montair

CLOSE
CONTROL
SYSTEMS

PRODUCT GUIDE
2016

EXCELLENCE AND INNOVATION IN
PRECISION AIR CONDITIONING

montair CLOSE CONTROL SYSTEMS

G.I. INDUSTRIAL HOLDING

40 YEARS OF EXPERIENCE IN AIR CONDITIONING, INDUSTRIAL PROCESS COOLING, PRECISION AIR CONDITIONING AND AIR TREATMENT.

CLOSE
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SYSTEMS

ABOUT US

2016
New MONTAIR
product range

2015
G.I. MIDDLE EAST
start-up

2013
G.I. INDUSTRIAL ASIA HOLDING
start-up

2009
MONTAIR
acquisition

2009
GIMEK
acquisition

2004
CLINT brand
launch

2003
NOVAIR
acquisition

2002
KTK KLIMATECHNIK
acquisition

2000
G.I. HOLDING Group
start-up

1976
Oldest acquired Company
start-up

EXCELLENCE AND INNOVATION IN PRECISION AIR CONDITIONING.

For 40 years MONTAIR has been the name of excellence in precision air conditioning in high technology environments: Cooling Systems for technical applications such as Server Rooms and Telecommunication Plants.
Montair trademark is in the network of **G.I. INDUSTRIAL HOLDING**, a Company of the multinational **G.I. HOLDING Group**, which offers a complete range of solutions for comfort and industrial cooling: air conditioning and air handling systems in commercial or industrial buildings, cooling systems for server rooms and industrial process.
G.I. INDUSTRIAL HOLDING has grown by the acquisition of historic Companies operating for decades in the different fields of air conditioning and industrial cooling.
In rapid international expansion, the Company now operates internationally with an extensive production and sales network, with 2 own production plants and a network of 30 Sales Representatives in Italy and over 60 Distributors in more than 70 Countries in the World, coordinated by 3 Sales Offices.

GROUP STRUCTURE:

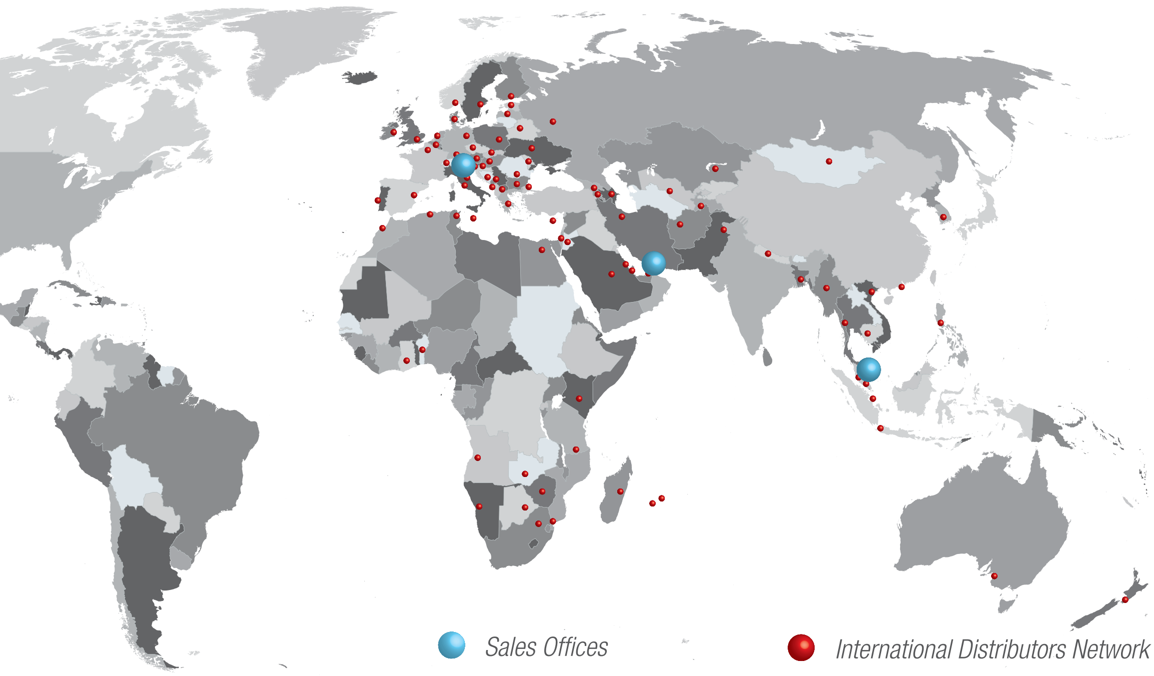
G.I. HOLDING SPA GROUP

- G.I. INDUSTRIAL HOLDING SPA
- GIMEK ZRT HVAC MANUFACTURING CO
- G.I. INDUSTRIAL ASIA HOLDING SDN BHD
- GI Middle East FZ CO

30 SALES REPRESENTATIVES IN ITALY

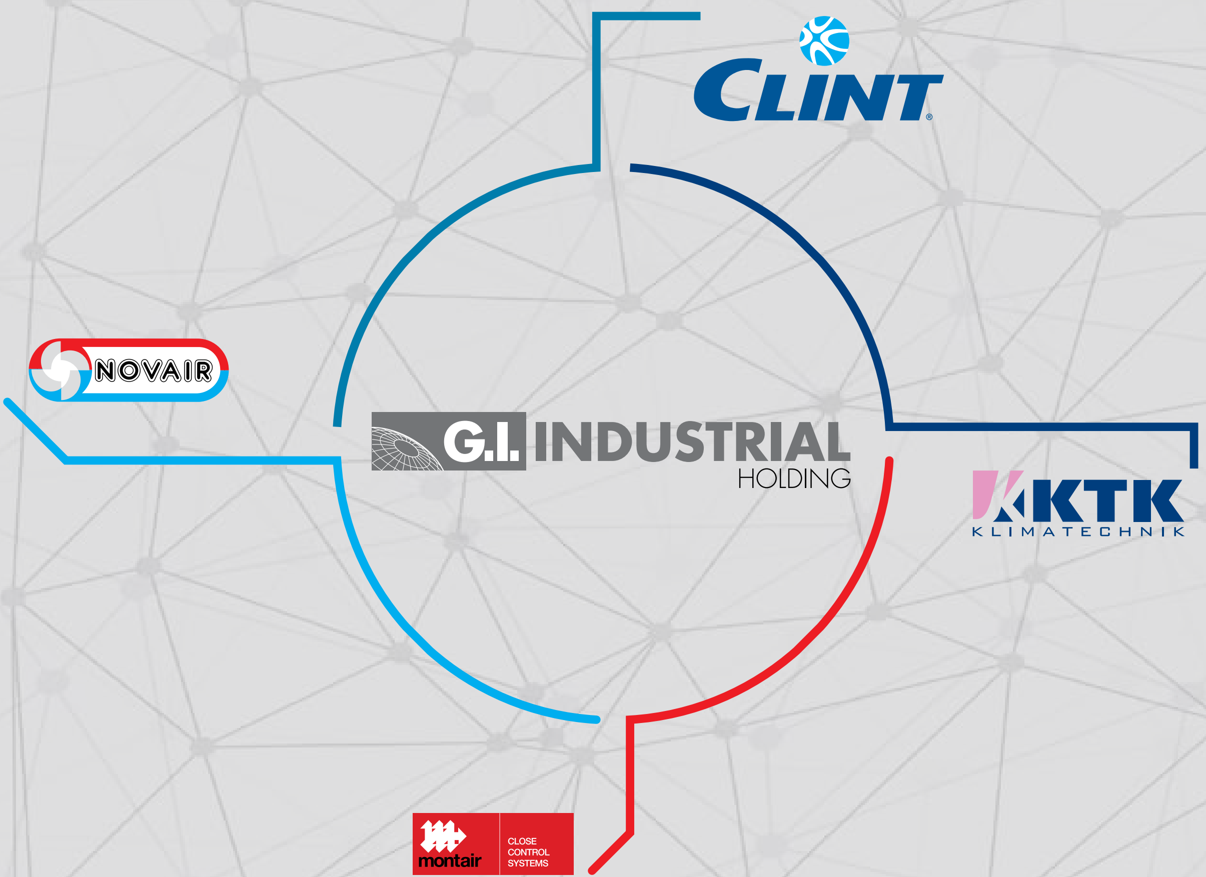
60 DISTRIBUTORS WORLDWIDE

3 SALES OFFICES



montair CLOSE CONTROL SYSTEMS

THE COMPANY



A MULTI-BRAND COMPANY FOR THE WIDEST PRODUCT RANGE.

Four historical brands form the portfolio of **G.I. INDUSTRIAL HOLDING S.p.A.**, each dedicated to a specific branch of HVAC business.

