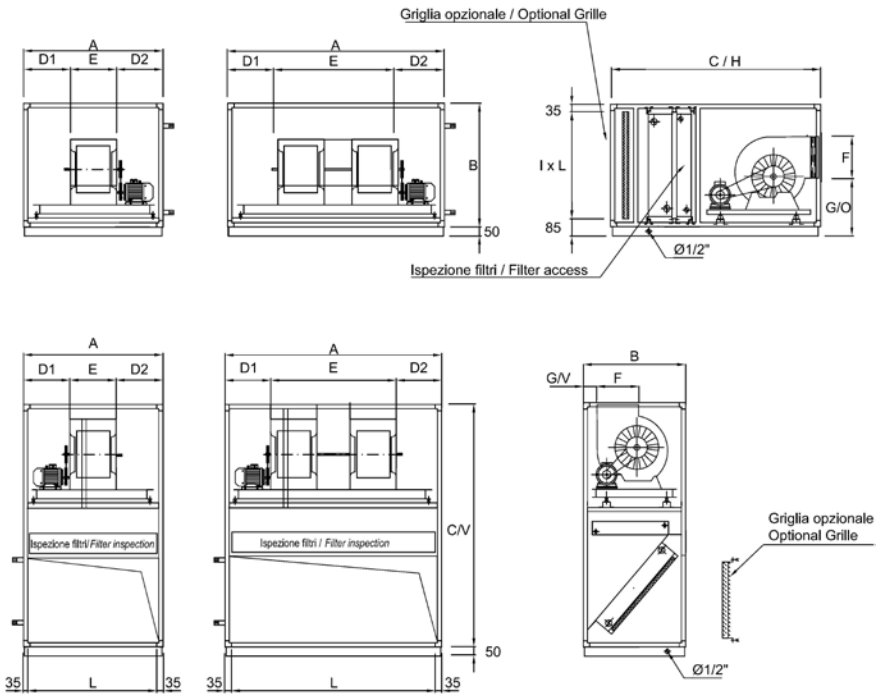
Inlet grill
Air inlet damper
Inlet plenum for vertical execution
Plenum with 1 damper
Plenum with 2 dampers
Outlet plenum

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	**30**	**53**	**72**	**95**	**130**	**175**	
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	**30**	**50**	**70**	**100**	**130**	**180**	
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	**30**	**50**	**70**	**100**	**130**	**180**	
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



Model		30	50	70	100	130	180
A	mm	1180	1420	1660	1780	1940	2300
B	mm	770	770	770	920	1100	1100
C/H	mm	1290	1290	1290	1290	1290	1290
C/V	mm	1540	1540	1540	1830	2010	2090
D1	mm	418	505	625	222	383	392
D2	mm	418	505	625	428	427	568
E	mm	344	410	410	1130	1130	1340
F	mm	304	354	354	354	354	417
G/H	mm	360	390	390	390	390	410
G/V	mm	150	150	150	105	105	105
I	mm	700	700	700	850	1030	1030
L	mm	1110	1350	1590	1710	1870	2230

> FTP
AIR HANDLING UNITS

The FTP-type handling units represent an important contribution to improving our working environments.
The result of FERROLI's professionalism and many years' experience, they make an important reference point.
The Quality of construction and the components guarantees reliability, functionality and efficiency. Designed to work at low, medium and high pressure, FERROLI FTP units are built with a modular system providing for 18 sizes for a wide range of capacities.

- STRUCTURE: Made with strong framework in extruded UNI 9006 anodised aluminium sections, joined with angle joints in die-cast aluminium or nylon panels with double shell and insulated with high density (80-100 kg/m3) mineral wool or polyurethane foam with thickness 23 or 50 mm, with normal profiles or a heat barrier. The panels can be:
  - galvanised steel sheet
  - prepainted
  - peraluman
  - 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).

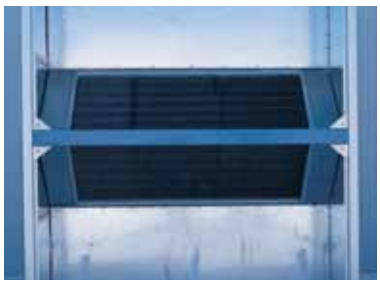
- BASE: With a continuous beam in heavy galvanised steel sheet, press bent with sections with a high structural rigidity which ensure safe transport and handling on site.

- ELECTRIC COILS: The electric coils have immersion-type heaters with one or more stages, complete with connection panel and safety thermostat.

- COLLECTION TRAYS: These can be in galvanised steel or AISI 304 stainless steel sheet, provided with one or more threaded load/discharge manifolds.

- AIR FILTERS: This selection is all-important to ensure the high Quality of the treated air. The types available:
  - roll filters
  - pleated filter cells
  - soft or rigid pocket filters
  - absolute filters
  - activated carbon filters

Efficiency certified in conformity with the main standards(EUROVENT, AFI, ASHRAE, NSB etc.).



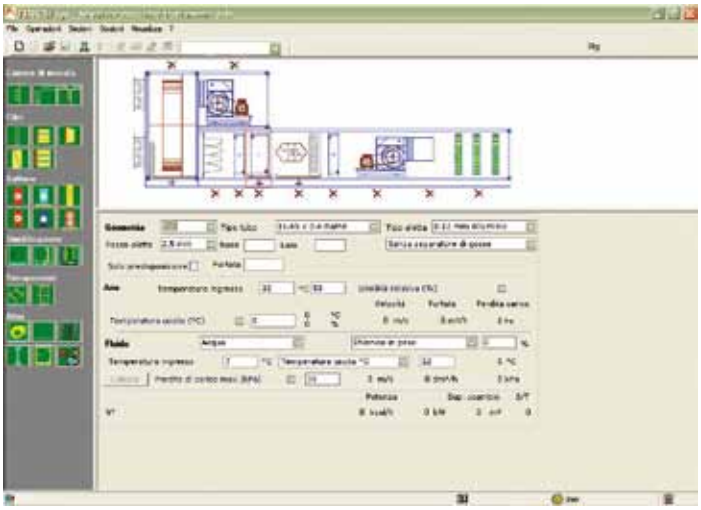
- RECUPERATOR: static-type cross flow with sealed aluminium (or stainless steel) plates in order to guarantee no contact between the expelled air and that introduced inside the plant, so as to enable easy servicing. Complete with equalising dampers for creating mixing chambers or bypass for operation with outside air introduction, recirculation or free-cooling. Rotary type, with rotating drum, are available on request complete with devices for controlling rotation speed.
- DAMPERS: As a standard version they have a galvanised sheet frame and extruded aluminium fins, complete with seal, moved by nylon wheels located inside the damper and provided with shaft for applying the servo control. Single dampers for outside air intake, mixing chambers with two dampers and mixing chambers with three dampers can be specified.

Service

AIR FTP

The FERROLI design engineers team have prepared the FTP 2010 AIR selection and design software to quickly and easily obtain an operational, construction layout and financial data of the air treatment system.
There is also the selected choice of accessories the printing of the description of the units pecifications 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 Ferroli Industrial Climate Control Branch.



- HEAT EXCHANGE COILS: Removable-type for operation with water, mixture with glycol, direct expansion or steam, made with frame in pressed steel sheet, tested at a pressure of 30 Ate. In the standard version they are made with copper pipes and aluminium finned pack, mechanically expanded. Available on request :
  - steel pipe
  - stainless steel pipe
  - copper finned pack
  - tinned copper finned pack.

- HUMIDIFICATION: Sections for humidification systems are provided for as follows:
  - WITH STEAM: created through the installation of an independent steam producer or the assembly of distributors for system steam.
  - WITH NOZZLES: commonly called "washer", humidification is created with a system of self-cleaning spray nozzles, fitted on one or two trains. The system provides for a double sealed chamber and can be supplied with expendable water or with a recirculating pump.
  - WITH PACK: created with a honeycomb pack in cellulose impregnated with phenolic resins of thickness 100 or 200 mm, complete with metal holding frame and distributor for water in the upper part. It can be with expendable water or with a recirculating pump with filler valve, overflow or bleed-off.

- FANS: Dual-intake centrifugal type with forward or backward blades, with the wheel statically and dynamically balanced manufactured to the values required by the specification. They normally use bearings lubricated for a service life of at least 50,000 hours.

- MOTORS: Three-phase induction with cage rotor, IP55 protection rating and class F windings. Conforming to Standards IEC 34-1 and IEC 72 (CEI 2 - 3 no. 355 - UNEL 131132-71-B3 UNEL 13118-71); they also meet the national prescriptions (VDE, NFC, NBNC, BS, SEV, NEN, etc.). Mounted on a slide enabling fixing of the drive belt tension. The motor-fan assembly is mounted on hard rubber supports to absorb rotation vibrations.

- DRIVES: By means of belts and V pulleys with taper lock bush. All the pulleys, with one or more races, balanced, are in cast iron with galvanic surface treatment. Variable diameter pulleys can be fitted on request.

- VIBRATION-MOUNTING JOINTS: They are normally fitted between the fan mouth and the delivery panel, but can also be arranged on all the channel connection flanges; the fabric used is “class 1” self-extinguishing.

- SILENCERS: They can be installed inside or outside the unit located in delivery or intake and are essential for suppressing the noise mainly produced by the fan. Supplied in different lengths of 750 to 2000 mm, they have sound-absorbing septums, made with multiple layers of mineral wool held by a perforated metal sheet; the outer surfaces of the septums (in direct contact with the air) are covered with a glass fibre film to prevent flaking.

> RFA

PACKAGED ROOF-TOP AIR CONDITIONERS

* Units Series

Unit type

PC reversible heat pump on refrigerant side

versions

VB Basic
V1 with 1 damper
V2 with 2 damper
V3 with 3 damper

acoustic versions

AB Basic
AS Low noise

* Unit specifications

This range of air-air heat pumps meets the cooling and heating needs of medium-size areas such as shopping centres hypermarkets, cinemas, offices, cafeterias, restaurants, etc.

Each model can be equipped with a wide range of accessories and made in various construction configurations to adapt to the various installation requirements.

The regulation system enables the management of the refrigerant circuit and available accessories with the option of choosing different methods for integration of the heating function, normally done through the reversing of the refrigeration cycle.

All the units are meticulously built and individually factory-tested. All versions are supplied as monobloc units and the installation therefore only requires the electrical, aeraulic connections.

Air treatment section side

■ FILTER SECTION: in pleated-type cells, efficiency G4 (classification Eurovent EU4. average ponderal efficiency 90%) They are accessible and removable for cleaning and testing operations.

■ SYSTEM SIDE EXCHANGER: one large finned coil exchangerwith copper pipes and notched aluminium fins, complete with stainless steel condensate tray.

■ SYSTEM SIDE FAN: two centrifugal-type fans with forward blades, statically and dynamically balanced. The fan is coupled by means of a belt and pulley (variable on motor) to a 4-pole motor arranged on a belt tensioner slide. Starting of motors of 4 kW power or higher is by star-delta switching.

Condensing section side

■ COMPRESSORS: one or two orbital spiral SCROLL type, mounted on rubber vibration-mounting supports, complete with high and low pressure switch.

■ REFRIGERANT CIRCUIT, one or two completely independent to allow a constant sensible and total refrigerating capacity to be maintained even at partial loads; this ensures better air treatment as well as greater reliability. Each circuit has a double thermostatic valve with external equaliser to optimise the two operation modes, ball stop valves ahead of and below the external coils, one-way valves, dehydrator filters, liquid separator and 4-way reversing valves.

■ SOURCE SIDE EXCHANGER: one or two large finned coils with copper pipes and notched aluminium fins.

■ SOURCE SIDE FAN: two or four (depending on the model), they are helical with crescent-shaped blades and with variable rotation speed.

■ ELECTRICAL PANEL: for command and control with main door lock disconnecting switch, housing the electrical equipment and all components with IP54 minimum protection rating.

Low noise Version (AS)

In addition to the specification of the Basic version (AB), the Low noise version (AS) provides for the following configurations:

■ COMPRESSORS: covered with a soundproofing jacket.

To further reduce the noise level, the housing compartment is covered with sound-absorbing material of suitable thickness.

* Main accessories/Options

Internal fan with option of standard, oversize and reduced

Integration of heating through

- coil, 2 rows, with or without valve
- coil, 3 rows, with or without valve
- standard or oversized condensing gas heating module
- standard or oversized electrical heating elements

Silencers in delivery

Enthalpic free cooling

Air quality CO2 probe

Special rigid pocket filters F6 F7 F8 F9

Special activated carbon filters F9

Filters differential pressure switch

Drip separator

Remote control

Voltage monitor and sequence meter

Roof curb

Common data

	35.1	45.1	55.1	70.2	90.2	110.2	140.2	180.2	220.2	
Supply	400V - 3ph+N - 50Hz									V-ph-Hz
Quantity-type compressor - n° circ	1 - SCROLL - 1			2 - SCROLL - 2						N°
Part load	0 - 100			0 - 50 - 100						%
Fan source side										
Quantity-type	2 - axial			4 - axial						N°
Total air flow rate	18.300	17.200	16.100	36.700	34.500	32.300	84.000	80.000	75.000	m3/h
Max speed	900	900	900	900	900	900	900	900	900	rpm
Fan plant side (SUPPLY AIR)										
Quantity-type	2 - centrifugal type									N°
STANDARD air flow rate	6200	8100	10000	11000	14500	17000	22500	29000	35000	m3/h
External static pressure	200	200	200	200	200	200	200	200	200	Pa
Power input	1,5	2,2	2,2	4,0	5,5	5,5	11,0	11,0	18,4	kW
F.L.A. Full Load Ampere*	34	39	49	69	81	99	130	160	205	A

* refer ti Basic Version with Standard air flow without accessories

Heat pump (IP)

Fan	35.1	45.1	55.1	70.2	90.2	110.2	140.2	180.2	220.2	
Air flow rate plant side	6200	8100	10000	11000	14500	17000	22500	29000	35000	m3/h
External static pressure plant side	200	200	200	200	200	200	200	200	200	Pa
Cooling	**35.1**	**45.1**	**55.1**	**70.2**	**90.2**	**110.2**	**140.2**	**180.2**	**220.2**	
Total Cooling capacity	35,5	46,3	57,7	71	92,3	113	142	184	226	kW
RST *	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	-
Power input	10,9	14	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**	**-**
Heating	**35.1**	**45.1**	**55.1**	**70.2**	**90.2**	**110.2**	**140.2**	**180.2**	**220.2**	
Heatin 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	29,5	37,5	47,7	60,9	75,5	kW
COP	**3,28**	**3,32**	**3,27**	**3,21**	**3,25**	**3,15**	**3,1**	**3,15**	**3,13**	**-**

NOTES:
* RST= relationship between sensible cooling capacity and total cooling capacity.
Cooling performance values measured with AT 35°C D.B. - Room air 27°C D.B. / 19°C W.B.
Heating performance values measured with AT 7°C D.B. 6°C W.B. - Room air 20°C D.B.
Declared data according to EN 14511; Valuues refer to unit without options or accessories and operating with 100% fresh air

		Cooling		Heating		
		min	max	min	max	
Suction air temperature plant side	D.B.	12	40	5	27	°C
	W.B.	11	27	-	-	°C
Ambient air	D.B.	15	50	-9	28	°C
	W.B.	-	-	-10	20	°C

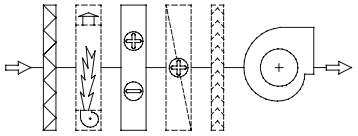
	35.1	45.1	55.1	70.2	90.2	110.2	140.2	180.2	220.2	
SWL	84	85	85	87	88	88	90	92	93	dB(A)
SPL 1 m	67	67	68	69	69	70	71	73	74	dB(A)
SPL 5 m	58	58	59	60	61	61	63	65	66	dB(A)
SPL 10 m	53	53	54	55	56	56	58	60	61	dB(A)

NOTE:
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Basic version - VB

This version allows operation with 100% inlet air. It contains the standard filter section and the air-refrigerant coil that makes possible the heating or cooling and dehumidification treatments.

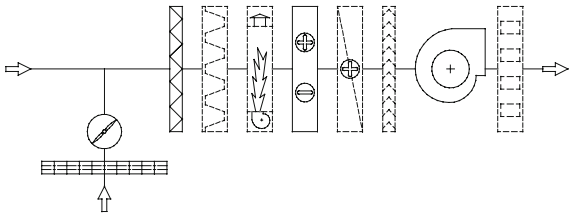
It is possible to add a further heating section (a water coil or a series of electric heaters) and a droplet separator. As an alternative to this heating section it is possible to add a condensation gas thermal module, positioning it between the filter section and the air-refrigerant coil.



Version with 1 damper – V1

This version allows operation with a percentage of outside air that can be set by manually adjusting the damper installed on the additional module. The outside air intake comes complete with a rainproof cover and a protective metal mesh. The discharge from the climate-controlled room of an air flow rate equal to the fresh air flow rate must occur independently from the unit through the overpressure openings or the removal devices.

Various types of special filters can be inserted in the additional module to complete the standard filter section. Also in this version it is possible to add a further heating section (a water coil or a electric heaters) and a droplet separator. As an alternative to this heating section it is possible to add a condensation gas thermal module, positioning it between the filter section and the air-refrigerant coil. Sound attenuator can be installed downline from the outlet fan to reduce the noise transmitted in the rooms to be climate-controlled by means of air ducts.



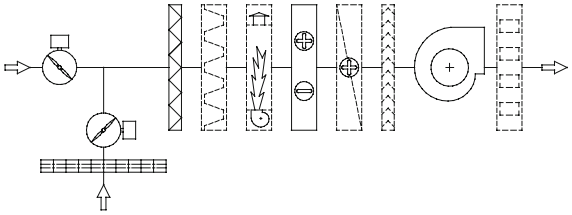
Version with 2 dampers – V2

Two motorized dampers managed by the unit controller make possible operation with a minimum percentage of fresh outside air (which can be set by means of the UNIT CONTROL) and the implementation of thermal free cooling. The outside air intake, which comes complete with a rainproof cover and a protective metal mesh, is sized for 100% of the total flow rate and, therefore, makes possible operation in the free cooling mode with 100% outside air. The discharge from the climate-controlled room of an air flow rate equal to the fresh air flow rate must occur independently from the unit through the overpressure openings or the removal devices.