CLINT brand is focused on the segment of liquid Chillers, Packaged Roof Top units and Fan Coil units.
KTK trademark is focused on applications for Industrial Process Cooling and special Air Conditioning Systems.
MONTAIR is the trademark dedicated to Cooling Systems for Data Centres and Telecom Applications.
NOVAIR is a leading brand in the Air Treatment sector.

RANGE:

LIQUID CHILLERS

PACKAGED ROOF TOP UNITS

FAN COIL UNITS

DRY COOLERS

CLOSE CONTROL UNITS

AIR HANDLING UNITS

G.I. INDUSTRIAL HOLDING
MANUFACTURING PLANTS:

G.I. INDUSTRIAL HOLDING

ITALY
RIVIGNANO TEOR
GROUP HEADQUARTERS,
EURASIA AND NORTH & SOUTH
AFRICA REGIONAL OFFICE
AND PRODUCTION PLANT

ITALY
PIOVE DI SACCO
PRODUCTION PLANT

HUNGARY
BUDAPEST (GIMEK ZRT)
PRODUCTION PLANT

PRODUCTION:
A FULLY CERTIFIED SYSTEM.

The design and manufacturing of Cooling Systems for Data Centres and Telecom Applications is concentrated in the production plant of **Piove di Sacco.**
Structured according to modern assembly lines, the production involves a close monitoring of every production phase, up to final testing of the units in terms of quality and performance.

The plant and its products have obtained the most important internationally-recognised certifications:

- **CE:** It certifies that every unit leaving our production lines is built in accordance with the standards required by the European Union.

- **BV:** Certification for pressurised fluids which guarantees the correct implementation of cooling and hydraulic circuits in units with compressors.

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- **UNI EN ISO 9001:2008:** The first Italian Company in the sector to adhere to the programme in 1999, proving the special attention dedicated to the correct management of the industrial process.

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CLOSE
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OUR REFERENCES

OUR REFERENCES.

For 40 years we have been present in the most prestigious buildings and installations. **MONTAIR** boasts a large number of international references proving the quality and efficiency of the various installed solutions.

>> DATA CENTRES AND TELECOMMUNICATIONS.

SAT 1 Television, Berlin, Germany
PSI Net Provider, Amsterdam, Netherlands
RTE Television, Dublin, Ireland
DIAX Communications, Zurich, Switzerland
RAADIOMAJA Radio, Tallin, Estonia
01 CERIDIAN Server Room, Port Louis, Mauritius

>> BANKS.

LUINO & VARESE Bank, Varese, Italy
BNY MELLON Bank, Amsterdam, Netherlands
BANK OF PARIS, London, U.K.
BANK ANLAGE UND KREDITBANK, Zurich, Switzerland
PICTET Bank, Zurich, Switzerland
CLARIDEN Bank, Zurich, Switzerland
02 SWISS NATIONAL BANK, Zurich, Switzerland
UBS Bank, Zurich, Switzerland
EURO CITI BANK, Moscow, Russia
NATIONAL BANK OF UKRAINE, Kiev, Ukraine
INFIN Bank, Tashkent, Uzbekistan

>> INSTITUTIONS AND PUBLIC BUILDINGS.

03 CORTE SUPREMA DI CASSAZIONE, Rome, Italy
ATM Public Transport Company, Milan, Italy
INPS, Rome, Italy
POSTE ITALIANE, Milan, Italy
POSTE ITALIANE, Trento, Italy
04 POSTE ITALIANE, Trieste, Italy
POSTE ITALIANE, Verona, Italy
ENEL POWER, Cagliari, Italy
ENEL POWER, Genoa, Italy
ENEL POWER, Pisa, Italy
05 CONSORZIO ACQUA POTABILE, Milan, Italy
LATVIAN OLYMPIC COMMITTEE, Riga, Latvia
SAI KUNG Government Office, Kowloon, Hong Kong

01 CERIDIAN, Port Louis, Mauritius

02 SWISS NATIONAL BANK, Zurich, Switzerland

03 CORTE SUPREMA DI CASSAZIONE, Rome, Italy

04 POSTE ITALIANE, Trieste, Italy

05 CONSORZIO ACQUA POTABILE, Milan, Italy

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OUR REFERENCES

06 BRAWOPARK Business & Shopping Centre, Braunschweig, Germany

07 NIGUARDA Hospital, Milan, Italy

08 BALTALIMANI Hospital, Istanbul, Turkey

09 RADISSON Hotel, Copenaghen, Denmark

10 NOVAMONT Chemical, Terni, Italy

>> MUSEUMS.

NATIONAL MUSEUM, Munich, Germany
MUSEUM OF HISTORY, Kowloon, Hong Kong

>> COMMERCIAL APPLICATIONS.

06 BRAWOPARK Business and Shopping Centre, Braunschweig, Germany
KAZINO MIRAZH Casinò, Almaty, Kazakhstan
ZAYANI MOTORS Showroom, Manama, Bahrain

>> HOSPITALS.

SACRO CUORE Institute, Milan, Italy
07 NIGUARDA Hospital, Milan, Italy
SAN SEVERO Hospital, Foggia, Italy
SAN FRANCESCO Hospital, Nuoro, Italy
SAN GALLICANO Hospital, Rome, Italy
D'AUBUSSON Hospital, Aubusson, France
BRETECHE Clinic, Nantes, France
VOLNAY Clinic, Volnay, France
MAX PLANCK INSTITUT, Munich, Germany
ROENTGENINSTITUT DR. ALDER Hospital, St. Gallen, Switzerland
RHEUMATISM FOUNDATION Hospital, Heinola, Finland
APOLLO Hospital, Moka, Mauritius
FLACQ Hospital, Port Louis, Mauritius
JEETOO Hospital, Port Louis, Mauritius
08 BALTALIMANI Hospital, Istanbul, Turkey

>> HOTELS.

HILTON Hotel, Basel, Switzerland
09 RADISSON Hotel, Copenaghen, Denmark

>> PRIVATE INDUSTRIES.

TERNA POWER, Florence, Italy
IBM SEMEA, Genoa, Italy
YAZAKI Automotive, Grugliasco, Italy
REALE MUTUA Insurances, Milan, Italy
10 NOVAMONT Chemical, Terni, Italy
IBM, Madrid, Spain
11 BMW, Dingolfing, Germany
ADAC Automobilclub Headquarters, Munich, Germany
HOCHST, Munich, Germany
BRAUEREI LOEWENBRAEU, Mittweida, Germany
BRAUEREI LOEWENBRAEU AG, Munich, Germany
SIEMENS, Regensburg, Germany
VOLKSWAGEN De Ject, Wolfsburg, Germany

NOKIA, Rotterdam, Netherlands
12 *BMW UK - MINI, Oxford, U.K.*
NABISCO, Birmingham, U.K.
SCOTSMAN Newspaper, Edinburgh, U.K.
BOSCH, Hünenberg, Switzerland
CERBERUS, Männedorf, Switzerland
SIEMENS, Wallisellen, Switzerland
13 *NOVARTIS AG Pharmaceutical, Basel, Switzerland*
CABLECOM, Zurich, Switzerland
LANDESKRANKENHAUS, Rottenmann, Austria
BELLMAN, Lahti, Finland
BIAXIS, Lahti, Finland
ORU 110 Thermal plant, Saint Petersburg, Russia
VOLOGDA YUZHNAYA, Vologda, Russia
BELOZERSKAYA, Moscow, Russia
CHEREPOVETZ, Cherepovetz, Russia
CKC, Khabarovsk, Russia
BPC, Port Louis, Mauritius
LOLOTECH, Port Louis, Mauritius
INVESTEC, Port Louis, Mauritius
KARTAL HIZMET BINASI, Istanbul, Turkey
QAFCO, Doha, Qatar
BOSCH, Taguig City, Philippines
NAMSAWANG Pharmaceutical, Bangkok, Thailand

>> SCHOOLS, UNIVERSITIES AND THEATRES.

CATTOLICA University, Milan, Italy
TECHNISCHE University, Munich, Germany
14 *HELSINKY University, Helsinky, Finland*
ROYAL Theatre, London, U.K.

>> TRANSPORTS.

NATO Air Base, Fürstenfeldbruck, Germany
FINNAIR AIRLINES, Vantaa, Finland
ZHUKOVSKOGO Flight School, Saint Petersburg, Russia
15 *CHANGI Airport, Singapore*

11 BMW, Dingolfing, Germany

12 BMW UK - MINI, Oxford, U.K.

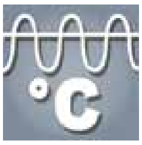
13 NOVARTIS Pharmaceutical, Basel, Switzerland

14 HELSINKY University, Helsinky, Finland

15 CHANGI Airport, Singapore

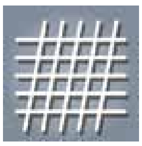
MONTAIR BRANDED PRECISION AIR CONDITIONING.