Various types of special filters can be inserted in the additional module to complete the standard filter section. Also in this version it is possible to add a further heating section (a water coil or electric heaters) and a droplet separator. As an alternative to this heating section it is possible to add a condensation gas thermal module, positioning it between the filter section and the air-refrigerant coil.

It is also possible to implement enthalpic free cooling by means of the installation of the appropriate humidity probes.

Sound attenuator can be installed downline from the outlet fan o reduce the noise transmitted in the rooms to be climatecontrolled by means of air ducts.



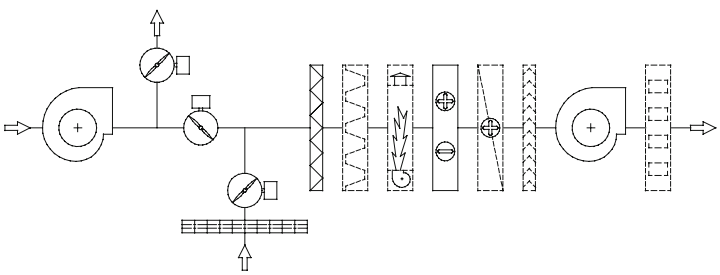
Version with 3 dampers – V3

Three motorised shutters managed by the unit's controller enable operation with a minimum percentage of outside change air (settable via UNIT CONTROL) and the creation of thermal free cooling and management of the expulsion air. The outside air intake, which comes complete with a rainproof cover and a protective metal mesh, is sized for 100% of the total flow rate and, therefore, makes possible operation in the free cooling mode with 100% outside air. The expulsion of air from the air-conditioned room equal to that of air change is obtained through the inlet fan and the expulsion shutter installed in the unit.

Various types of special filters can be inserted in the additional module to complete the standard filter section. Also in this version it is possible to add a further heating section (a water coil or electric heaters) and a droplet separator. As an alternative to this heating section it is possible to add a condensation gas thermal module, positioning it between the filter section and the air-refrigerant coil.

It is also possible to implement enthalpic free cooling by means of the installation of the appropriate humidity probes.

Sound attenuator can be installed downline from the outlet fan to reduce the noise transmitted in the rooms to be climatecontrolled by means of air ducts.



CONTROLLER BOARD UNIT '

The controller microprocessor is able to manage the unit with all the options and accessories available.
The main functions of the control system are:
- Adjustment of temperature in cooling and heating
- Adjustment of ambient in cooling
- Management of post heating cooling (with battery module thermal resistance or gas)
- Management of the shutters for the air of recovery, renewal and removal
- Management of the free cooling heat and enthalpy
- Monitoring of air quality

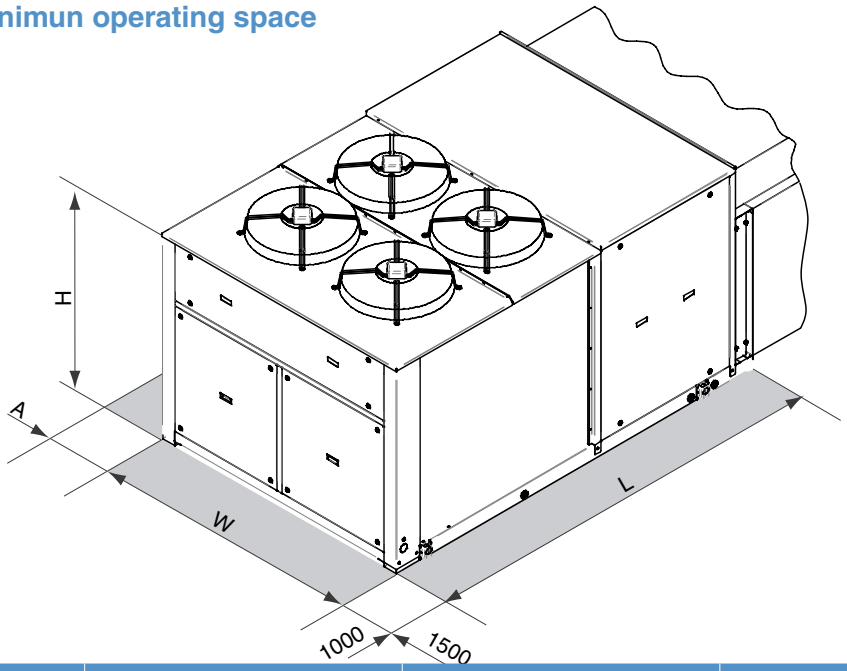
Besides standard UNIT CONTROL present on all units, thermostats and remote controls are available that allow remote control of all parameters of the unit remotely.

GAS THERMAL MODULE

Gas thermal module is suitable as a replacement for the heat pump. It is included in a dedicated module inside the unit and consists of a modulating premixed gas burner and a stainless steel air-flue gas exchanger. The combustion chamber is constructed completely of AISI 430 stainless steel and the exchangers' tubes and the flue gas headers are constructed of AISI 304L stainless steel. High yields due to the exploitation of the heat of condensation between 105% and 93.1% (min. and max. pressure) and extremely low level of pollutant emissions (absence of carbon monoxide and emissions of NOx of less than 30 ppm). This accessory is prepared for operation wit h G20 natural gas and a supply pressure of 20 mbar and it can be supplied with a rapid conversion kit to use Liquefied Petroleum Gas (LPG). The module is built in accordance with UNI, UNICIG, and CEI standards, is in compliance with the Gas Directive 90/396/EEC, and is Gastec certified. For every model are available standard and High Capacity version.

		35.1 – 45.1 – 55.1		70.2 – 90.2 – 110.2		140.2 – 180.2 – 220.2		
		Standard	High Capacity	Standard	High Capacity	Standard	High Capacity	
Rated heating capacity	max	44,8	54	93,4	145	186,8	290	kW
	min	15,5	16,3	31,5	46,3	63	92,6	kW
Yield	max	94,3	93,1	95,3	93,5	95,3	93,5	%
	min	105	105	105	105	105	105	%
Gas consumption (15°C -1013 mbar)	max	5,03	6,14	10,3	16,4	20,6	32,8	m3/h
	min	1,57	1,64	3,17	4,66	6,34	9,32	m3/h

Dimensions and minimun operating space



		35.1 - 45.1 - 55.1	70.2 - 90.2 - 110.2	140.2 - 180.2 - 220.2	
L	VB	2900	3100	3900	mm
	VB + MTGCond	3830	430	5100	mm
	V1 e V2	4000	4200	5000	mm
	V1 e V2 + MTGCond	4930	5400	6200	mm
	V3	4800	5000	6600	mm
	V3 + MTGCond	5730	6200	7800	mm
W		1400	2000	2200	mm
H		1600	1600	2350	mm
A		1000	1500		mm

> Main specification of heat recovery terminal units

UT REC / UT REC C
UT REC R
UT REC DP / UT REC DP F
RECOVERY EFFICIENCY IN WINTER MODE
RECOVERY EFFICIENCY IN SUMMER MODE

FERROLI offers a complete range of heat recovery terminal units, to meet all system requirements.

> UT REC

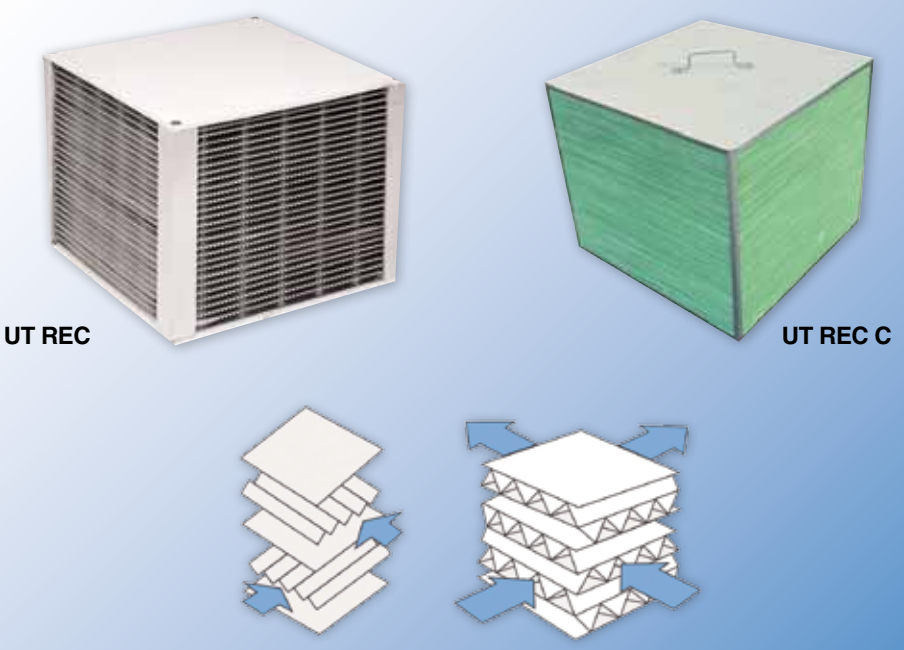
available in two versions:

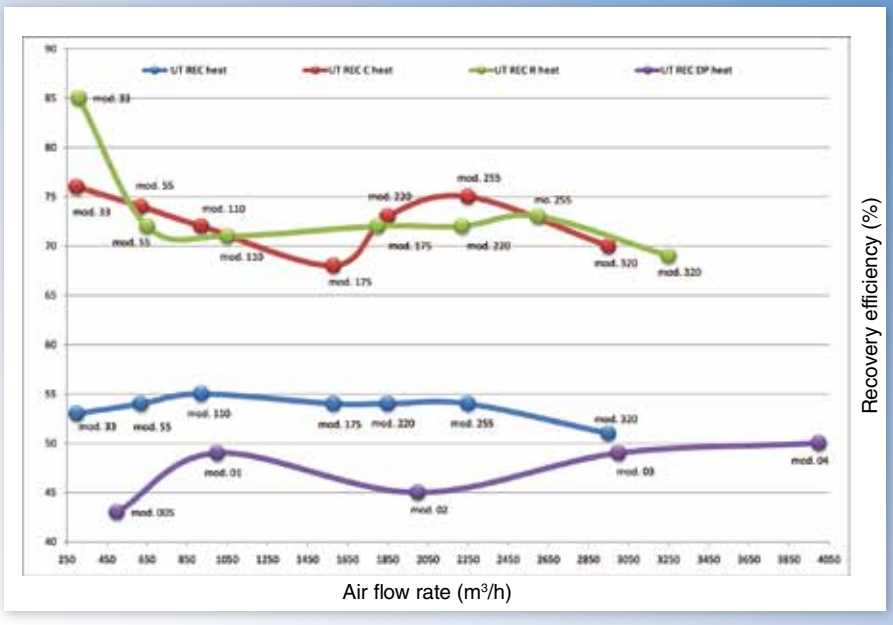
UT REC with static heat recuperator in ALUMINIUM; enables recovery of the sensible heat otherwise lost.

UT REC C with PAPER PACK static heat recuperator: in special treated self-extinguishing stiff paper. The structure consists of a pair of sheets with an interposed corrugated third sheet separating these and creating a triangular air channel (drawing opposite). The paper sheets are permeable to steam, enabling recovery of the sensible as well as latent heat. In this way limited air side pressure losses are obtained, as well as a high exchange area and therefore higher recovery are achivied to values higher than 55-60%.

> UT REC R

Available with a high efficiency rotary-type heat recuperator. Made in aluminium with a hygroscopic surface. Exchange efficiency is guaranteed by the quality of the seals that isolate the two air flows. The rotor consists of alternate flat and corrugated aluminium sheets wrapped around each other. This creates a "honeycomb" structure in whose channels the two air flows run in an opposed direction.
The surface, made porous by special treatments, allows the humidity to be absorbed, enabling recovery of the sensible and latent heat of the expelled air, resulting in recovery efficiency values above 85-90% .





>>> INDUSTRIAL AIR-CONDITIONING <<<

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> UT REC DP e DP F

Available with static-type heat recuperator in ALUMINIUM enabling recovery of the sensible heat otherwise lost. These units have a structure that enables outdoor installation, after application of a covering and suitable positioning.

The **UT REC DP** range features compact sizes< and the available accessories include a 2-row exchanger for heating only (acc. fitted).

The **UT REC DP F** range comes complete with a 4-row exchanger for cooling the air coming out the recovery exchanger. It therefore has larger dimensions than the previous version to enable lower speeds through the coil.

NB: The unit is designed to integrate the room air and ensure its change in a system. Cooling only, and not conditioning, is guaranteed.

> RECOVERY EFFICIENCY IN WINTER MODE

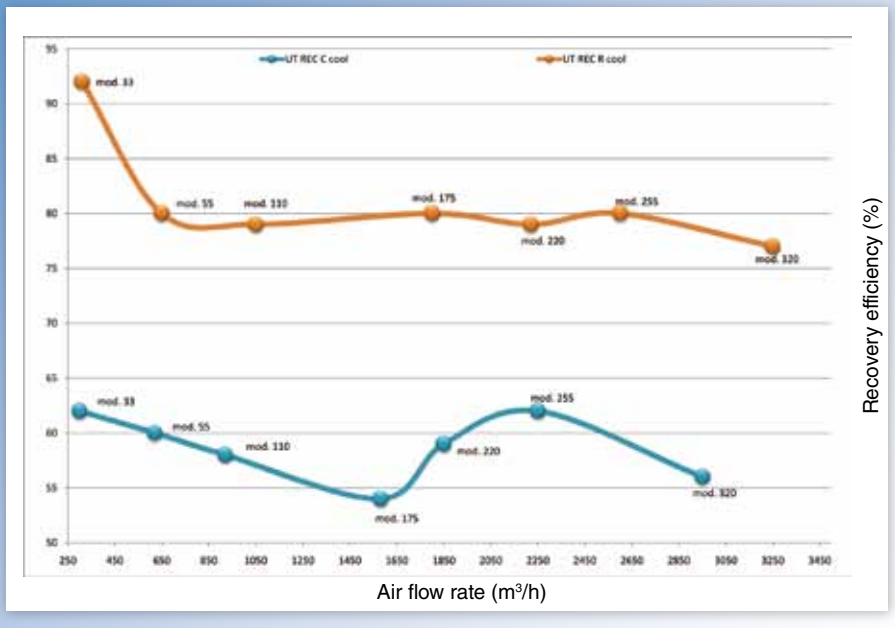
The graphs clearly show how recovery efficiency varies according to the period of operation and even of the type of recuperator.
Graph A shows how recovery efficiency increases according to the type of exchanger.

Reference conditions:
Outside Air T=- 5°C 80% R.H.
Room air T= 20°C 50% R.H.
max. speed.

> RECOVERY EFFICIENCY IN SUMMER MODE

IIn particular, Graph B shows how rotary heat recovery exchangers and paper pack heat recovery exchangers make an important contribution to energy-saving even in summer mode and therefore all year.

Reference conditions:
Outside Air T= 32°C 50% R.H.
Room air T= 26°C 50% R.H.
max. speed.



> UT REC

SINGLE-PANEL HEAT RECOVERY UNITS

* Units Series

Unit type
UT REC with recuperator in aluminium
UT REC C with paper pack recuperator

* Unit specifications

■ STRUCTURE: in strong aluzink sheet, lined with a suitable thickness of polyethylene and polyester to prevent heat loss, condensation and for increased soundproofing.

■ CONDENSATE TRAY: in ABS, it is placed under the recuperator to collect condensate during summer and winter operation.

■ AIR FILTER: situated inside the unit, it is easily removed from side and made from recycable materials, cleanable by washing.

■ FAN MOTOR: a directly coupled type, the unit is equipped with a three-speed motor/fan assembly (single-speed for models 33 and 55) with internal thermal protection and startup capacitor always on, with wheel statically and dynamically balanced to reduce noise and vibration.

■ ELECTRIC BOARD: situated on the unit, it consists of a relay power board to facilitate electrical connections and the control of fans with possible remote controls (not present for models 33 and 55).

■ HEAT RECUPERATOR:

ALUMINIUM: static-type, it only enables recovery of the sensible heat otherwise lost (picture below).

WITH PAPER PACK: Static-type, it enables recovery of the sensible heat and latent heat. In this way a high efficiency is obtained.

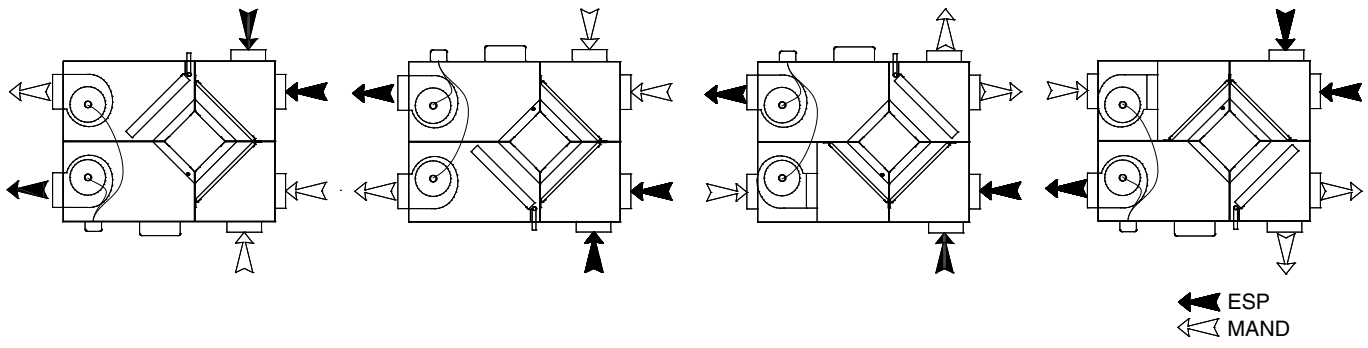
* Main accessories/Options

Servo motor for damper motorisation
Pressure switch for dirty filter signalling
Antifreeze thermostat
Hot water post-heating coil providing for the use of a 2-row coil.
External section with 3-row water coil for heating or cooling
Equalising damper with fins, arranged for servo control.
1-stage electric post-heating section.
Remote COM3 switch
Remote PE+PC thermostat
Single-phase speed variator

CONFIGURATION

Depending on the configuration of the plant duct are available four possible configuration of recovery.

CONFIGURATION 01 **CONFIGURATION 02** **CONFIGURATION 03** **CONFIGURATION 04**

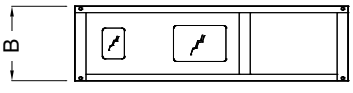


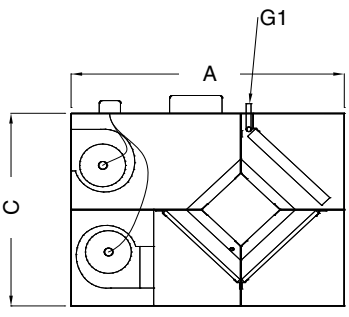
Supply fan	33	55	110	175	220	255	320	410	
Power supply				230 / 1 / 50				400 / 3 / 50	V/ph/Hz
Air flow rate	300	620	920	1580	1850	2250	2950	3920	m3/h
External static pressure	45	55	65	70	77	80	100	100	Pa
Sound pressure level 1,5m	40	48	47	46	50	48	50	54	dB(A)
max. input current	0,75	1,8	2,2	4,4	4,8	5,2	8,3	5	A
n° speed	3	3	3	3	3	3	3	1	n°
Performance UT-REC	33	55	110	175	220	255	320	410	
Recovery type/ Recuperator				cross flow and static / Aluminum plate exchanger					
Winter									
P.A.I. (Room air)	20	20	20	20	20	20	20	20	°C
P.A.E. (Ambient air)	-5/80	-5/80	-5/80	-5/80	-5/80	-5/80	-5/80	-5/80	°C/%
MAND (Fresh air)	8,3	8,5	8,8	8,15	8,5	8,5	7,8	9,3	°C
REC (Heating recovery capacity)	1,5	3,1	4,7	7,9	9,2	11,2	13,9	20,6	kW
Efficiency recovery (sensible/latent)	53	54	55	54	54	54	51	57	%
Performance UT-REC C	**33**	**55**	**110**	**175**	**220**	**255**	**320**	**410**	
Recovery type/ Recuperator				cross flow and static / hygroscopic paper pack					
Winter									
P.A.I. (Room air)	20 / 50	20 / 50	20 / 50	20 / 50	20 / 50	20 / 50	20 / 50	20 / 50	°C
P.A.E. (Ambient air)	-5/80	-5/80	-5/80	-5/80	-5/80	-5/80	-5/80	-5/80	°C
MAND (Fresh air)	14,0/39,5	13,5/39,7	13,0/36,7	12,0/42,0	13,3/49,4	13,8/48,8	12,5/50,2	11,0/47,6	°C/%
REC (Heating recovery capacity)	2,6	5,2	7,2	12,2	16,9	21,1	25,6	30,8	kW
Efficiency recovery (sensible/latent)	76/62	74/60	72/56	68/55	73/65	75/67	70/62	66/56	%
Summer									
P.A.I. (Room air)	26 / 50	26 / 50	26 / 50	26 / 50	26 / 50	26 / 50	26 / 50	26 / 50	°C/%
P.A.E. (Ambient air)	32 / 50	32 / 50	32 / 50	32 / 50	32 / 50	32 / 50	32 / 50	32 / 50	°C/%
MAND (Fresh air)	28,3/51,2	28,4/51,2	28,5/51,5	28,8/50,8	28,5/50,5	28,3/50,5	28,6/51,0	28,9/50,9	°C/%
REC (Heating recovery capacity)	1	2	2,9	4,7	6,1	7,9	9,1	11,3	kW
Efficiency recovery (sensible/latent)	62/60	60/58	58/55	54/53	59/59	62/62	56/55	52/51	%

Accessories

BW	33	55	110	175	220	255	320	410	
Coil type	N.A.				Cu/Al				
n° rows			2	2	2	2	2	2	n°
Coil connection			3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Winter									
Inlet/outlet air temperature			8,0 / 33,4	8,0 / 30,8	8,0 / 30,2	8,0 / 33,2	8,0 / 31,3	8,0 / 29,7	°C
Water temperature IN/OUT			70 / 60	70 / 60	70 / 60	70 / 60	70 / 60	70 / 60	°C
Heating capacity			8,2	12,2	14,4	20,3	24,2	29,9	kW
Air pressure drop			25	32	35	24	36	36	Pa
BFW	**33**	**55**	**110**	**175**	**220**	**255**	**320**	**410**	
Coil type	N.A.				Cu/Al				
n° rows			3	3	3	3	3	3	n°
Coil connection			3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Winter									
Inlet/outlet air temperature			8,0 / 45	8,0 / 43,4	8,0 / 45	8,0 / 46,5	8,0 / 43,7	8,0 / 41,5	°C
Water temperature IN/OUT			70 / 60	70 / 60	70 / 60	70 / 60	70 / 60	70 / 60	°C
Heating capacity			12	19,6	23,7	30,5	37	46,2	kW
Air pressure drop			28	41	39	27	40	53	Pa
Summer									
Inlet air / RH			30 / 50	30 / 50	30 / 50	30 / 50	30 / 50	30 / 50	°C / %
Outlet air temperature			19,2	18,9	18,2	17,3	18,3	19,1	°C
Water temperature IN/OUT			7 / 12	7 / 12	7 / 12	7 / 12	7 / 12	7 / 12	°C
Cooling capacity total/sensible			5/3,3	8,8/5,8	11,1/7,2	14,7/9,4	17,4/11,4	20,9/13,9	kW
Air pressure drop			38	50	53	45	48	60	Pa

Dimensions





Mod.	33	55	110	175	220	255	320	400	
A	990	990	1140	1300	1380	1650	1650	1750	mm
B	290	290	410	500	500	600	600	600	mm
C	750	750	860	860	960	1230	1230	1230	mm
G1 BW			3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Connection BFW			3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"

> UT REC R

SINGLE PANEL ROTARY HEAT RECOVERY UNITS

* Units Series

Unit type
UT REC R Horizontal unit

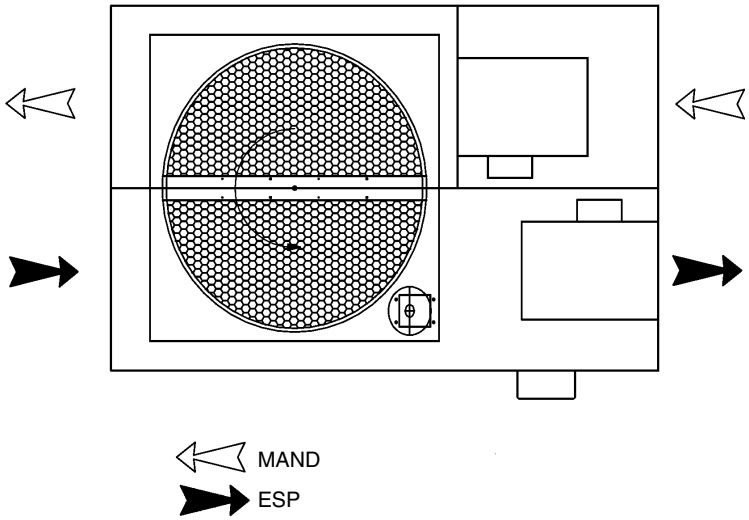
* Unit specifications

■ STRUCTURE: in strong aluzink sheet, lined with polyethylene and polyester sheets of 20mm average thickness to prevent heat loss, condensation and for increased soundproofing.
■ HEAT RECUPERATOR: high-efficiency rotary type, enabling recovery of the sensible and latent heat of the expelled air. Complete with condensate tray.
■ AIR FILTER: situated inside the unit, it is easily removed from side and made from recyclable materials, cleanable by washing (efficiency EU3).
■ FAN MOTOR: a directly coupled type, the unit is equipped with a three-speed fan/motor assembly with internal thermal protection and startup capacitor always on, with wheel statically and dynamically balanced to minimise noise and vibration.
■ ELECTRIC BOARD: situated on the unit, it consists of a relay power board to facilitate electrical connections and the control of fans and wheel motor with remote controls.