MONTAIR offers a range of specifically-designed products to fulfil the various types of applications, based on total climate control, reliability and energy efficiency, in order to optimise the investment made in the system.



CONSTANT TEMPERATURE

100% SHR



FILTERING SYSTEM

TOTAL CLIMATE CONTROL.

LONGER SYSTEM SERVICE LIFE.
MONTAIR units are designed especially for **rooms with a specific high thermal load** and ensure excellent **thermal–hygrometric levels**.

- **CONSTANT TEMPERATURE.** The use of Inverter* compressors prevents fluctuations in temperature, which could otherwise be damaging to servers.

- **LOW HUMIDITY, HIGH SHR.** Extremely high **Sensible Capacity levels, up to 100% SHR:** accurate dehumidification prevents the risk of condensation and corrosion on the racks, while maintaining levels to prevent static loads, harmful to data security.
  Dedicated versions equipped with **humidifying** and/or **dehumidifying** systems maintain the optimal level of humidity in every situation.

- **FILTERING SYSTEM, CLEAN AIR.** The air is kept free of impurities that can damage racks thanks to dedicated filtering systems in latex and high filtration fibre (standard M5, accessory F7-EU7).

* Available on dedicated models.

LONG-TERM RELIABILITY.

SHUT-DOWN PREVENTION: THE DATA IS PROTECTED.

MONTAIR precision air conditioners, designed to operate 24/7, 365 days a year, feature components **specifically designed for continuous use (heavy duty)** and maximum security. The materials are among the most resistant on the market, such as the paints and panels with thermo-acoustic and **fireproof insulation** that the unit structure is made of.

Specific models are designed according to an **internal redundancy** system to ensure System operation even in the case of unit failure, such as the **dual fluid and dual coil** models, or the **double cooling circuit** versions. The **LOGICA** rear cooling door System is a **patented system against hydraulic leaks** to guarantee maximum data protection.

The **production plant** is closely monitored throughout every phase of production, up to **final testing** of the units, in terms of quality and performance. In the after-sales phase, the **Technical Assistance Centres** distributed extensively throughout the international territory provide, on request, the on-site unit start-up in addition to complete technical assistance, quickly and precisely, during unit service life.

MAXIMUM ENERGY EFFICIENCY THROUGHOUT THE ENTIRE YEAR'S CYCLE.

REDUCED OPERATING COSTS.

In Data Centre Systems, a considerable part of total consumption is due to air conditioning on year-round operation. Accordingly, it is essential to design a cooling system that **minimises energy consumption**.

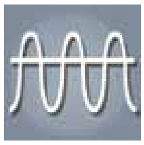
- **INVERTER TECHNOLOGY.** The **high-efficiency line** for medium-density systems with **Scroll Inverter compressors and EC Inverter Plug-Fans** features up to 50% less consumption at partial loads in comparison to traditional solutions.
- **LOGICA SYSTEM.** The integrated cooling system for high density systems that offers up to 93% in energy saving in comparison to traditional solutions.
- **FREE-COOLING.** Dedicated MONTAIR cooling systems are designed with the Indirect Free-Cooling logic, others can also be connected to external liquid Chillers equipped with **Free-Cooling** technology.