* Main accessories/Options

Servo motor for damper motorisation
Pressure switch for dirty filter signalling
Antifreeze thermostat
Hot water post-heating coil providing for the use of a 2-row coil.
External section with 3-row water coil for heating or cooling
Equalising damper with fins, arranged for servo control.
1-stage electric post-heating section.
Remote COM3 switch
Remote PE+PC thermostat
Single-phase speed variator

CONFIGURATION



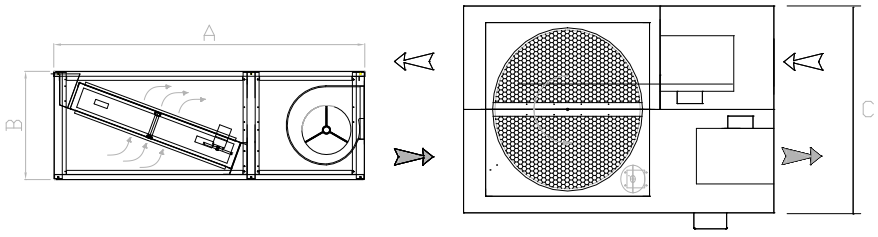
Supply fan	33	55	110	175	220	255	320	410	
Power supply				230 / 1 / 50				400 / 3 / 50	V/ph/Hz
Air flow rate	310	650	1050	1800	2220	2600	3250	4290	m3/h
External static pressure	50	65	80	130	100	110	125	130	Pa
Sound pressure level 1,5m	40	48	47	46	50	48	50	54	dB(A)
Motor input power	92	170	147	350	350	350	550	750	W
max. input current	1	2	2,5	4,8	5,2	5,6	8,7	5,4	A
n° speed / Poles	1/4	1/4	3/4	3/4	3/4	3/4	3/4	2/4	n°
Enclosure protection / Insulation class	44 / F	44 / F	44 / F	44 / F	44 / F	55 / F	44 / F	55 / F	IP
Performance UT-REC R	**33**	**55**	**110**	**175**	**220**	**255**	**320**	**410**	
Recovery type/ Recuperator				Hentalpic rotary / Aluminium hygroscopic					
Winter									
P.A.I. (Room air)	20 / 50	20 / 50	20 / 50	20 / 50	20 / 50	20 / 50	20 / 50	20 / 50	°C/%
P.A.E. (Ambient air)	-5/80	-5/80	-5/80	-5/80	-5/80	-5/80	-5/80	-5/80	°C/%
MAND (Fresh air)	16,3 / 52,5	13 / 57,6	12,7 / 58,5	13 / 57,6	13,0 / 58,3	13,1 / 57,2	12,3 / 60,5	10,8/67,4	°C/%
REC (Heating recovery capacity)	3,6	6,3	10	17,4	21,5	25,2	30,5	37,8	kW
Efficiency recovery (sensible/latent)	85/82	72/69	71/68	72/69	72/69	73/69	69/67	63/63	%
Summer									
P.A.I. (Room air)	26 / 50	26 / 50	26 / 50	26 / 50	26 / 50	26 / 50	26 / 50	26 / 50	°C/%
P.A.E. (Ambient air)	32 / 50	32 / 50	32 / 50	32 / 50	32 / 50	32 / 50	32 / 50	32 / 50	°C/%
MAND (Fresh air)	26,5 / 56,0	27,2 / 53,7	27,3 / 53,4	27,2 / 53,7	27,3 / 53,4	27,2 / 53,7	27,4 / 53,1	27,8/51,9	°C/%
REC (Heating recovery capacity)	1,3	2,5	4	6,9	8,6	10	12,4	15,7	kW
Efficiency recovery (sensible/latent)	92/73	80/69	79/69	80/69	79/69	80/69	77/68	70/66	%

Accessories

BFW	33	55	110	175	220	255	320	410	
Coil type	N.A.				Cu/Al				
n° rows			3	3	3	3	3	3	n°
Coil connection			3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Winter									
Inlet/outlet air temperature			12 / 45,2	12 / 43,2	12 / 43,8	12 / 46,5	12 / 43,9	12 / 42,4	°C
Water temperature IN/OUT			70 / 60	70 / 60	70 / 60	70 / 60	70 / 60	70 / 60	°C
Heating capacity			10,8	19,2	22,9	30,8	38,1	45,4	kW
Air pressure drop			28	41	39	27	40	53	Pa
Summer									
Inlet air / RH			30 / 50	30 / 50	30 / 50	30 / 50	30 / 50	30 / 50	°C / %
Outlet air temperature			19,2	19,3	18,9	17,9	18,8	18,8	°C
Water temperature IN/OUT			7 / 12	7 / 12	7 / 12	7 / 12	7 / 12	7 / 12	°C
Cooling capacity total			4,7	9,8	12,2	15,7	20,5	22,1	kW
Cooling capacity sensible			3,3	6,5	8	10,2	13,3	14,7	kW
Air pressure drop			38	50	53	45	48	60	Pa

BE-R	33	55	110	175	220	255	320	410	
Power supply	230 - 1 - 50				400 - 3 - 50				V-ph-Hz
Power input	1,5	3	3	6	6	12	12	12	kW
n° steps	1	1	1	1	1	1	1	1	n°
Inlet air temperature	12	12	12	12	12	12	12	12	°C
Outlet air temperature	26,2	26,4	21,6	29,5	20,6	26,4	22,4	20,4	°C

Dimensions



Mod.	33	55	110	175	220	255	320	400	
A	1075	1075	1205	1400	1540	1720	1720	1720	mm
B	425	425	460	530	560	600	600	600	mm
C	750	750	860	860	960	1230	1230	1230	mm
G1 BW			3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Connection BFW			3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"

> UT REC DP

DOUBLE PANEL HEAT RECOVERY UNITS

* Units Series

Unit type

UT-REC DP H	**Horizontal unit**
UT-REC DP V	**vertical unit**

* Unit specifications

■ SUPPORT STRUCTURE: in strong extruded aluminium profiles and double panel in galvanised steel sheet inside and prepainted galvanised sheet steel outside, with thermal insulation and soundproofing in hot-injected polyurethane foam, thick. 23 mm.

■ HEAT RECUPERATOR: static-type in aluminium enabling recovery of the heat otherwise lost. Efficiency is guaranteed by the quality of the insulation.

■ CONDENSATE TRAY: in sheet steel, it is placed under the recuperator for the condensate in summer mode.

■ AIR FILTER: made with pleated filter cells, class G4 (ponderal eff. 90.1%), metal frame and electrowelded screen, easily removed from side.

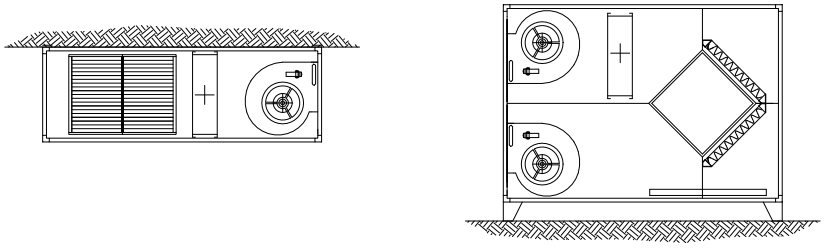
■ FAN MOTOR: a directly coupled type, three-speed with internal thermal protection and startup capacitor always on, with wheel statically and dynamically balanced to minimise noise and vibration.

* Main accessories/Options

Hot water post-heating coil providing for the use of a 2-row coil.
1-stage electric post-heating section.
Safety microswitch
Speed selector CV3
Protection roof

Layout

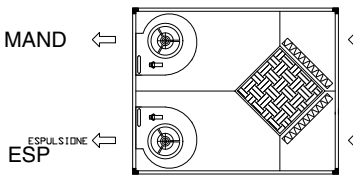
Unit are available in horizontal and vertica layout



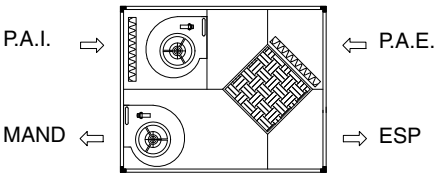
Configuration

Depending on the configuration of the plant duct are available six possible configuration of recovery.

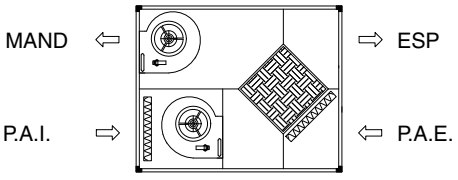
CONFIGURATION 01



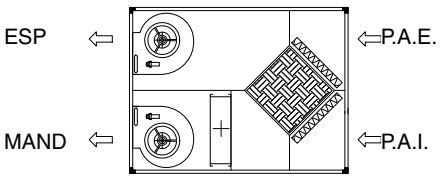
CONFIGURATION 02



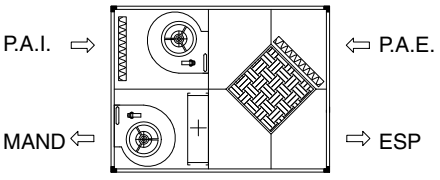
CONFIGURATION 03



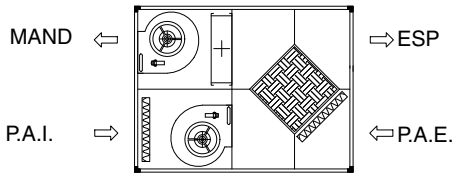
CONFIGURATION 04



CONFIGURATION 05



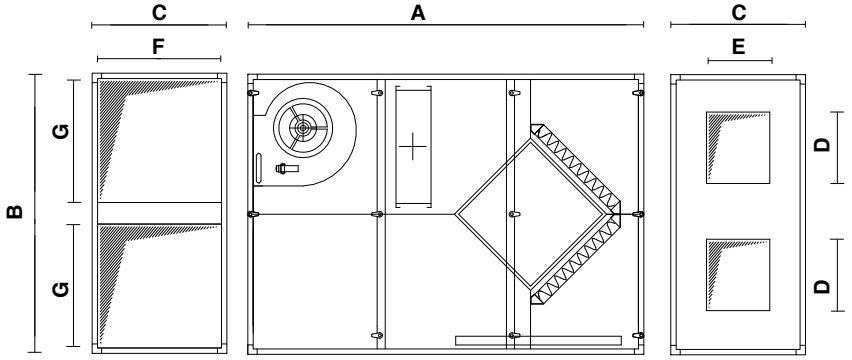
CONFIGURATION 06



Note: Always indicate layout and configuration when ordering

Supply fan	005	01	02	03	04	
Air flow rate	500	1.000	2.000	3.000	4.000	m3/h
External static pressure	80	122	105	153	130	Pa
Power input	45	184	350	550	736	W
n° speed	3	3	3	3	3	n°
Return fan	**005**	**01**	**02**	**03**	**04**	
Air flow rate	500	1.000	2.000	3.000	4.000	m3/h
External static pressure	77	119	93	140	120	Pa
Power input	45	184	350	550	736	W
n° speed	3	3	3	3	3	n°
Performance UT REC DP	**005**	**01**	**02**	**03**	**04**	
Recovery type	cross flow and static type					
Recuperator	High efficiency aluminium plate exchanger					
P.A.I. (Room air)	22 / 50	22 / 50	22 / 50	22 / 50	22 / 50	°C/%
ESP (Exhaust air)	11,0 / 89	9,8 / 93	10,5 / 91	9,7 / 93	11,0 / 87	°C/%
P.A.E. (Ambient air)	-5 / 80	-5 / 80	-5 / 80	-5 / 80	-5 / 80	°C/%
MAND (Fresh air)	8,3 / 28	10,2 / 25	9,1 / 27	10,4 / 25	8,7 / 28	°C/%
REC (Heating recovery capacity)	2,2	5,1	9,5	15,5	18,4	kW
Efficiency recovery (sensible/latent)	49	57	52	57	51	%
Accessories BW	**005**	**01**	**02**	**03**	**04**	
Coil type	Cu/Al					
n° rows	2	2	2	2	2	n°
Coil connection	1/2 “	3/4”	3/4”	3/4”	1”	ø
Inlet air / RH	8,4 / 28	10,0 / 25	9,1 / 27	10,0 / 25	8,7 / 28	°C/%
Outlet air / RH	27,5 / 8	31,9 / 11	25,4 / 13	25,6 / 13	24,9 / 15	°C/%
Water temperature IN/OUT	70 / 60	70 / 60	70 / 60	70 / 60	70 / 60	°C
Heating capacity	3,2	7,4	11,4	15,8	21,8	kW
Air pressure drop	10	17	45	53	55	Pa
Accessories BE	**005**	**01**	**02**	**03**	**04**	
Power supply	400 - 3 - 50					
Power input	2,5	5	10	15	15	kW
n° steps	1	1	2	2	2	n°

Dimensions



Mod.	UM	005	01	02	03	04
A	mm	1290	1310	1310	1660	1840
B	mm	1040	1040	1040	1250	1400
C	mm	400	500	500	600	650
D	mm	135	205	265	295	395
E	mm	225	235	235	265	341
F	mm	320	460	460	560	570
G	mm	380	380	380	470	555

> UT REC DP F

DOUBLE PANEL HEAT RECOVERY UNIT WITH 4 ROWS EXCHANGER

* Units Series

Unit type

UT-REC DP F Horizontal unit

* Unit specifications

■ SUPPORT STRUCTURE: in strong extruded aluminium profiles and double panel in galvanised steel sheet inside and prepainted galvanised steel sheet outside, with thermal insulation and soundproofing in hot-injected polyurethane foam, thick. 23 mm.

■ HEAT RECUPERATOR: static-type in aluminium enabling recovery of the heat otherwise lost. Efficiency is guaranteed by the quality of the insulation.

■ CONDENSATE TRAY: in steel sheet, it is placed under the recuperator for the condensate in summer mode.

■ AIR FILTER: made with pleated filter cells, class G4 (ponderal eff. 90.1%), metal frame and electrowelded screen, easily removed from side.

■ FAN MOTOR: a directly coupled type, three-speed with internal thermal protection and startup capacitor always on, with wheel statically and dynamically balanced to minimise noise and vibration.

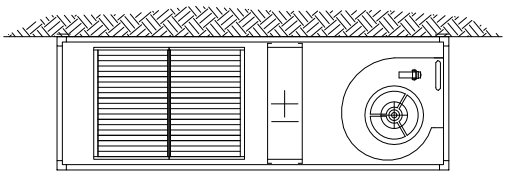
■ HEAT EXCHANGER: made with copper pipes arranged in staggered rows to increase heat exchange and aluminium fins locked by mechanical expansion of the pipes, with 4 rows for air conditioning and heating.

* Main accessories/Options

Single-phase speed variator
Safety microswitch
Speed selector CV3
Protection roof

Layout

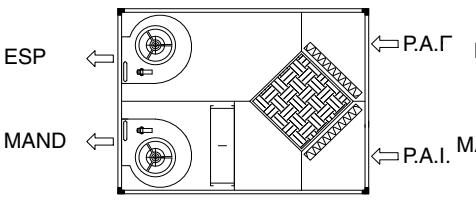
Unit are available in horizontal layout



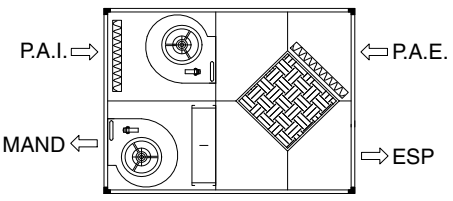
Configuration

Depending on the configuration of the plant duct are available three possible configuration of recovery.

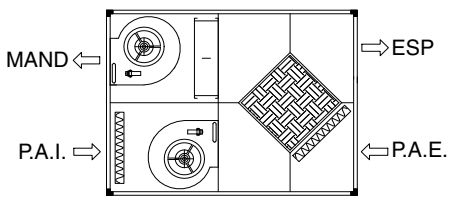
CONFIGURATION 01



CONFIGURATION 02

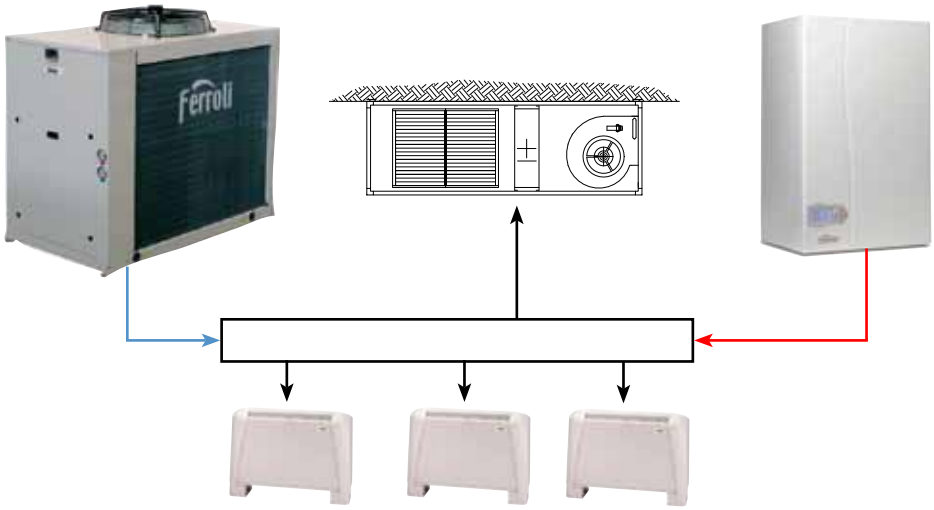


CONFIGURATION 03



Note: Always indicate configuration when ordering

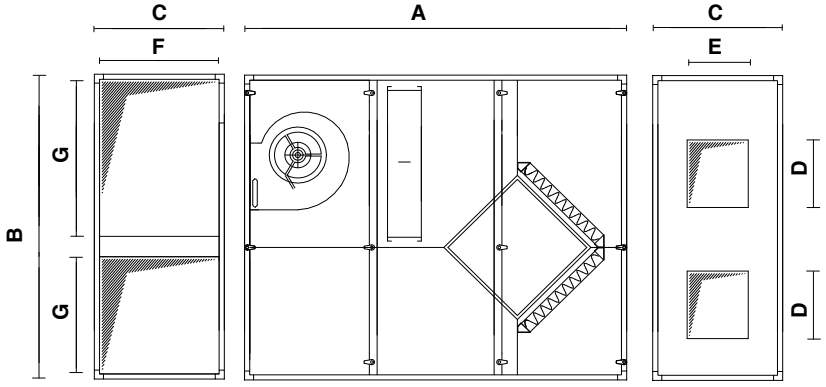
Supply fan	005	01	02	03	04	
Air flow rate	500	1.000	2.000	3.000	4.000	m3/h
External static pressure	55	155	75	95	65	Pa
Power input	45	350	550	550	1.100	W
n° speed	3	3	3	3	1	n°
Return fan	**005**	**01**	**02**	**03**	**04**	
Air flow rate	500	1.000	2.000	3.000	4.000	m3/h
External static pressure	90	116	125	142	104	Pa
Power input	45	184	550	550	1.100	W
n° speed	3	3	3	3	1	n°
Performance UT REC DP F	**005**	**01**	**02**	**03**	**04**	
Recovery type	cross flow and static type					
Recuperator	High efficiency aluminium plate exchanger					
P.A.I. (Room air)	27 / 48	28 / 50	28 / 50	28 /50	28 / 50	°C/%
ESP (Exhaust air)	29,4 / 45	29,9 / 44	29,8 / 44	29,9 / 44	30 / 44	°C/%
P.A.E. (Ambient air)	32 / 50	32 / 50	32 / 50	32 / 50	32 / 50	°C/%
MAND (Fresh air)	30 / 57	30 / 55	30 / 55	30 / 55	30 / 56	°C/%
REC (Heating recovery capacity)	0,3	0,7	1,2	2	2,7	kW
Efficiency recovery (sensible/latent)	43	49	45	49	50	%
Performance 4R coil	**005**	**01**	**02**	**03**	**04**	
Coil type	Cu/Al					
n° rows	4	4	4	4	4	n°
Coil connection	1/2 “	3/4”	3/4”	1”	1”	ø
Inlet air / RH	30 / 57	30 / 55	30 / 55	30 / 55	30 / 56	°C/%
Outlet air / RH	16,4 / 97	18,8 / 94	19,1 / 92	18,9 / 92	18,5 / 93	°C/%
Water temperature IN/OUT	07/12	07/12	07/12	07/12	07/12	°C
Cooling capacity	4	5,5	11,4	17,1	24,8	kW



NB: For correct operation of the unit in heating, maximum delivery water temperatures up to T=50°C are acceptable. Therefore connection to a condensing-type boiler, as indicated in the diagram opposite, is advisable. If the unit is connected to a conventional boiler, the use of a 3-way valve with adjustment on the temperature of delivery to the system is indispensable.