HEAVY DUTY COMPONENTS

FIREPROOF

REDUNDANCY

AFTER-SALES



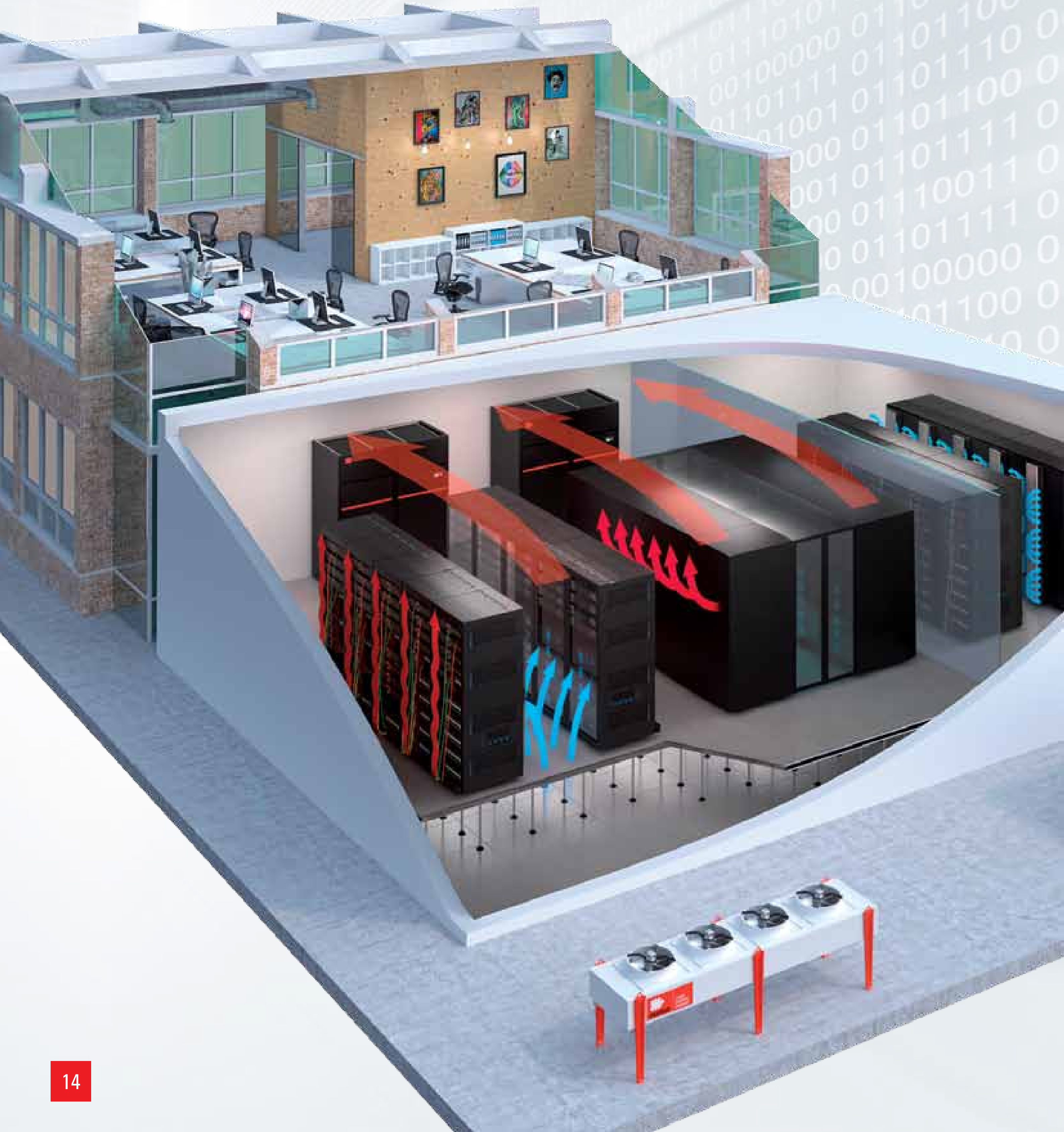
INVERTER TECHNOLOGY

LOGICA SYSTEM

FREE-COOLING

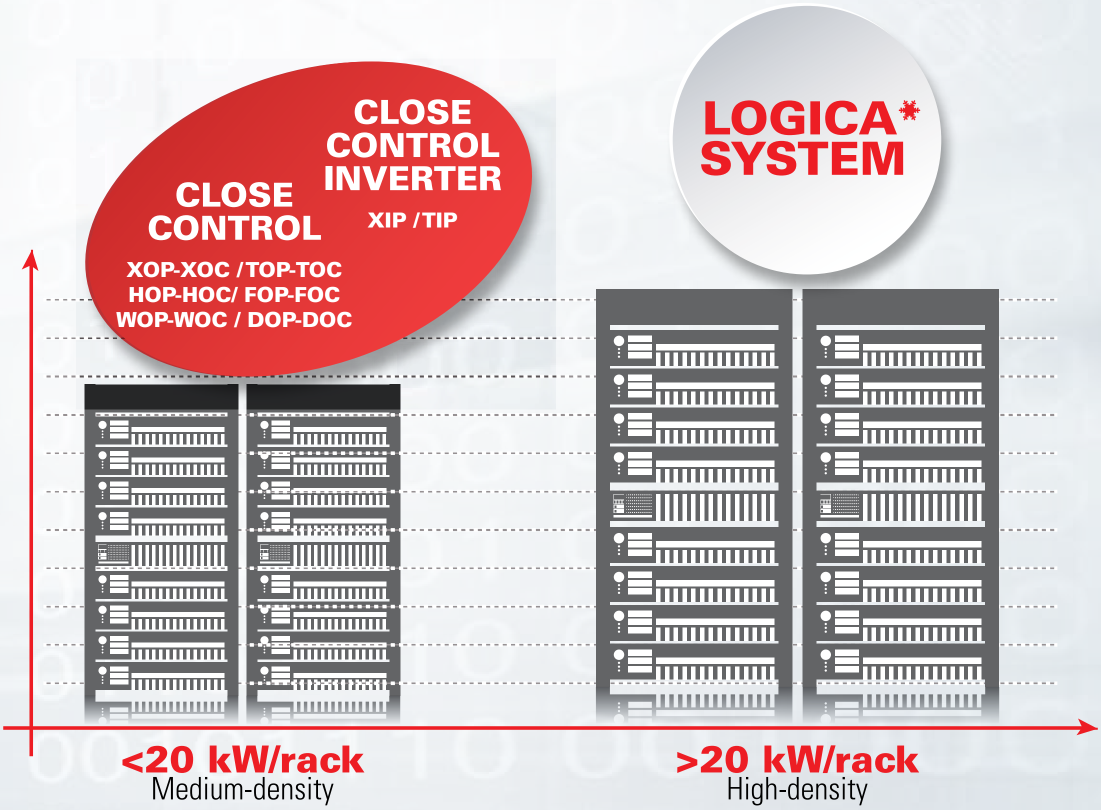
montair CLOSE CONTROL SYSTEMS

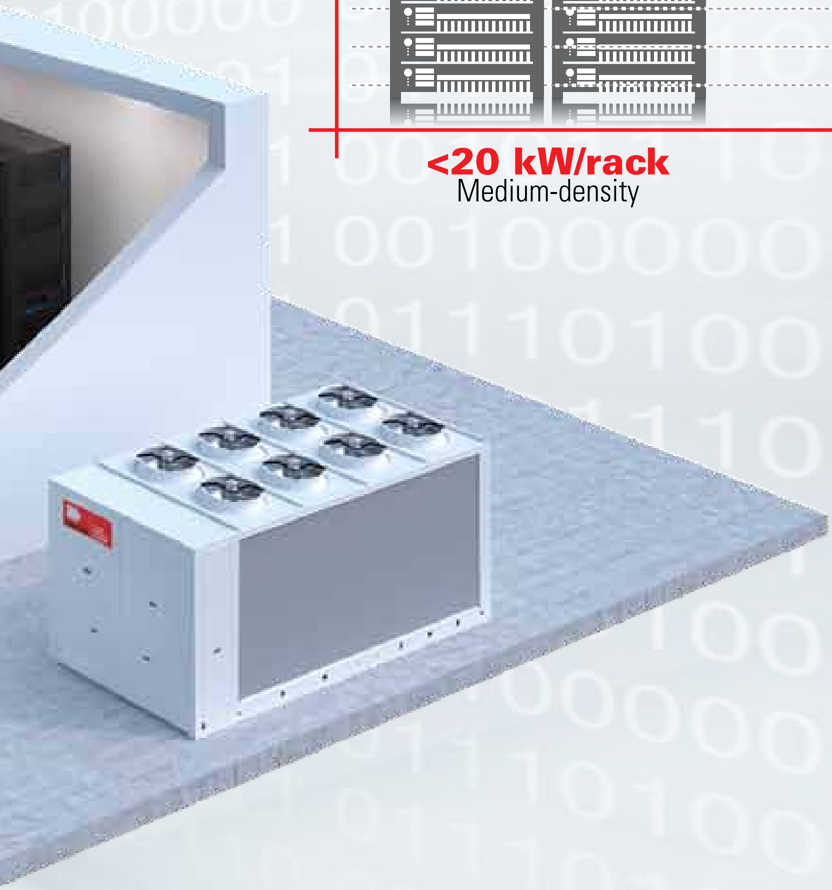
PRODUCT RANGE



A BROAD RANGE
FOR DIFFERENT NEEDS.

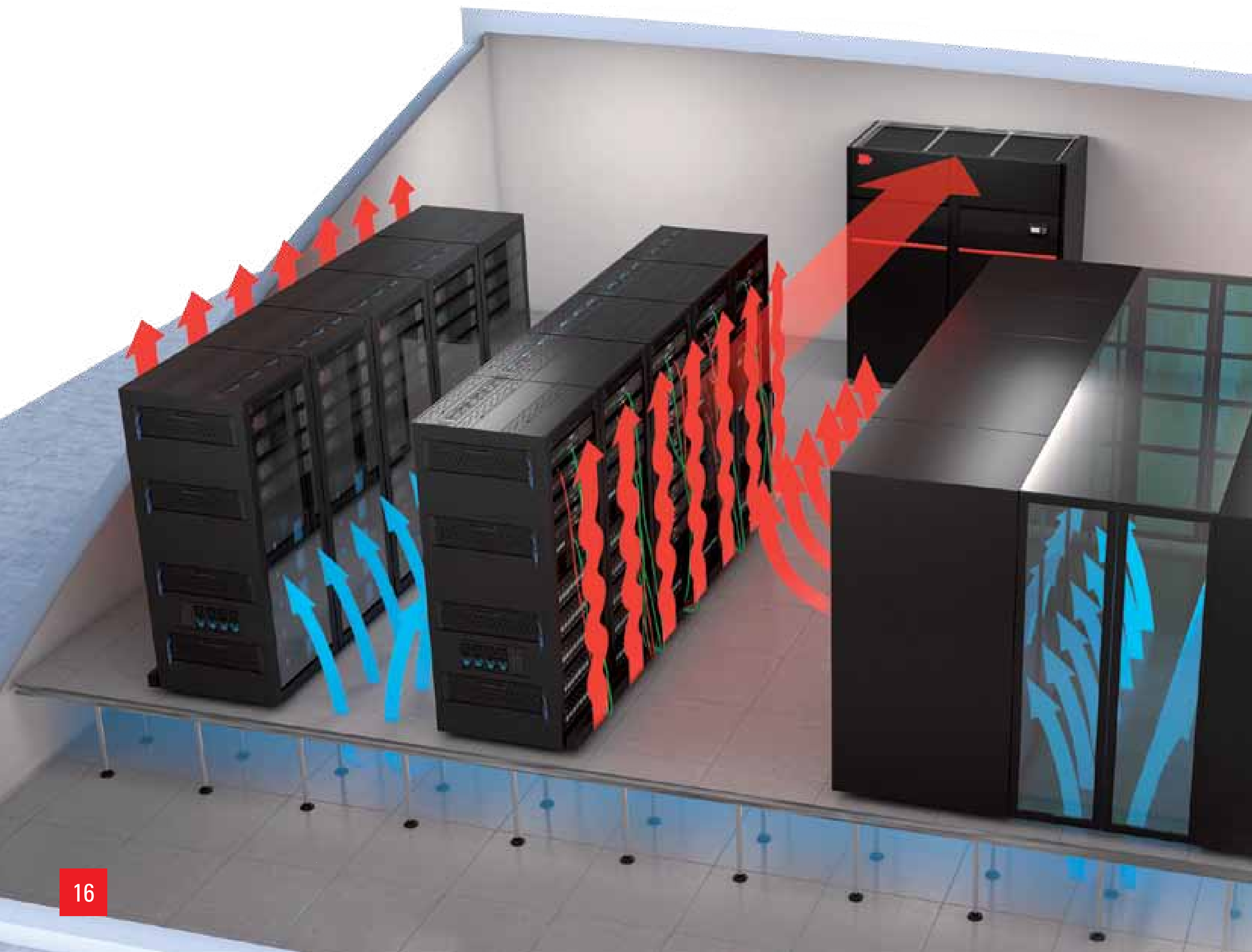
MONTAIR offers new ranges, specifically designed on real thermal power loads of server rooms (kW/rack): for traditional, medium-density or latest-generation, high-density Data Centres.





MEDIUM DENSITY

CLOSE CONTROL UNITS FOR **MEDIUM-DENSITY** DATA CENTRES **<20 kW/rack**



INVERTER COMPRESSOR TECHNOLOGY
EC INVERTER PLUG FAN

The server room and its cooling system are designed to create **HOT AND COLD AISLES**. As the thermal power generated by the racks increases in order to reduce dispersion of the cold air produced by the Close Control units, the server room can be designed according to the logic of **CONTAINED COLD AISLES**.
By closing the racks with dedicated walls, it prevents hot and cold air from mixing at the top of the aisles, thereby ensuring that all the cold air generated by the Close Control units is directed towards the servers.

This is the simplest solution, with the most **reduced investment**, and its **flexibility** makes it possible to re-design the server room quickly if any changes need to be made to the layout.

- √ INVERTER SCROLL COMPRESSOR
- √ EC INVERTER PLUG-FANS
- √ COMPACT DIMENSIONS
- √ THERMO-ACOUSTIC INSULATION
- √ REDUNDANCY
- √ MULTI COMPRESSOR
- √ HIGH EFFICIENCY LIQUID CHILLER
- √ FREE-COOLING TECHNOLOGY
- √ ELECTRONIC EXPANSION VALVE
- √ CONSTANT AIRFLOW AND STATIC PRESSURE
- √ REMOTE MANAGEMENT
- √ SUITABLE FOR HIGH EXTERNAL AMBIENT TEMPERATURE (UP TO 52°C)

CLOSE CONTROL SYSTEMS

PRODUCT RANGE

INVERTER COMPRESSOR TECHNOLOGY

EC INVERTER PLUG FAN

MEDIUM DENSITY

CLOSE CONTROL INVERTER LINE: THE RANGES

The CLOSE CONTROL INVERTER LINE is based on the concept of **INVERTER** applied to **compressors** and **Plug-Fans**.

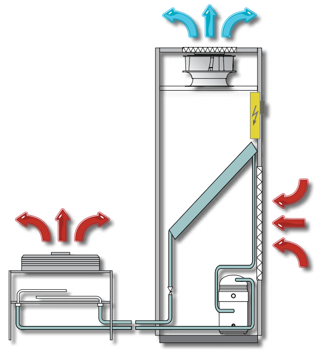
This broad line covers cooling capacities **from 17 to 136 kW (from 5 to 39 TON)** and includes the ranges:

XIP:
AIRCOOLED DIRECT EXPANSION UNITS WITH FULL INVERTER TECHNOLOGY.

TIP:
AIRCOOLED DIRECT EXPANSION DUAL FLUID UNITS WITH FULL INVERTER TECHNOLOGY.

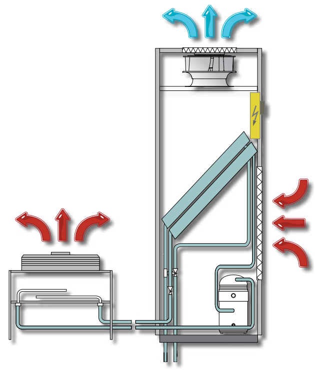
XIP
AIRCOOLED DIRECT EXPANSION UNITS WITH FULL INVERTER

These units use the coolant as a heat carrier. The air in the room is handled in the evaporator coil where the coolant flows; the condensation heat is disposed of in an outdoor air condenser.
The XIP series features Inverter Scroll compressor and EC Inverter Plug-Fans.



TIP
AIRCOOLED DIRECT EXPANSION DUAL FLUID UNITS WITH FULL INVERTER

The units in the TIP range are equipped with two separate cooling systems that do not start-up simultaneously: a PRIMARY chilled water system (CW) connected to an on-site liquid Chiller, and a SECONDARY direct expansion system (DX) that can also have a back-up function. These models are particularly suited for systems requiring RELIABILITY, DATA PROTECTION and REDUNDANCY of the conditioning system.
The TIP series features Inverter Scroll compressor and EC Inverter Plug-Fans.



PRODUCT RANGE

EC INVERTER PLUG FAN

MEDIUM DENSITY

CLOSE CONTROL LINE: THE RANGES

The broad CLOSE CONTROL LINE covers cooling capacities **from 9 to 155 kW (from 3 to 44 TON)** and includes the following ranges to fulfil every installation need:

XOP AND **XOC:**
AIRCOOLED DIRECT EXPANSION UNITS.

TOP AND **TOC:**
AIRCOOLED DIRECT EXPANSION DUAL FLUID UNITS.

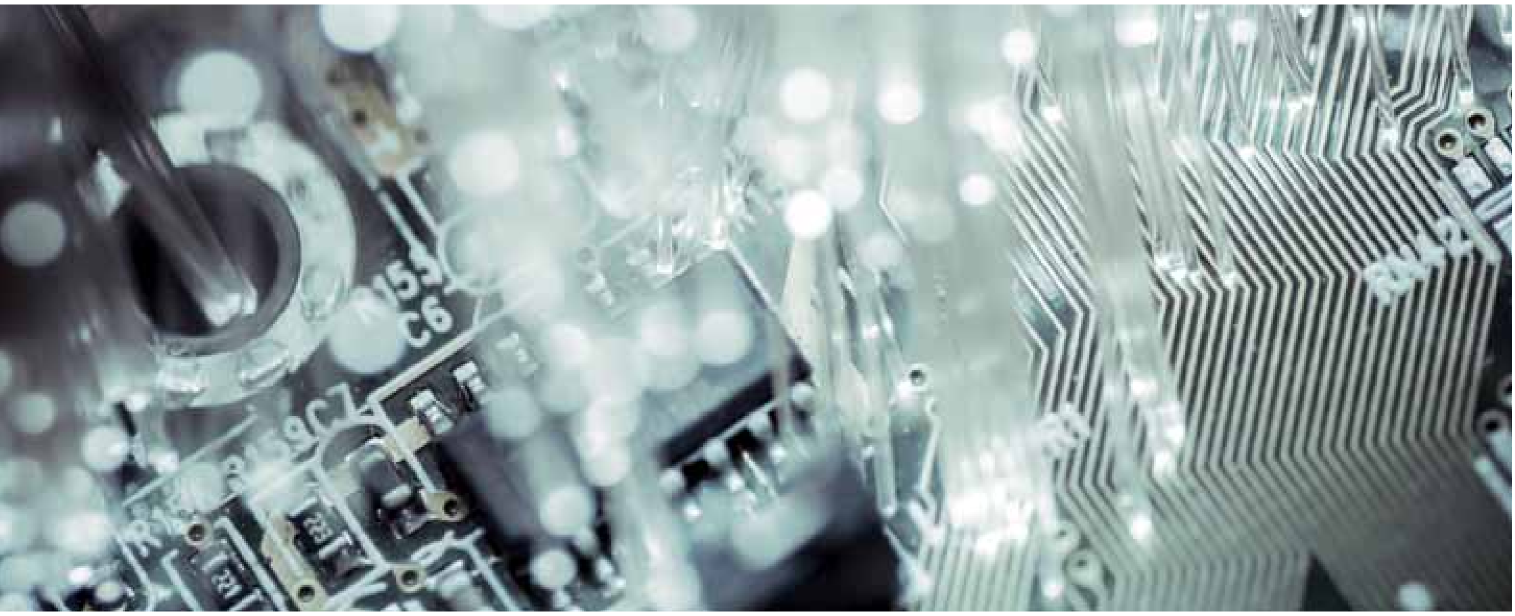
HOP AND **HOC:**
WATERCOOLED DIRECT EXPANSION UNITS.

FOP AND **FOC:**
WATERCOOLED DIRECT EXPANSION FREE-COOLING UNITS.

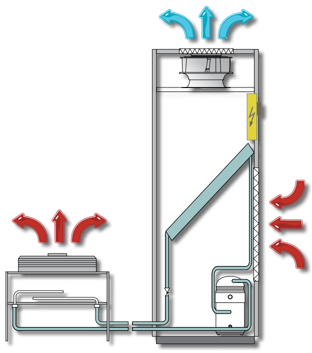
WOP AND **WOC:**
CHILLED WATER UNITS.

DOP AND **DOC:**
CHILLED WATER DUAL COIL UNITS.

EC Inverter Plug-Fans or radial fans, depending on the model, provide optimised air flow for the requested thermal load.



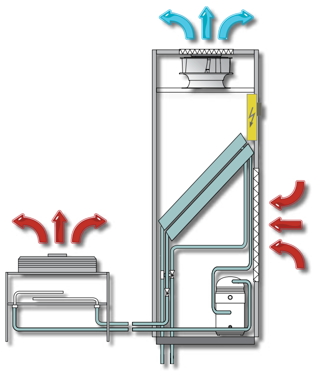
XOP / XOC
AIRCOOLED DIRECT EXPANSION UNITS



These units use the coolant as a heat carrier. The air in the room is handled in the evaporator coil where the coolant flows; the condensation heat is disposed of in an outdoor air condenser.

- **XOP** – with EC Inverter Plug-Fans
- **XOC** – with radial fans

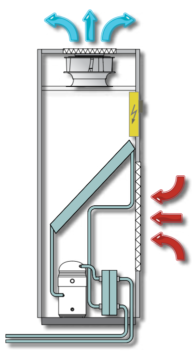
TOP / TOC
AIRCOOLED DIRECT EXPANSION DUAL FLUID UNITS



The units in the T series are equipped with two separate cooling systems that do not start-up simultaneously: a PRIMARY chilled water system (CW) connected to an on-site liquid Chiller, and a SECONDARY direct expansion system (DX) that can also have a back-up function. These models are particularly suited for systems requiring RELIABILITY, DATA PROTECTION and REDUNDANCY of the conditioning system.