NB: The unit is designed to integrate the primary air and therefore guarantee the air change in an existing system. It only guarantees cooling, and not conditioning (see example above).

Dimensions



Mod.	UM	005	01	02	03	04
A	mm	1290	1540	1540	1790	2040
B	mm	1040	1040	1400	1790	2040
C	mm	400	500	500	600	650
D	mm	135	205	265	295	395
E	mm	225	235	235	265	341
F	mm	320	420	420	520	570
G	mm	380	380	380	640	640

> EOLO
EXHAUST AIR UNITS

* Units Series

Unit type
EOLO FK direct drive

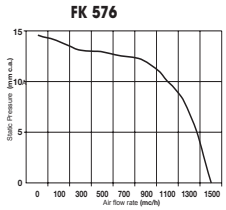
* Unit specifications

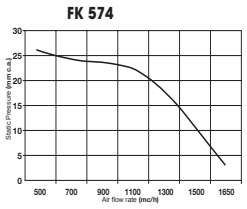
■ CONSTRUCTION CHARACTERISTICS: in aluzink sheet, with soundproofing interposed in the unit, guaranteed by an adequate thickness of polyester.

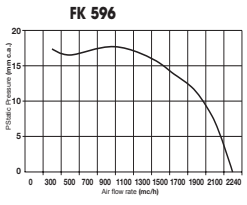
■ ELECTRIC FANS: the fans are dual-intake centrifugal type with statically and dynamically balanced wheels. EOLO FK Series 1 models have centrifugal electric fans with motor directly coupled. Vibration dampers are interposed between the structure and the fan to attenuate the transmission of any vibrations.
The working temperature must be between –20°C and +40°C.

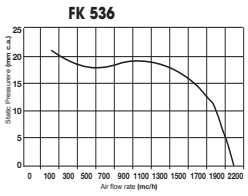
* Main accessories/Options

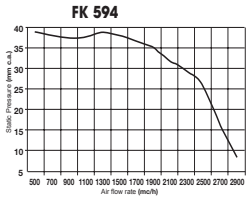
Single-phase speed variator
Three-phase speed variator
Protection roof
Bird net shroud
Overpressure damper
Support feet

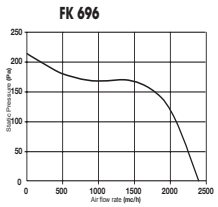


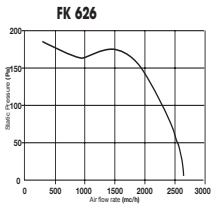


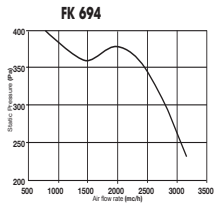


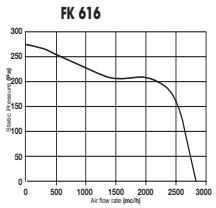


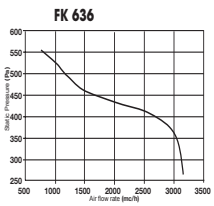


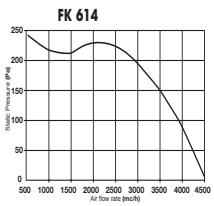


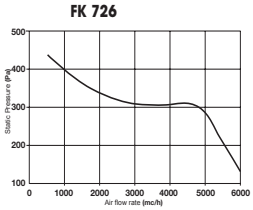


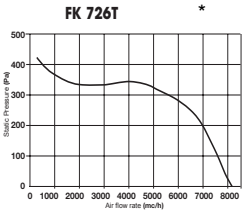


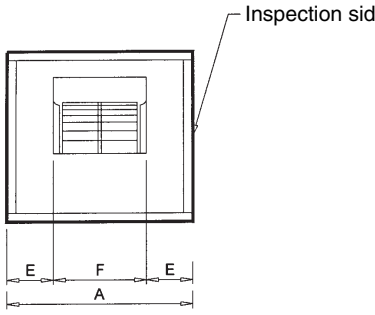


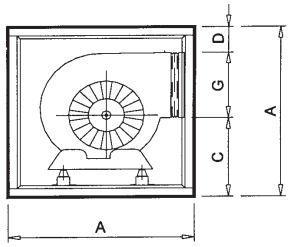










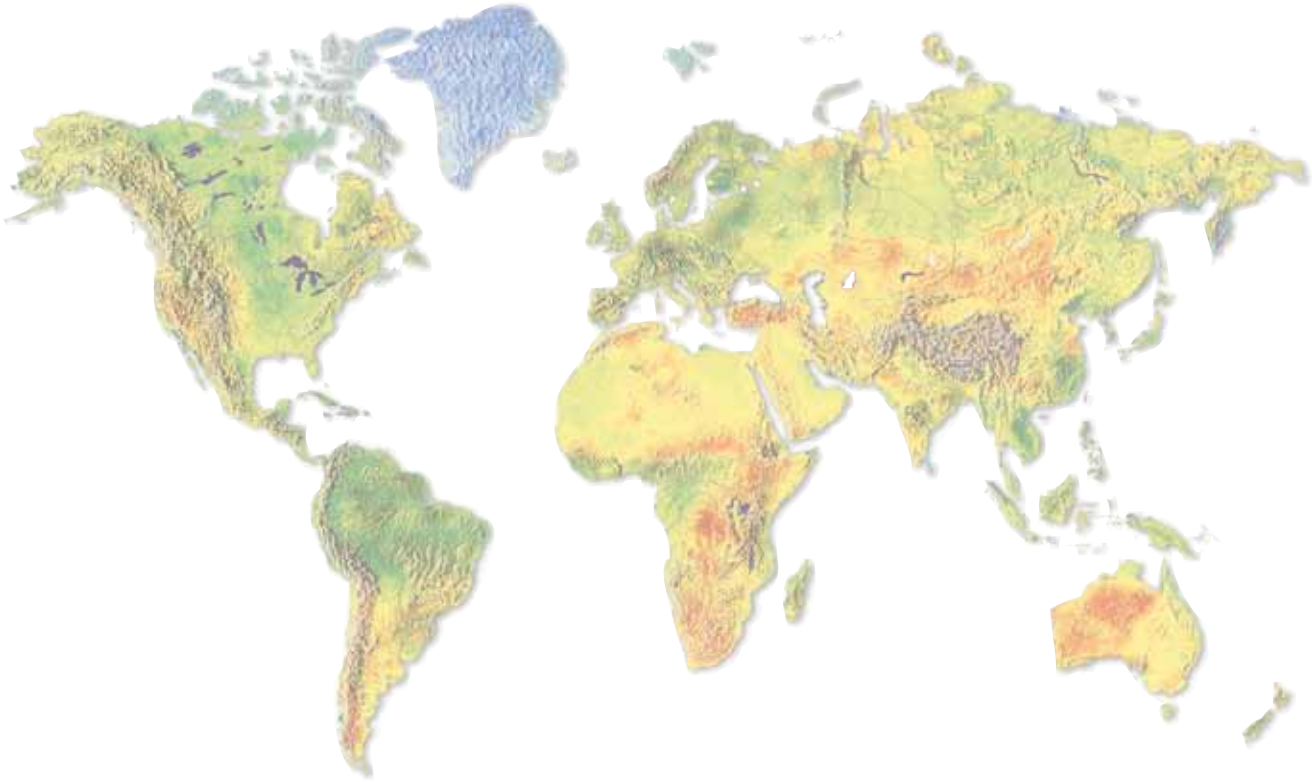


* three-phases unit

Dimensions

Mod.	UM	FK 576-574	FK 596-536-594	FK 596-626-694	FK 616-636-614	FK 726-726T*
A	mm	500	500	600	600	700
C	mm	171	179	179	208	234
D	mm	111	49	149	93	115
E	mm	129	129	146	129	147
F	mm	242	242	308	342	406
G	mm	218	272	272	299	351
Weight	Kg	25-30	28-33	35-40	40-45	60

e



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