- **TOP** – with EC Inverter Plug-Fans
- **TOC** – with radial fans

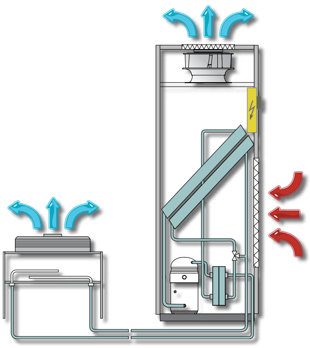
HOP / HOC
WATERCOOLED DIRECT EXPANSION UNITS



These units use the coolant as a heat carrier. The air in the room is handled in the evaporator coil where the coolant flows; the condensation heat is disposed of in an internal plate exchanger, in turn connected to a water circuit: well water, local water supply or closed circuits as cooling towers and/or dry coolers.

- **HOP** – with EC Inverter Plug-Fans
- **HOC** – with radial fans

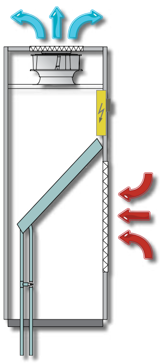
PRODUCT RANGE



FOP / FOC
WATERCOOLED DIRECT EXPANSION FREE-COOLING UNITS

Units equipped with two separate cooling systems, a PRIMARY direct expansion system (DX) and a SECONDARY chilled water one (CW). The microprocessor, that the units are equipped with, manages 3 operating modes: DX only, MIXED and CW. Based on the outdoor temperature, this maximises energy saving through the intelligent management of the three operating modes. This type of unit is particularly suited for systems requiring special ENERGY EFFICIENCY and SAVINGS on the entire conditioning system.

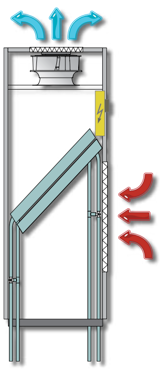
- **FOP** – with EC Inverter Plug-Fans
- **FOC** – with radial fans



WOP / WOC
CHILLED WATER UNITS

These units use chilled water produced by a liquid Chiller, which can be watercooled or air-cooled, also with Free-Cooling technology. An internal 3-way valve manages the flow of liquid through the unit's water coil.

- **WOP** – with EC Inverter Plug-Fans
- **WOC** – with radial fans



DOP / DOC
CHILLED WATER UNITS WITH DUAL COIL

These units have two cooling circuits, both running on chilled water and both operating separately. These circuits are connected to 2 on-site water or air condensing liquid Chillers, also with Free-Cooling technology. These models are particularly suited for systems requiring RELIABILITY, DATA PROTECTION and REDUNDANCY of the conditioning system.

- **DOP** – with EC Inverter Plug-Fans
- **DOC** – with radial fans

AIR FLOW CONFIGURATION:

Each model is available with top or bottom air discharge. Baseframes and deflectors are also available to enlarge the possible airflow configurations.

TOP

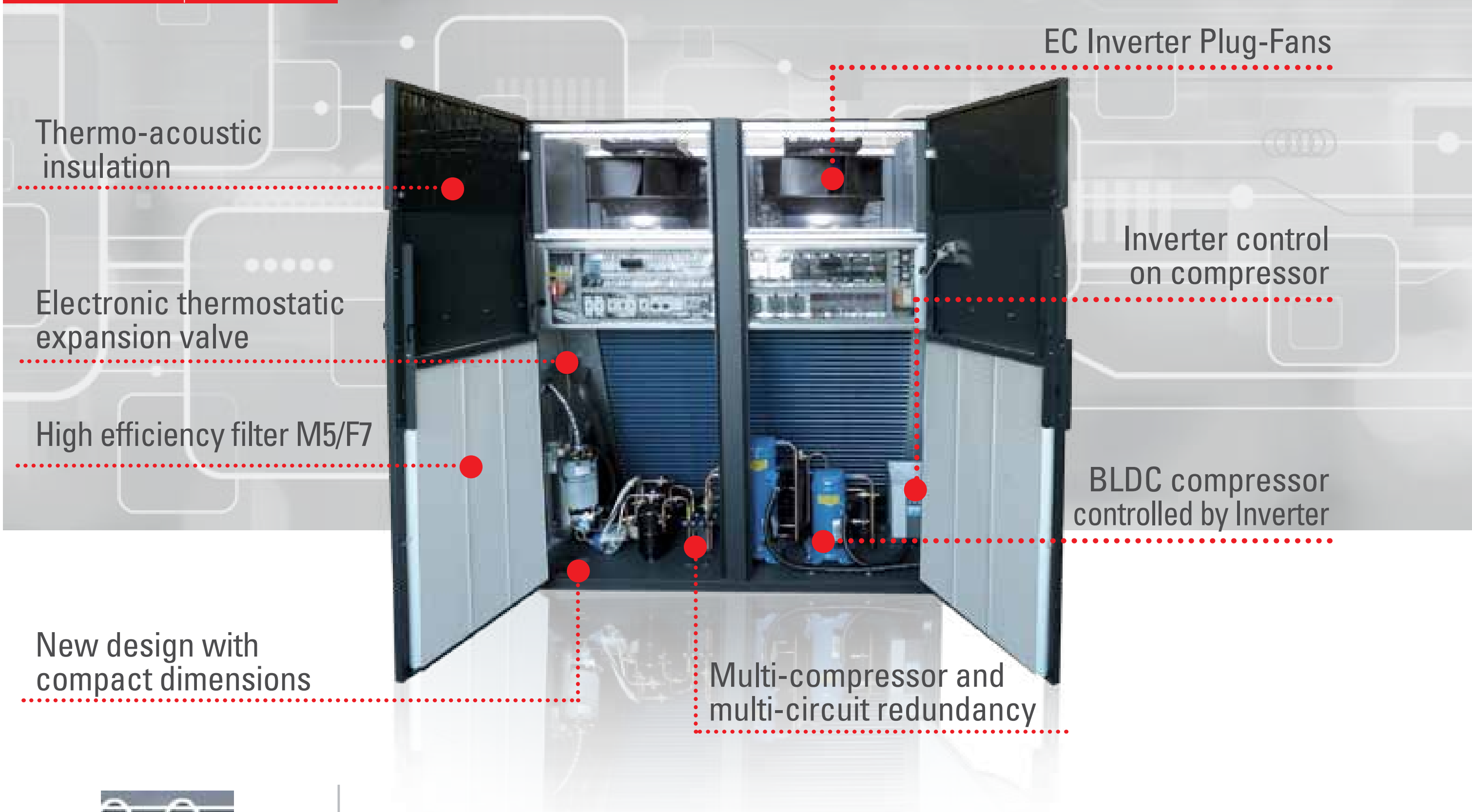
The air discharge is directed upwards and the intake is frontal. (T version)

BOTTOM

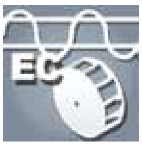
The air discharge is directed under-floor and the intake is at the top of the unit. (B version)

CLOSE CONTROL SYSTEMS

BENEFITS



INVERTER COMPRESSOR



EC INVERTER PLUG-FANS

INVERTER: MAXIMUM ENERGY EFFICIENCY.

EER UP TO 4,5.

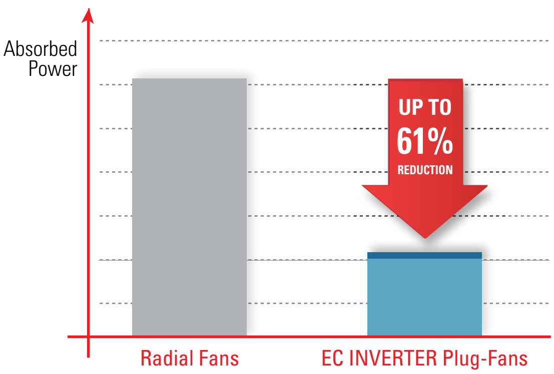
The operating costs of the server room are kept to a minimum thanks to **capacity modulation:**

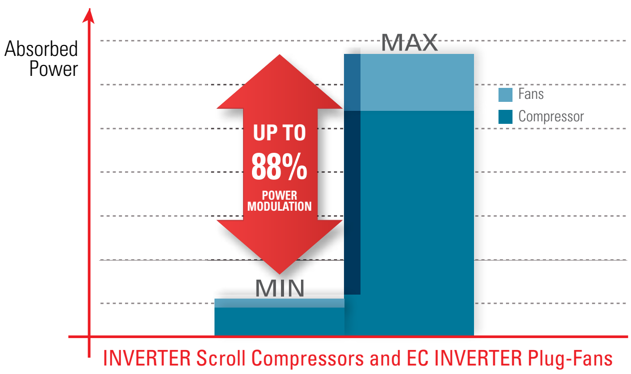
- **Inverter compressor*** modulates the speed based on the requested thermal load, reducing the energy consumption at partial loads.
- **EC Inverter Plug-Fans*** manage a variable air flow based on the requested thermal load, thereby reducing the energy consumption even more, especially at partial loads.

* Available on dedicated models.

Thanks to speed modulation, the **EC INVERTER Plug-Fans** allow to reduce energy consumption up to 61% compared to traditional radial fans.

Models with **full INVERTER technology** are able to vary the energy consumption from minimum to maximum levels, reducing the total energy consumption up to 88%.





REDUCED CONSUMPTION.

LOWER RUNNING COSTS.

- The standard **electronic thermostatic expansion valve*** stabilizes the operating mode of the cooling circuit, optimising compressor operation.

- **Multi-compressor splitting:** up to four compressors can be activated in series based on the requested thermal load, reducing absorbed power at partial loads.

- **High efficiency liquid Chiller:** models with chilled water circuits can be connected to high-efficiency liquid Chillers, such as those with Magnetic Levitation or Inverter technology compressors, to maximise the efficiency of the entire system.

HIGH WATER TEMPERATURE OPERATION: 13-18°C.

Chilled water series can operate at high water temperature (13-18°) with dedicated HT accessory: coils are optimized for that setpoint to reach an higher energy efficiency.

INTERNAL REDUNDANCY.

DATA PROTECTION, PREVENTS SYSTEM SHUT-DOWN.

An **internal redundancy system** guarantees the system operation even in the case of unit failure.

- **Dual Fluid and Dual Coil models:** with chilled water primary circuit and direct expansion secondary circuit, or with double chilled water circuits. The two systems are separate with non-simultaneous start-up, for back-up operation.

- **Double cooling circuit:** with independent operation to provide a back-up in case of failure of one circuit.

SERVER PROTECTION.

NO SERVER DAMAGES, DATA PROTECTION.

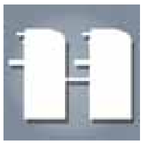
- Polyurethane and glass fibre thermo-acoustic and fireproof insulating panels guarantee **Euroclass 1 fire-resistance****.

- Available as standard, an alarm alerts in the case of **fans failure** (fan pressure switch).

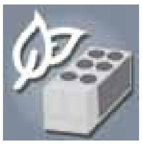
* Available as standard or as accessory on dedicated models.

** According to UNI EN 1350-1.

ELECTRONIC EXPANSION VALVE



MULTI-COMPRESSOR



HIGH EFFICIENCY LIQUID CHILLER

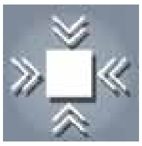
HIGH WATER TEMPERATURE

REDUNDANCY

FAN PRESSURE SWITCH

BENEFITS

FREE-COOLING



COMPACT DIMENSIONS

LOW NOISE

FREE-COOLING.

ZERO COST DURING THE COLD SEASON.

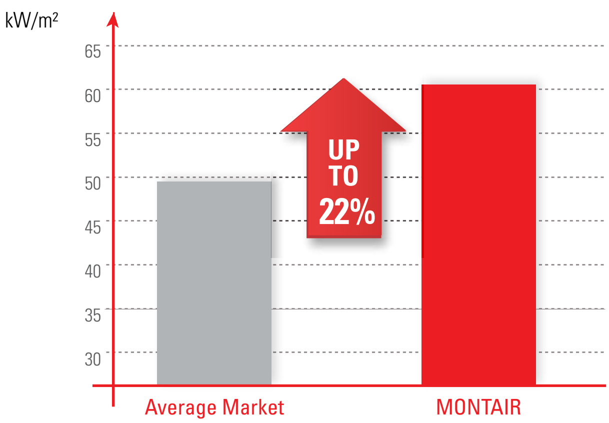
During the cold season, when the outdoor air temperature is sufficiently low, server room cooling can be carried out using the energy from external air, without compressors activation.

- Models of FOP / FOC series are based on **Indirect Free-Cooling** technology.
- Chilled water models can be connected to **liquid Chillers with Free-Cooling technology**.

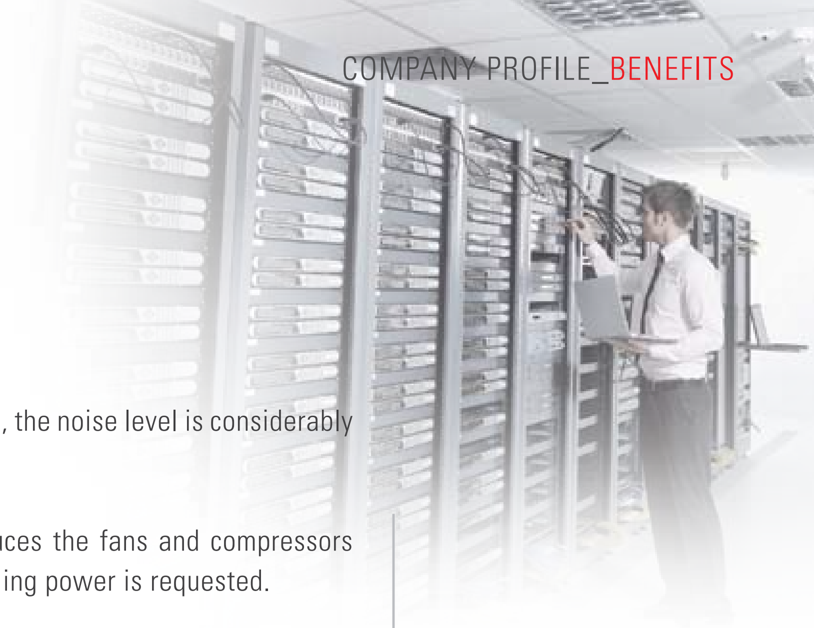
COMPACT DIMENSIONS.

MORE SPACE TO SERVERS.

The new range has been specifically designed to minimise the external overall dimensions and thereby offers more space for servers. The internal parts and overall layout have been optimised, achieving an important reduction in overall dimensions in comparison to units commonly available on the market.



Delivered cooling power per occupied space.
On the same footprint, the new MONTAIR product range delivers the highest cooling power, **+22%** if compared to the average market levels.



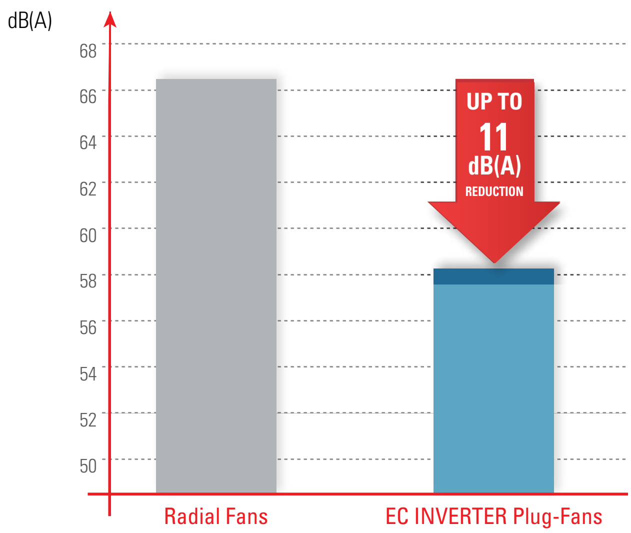
LOW NOISE LEVELS.

NO DISTURB TO WORKPLACES.

- Thanks to insulating panels and EC Inverter Plug-Fans, the noise level is considerably lower than traditional units.

- Especially at partial loads, the Inverter control reduces the fans and compressors speed, and therefore noise levels, when a lower cooling power is requested.

- Available as accessory, silencing on compressors ensures a further reduction of overall noise levels of the unit.



Thanks to speed modulation, the **EC INVERTER Plug-Fans** allow to reduce noise levels up to 11 dB(A) compared to traditional radial fans.

CONSTANT AIR FLOW

CONSTANT AVAILABLE AIR PRESSURE

CONSTANT AIR FLOW AND AVAILABLE STATIC PRESSURE.

REGULATION CONTROL SYSTEMS.

The new MONTAIR **Regulation Control Systems for Constant Air Flow and Constant Available Static Pressure** solve the problem of differences in under-floor pressure, which is common in systems with hot and cold aisles. An electronic system with pressure sensors on the system and control sensors on EC Plug-Fans adjusts the flow rate and the available static pressure to keep the air flow towards the servers constant.

BENEFITS

WEB MONITORING

HIGH AMBIENT
TEMPERATURE

REMOTE MANAGEMENT.

WEB MONITORING.

MONTAIR Close Control units can be monitored and supervised remotely through the **WEB MONITORING** system using communication protocols GPRS/GSM/TCP-IP*. Through a dedicated WEB page Users that are set up for the service can access monitoring, management and statistic functions. Thanks to this application, all the information can be displayed through a dedicated website.

SUITABLE FOR HIGH EXTERNAL AMBIENT TEMPERATURE.

UP TO 52°C.

MONTAIR Close Control ranges are also suitable to operate at high external ambient temperature, **up to 52°C**.

* Available as accessory.


2.0TB
2.0TB
2.0TB

HIGH DENSITY

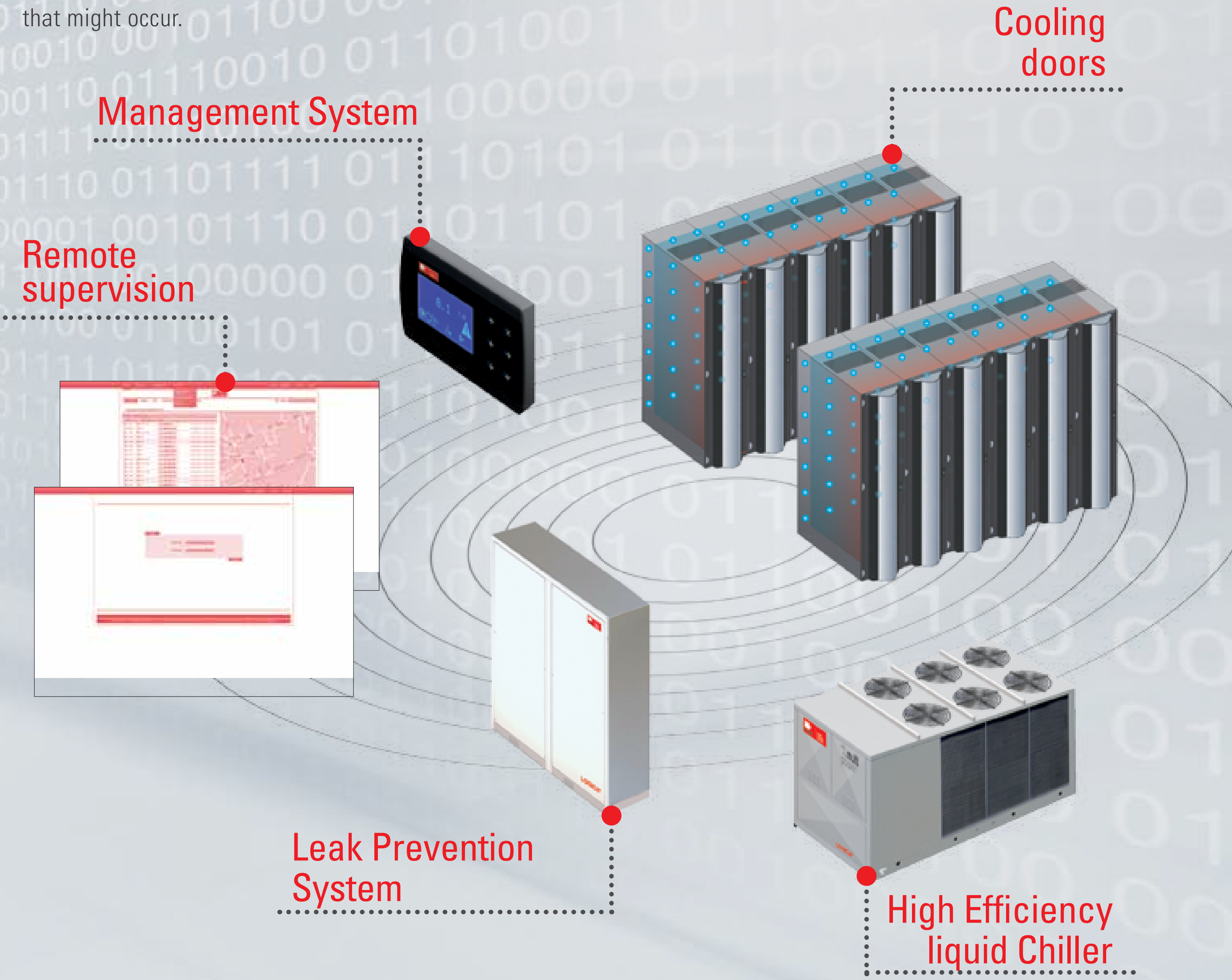
LOGICA* SYSTEM

LATEST GENERATION
FOR **HIGH-DENSITY**
DATA CENTRES
>20 kW/rack

The rapid technological progress in the IT industry over recent years has led to the development of increasingly higher performing Servers and Data Centres with thermal loads of increasingly higher density. These Data Centres require high-level and performing cooling systems.

LOGICA* SYSTEM: THE FUTURE OF HIGH-DENSITY DATA CENTRES.

LOGICA is the latest generation system for high density server rooms, where the thermal load produced by the servers is particularly high. LOGICA goes beyond the concept of hot and cold aisles and **provides localised cooling**, focusing directly on hot spots caused by the servers, through a **cooling doors system installed directly on the racks**.
The energy efficiency is boosted to the maximum and therefore the Data Centre operating costs drop drastically.
LOGICA is a hydronic system based on a patented **NEGATIVE PRESSURE technology** named **Leak Prevention System**: servers are fully protected against any water leaks that might occur.



montair

CLOSE
CONTROL
SYSTEMS

BENEFITS

93%

ENERGY SAVING

50%

MORE SPACE

LEAK PREVENTION SYSTEM

UP TO 93% YEARLY ENERGY SAVING.

- Cooling is localised directly on the server **"hot spots"**, avoiding cooling the entire room. Energy consumption is optimised and the Data Centre operating costs drop drastically.
- LOGICA operates with a liquid Chiller using water at higher temperature than traditional systems, allowing greater energy saving.
- LOGICA also makes it possible to use higher efficiency liquid Chillers with magnetic levitation compressors (Turboline models) or with Inverter technology or Free-cooling for high energy savings.

UP TO 50% MORE SPACE TO SERVERS.

LOGICA eliminates the overall dimension of the traditional Close Control unit and the raised floor: offering the same installed power, 50% less space is occupied by the cooling system.

MAXIMUM SECURITY:
IT PREVENTS WATER LEAKS.

Thanks to the patented negative pressure system, the servers are protected against any water leaks in the cooling door.

TOTALLY FLEXIBLE AND ADAPTABLE TO EXISTING CABINETS.

LOGICA adapts to existing and future development needs (power, use, times): the cooling door system is modular, therefore it can be installed on an existing system and, as the server room grows, just adding more cooling doors.

IT ELIMINATES THE RAISED FLOOR, REDUCES INSTALLATION COSTS.

LOGICA does not require a raised floor, like traditional systems, therefore no particular design is required for the server room during installation.

EASY MAINTENANCE.

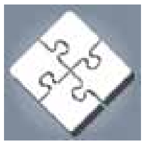
The independent cooling door system makes it possible to perform maintenance on one door while keeping the others running, without stopping the entire system.

REMOTE MANAGEMENT.

LOGICA features the **WEB MONITORING** system for remote management and control of the units through communication protocols GPRS/GSM/TCP-IP.
Through a dedicated WEB page Users that are set up for the service can access monitoring, management and statistical functions. Thanks to this application, all the information can be displayed through a dedicated website.

SUITABLE FOR HIGH EXTERNAL AMBIENT TEMPERATURE.

LOGICA is also suitable to operate at high external ambient temperature, **up to 52°C**.



FLEXIBLE
AND ADAPTABLE

NO RAISED FLOOR

EASY MAINTENANCE

WEB MONITORING

HIGH EXTERNAL
AMBIENT TEMPERATURE

LOGICA* SYSTEM:

LOGICA SYSTEM is made up of four parts:

HIGH EFFICIENCY LIQUID CHILLER.

Chilled water is supplied by the liquid Chiller, which can also feature Free-Cooling or magnetic levitation technology (Turboline models) for maximum efficiency.

REAR COOLING DOOR.

Through dedicated pipes, the chilled water reaches the Rear Cooling Door. The heat generated by the servers is pushed towards the **heat exchanger located in the cooling door**, where **the air is cooled and released back into the room at ambient temperature**. Accordingly, the indoor temperature of the server room is not raised by the servers.

LEAK PREVENTION SYSTEM.

The chilled water that flows between the Chiller and the cooling doors is sucked by the Leak Prevention System, a **patented system that generates negative pressure** inside the structure, so that the servers are protected against any water leaks from the cooling door.

MANAGEMENT SYSTEM.

The Management System is the system’s brain. The temperature of the server room is controlled locally by the LOGICA ELECTRONIC MANAGEMENT SYSTEM which acts simultaneously on the cabinet and server room, automatically adjusting fan speed and flow rate and the temperature of the water in circulation.
Accordingly, the temperature inside the Data Centre is kept constant.

PRODUCT RANGE

AIR CONDITIONING FOR TELECOM APPLICATIONS

THE RANGE

The range includes Outdoor and Indoor Direct Expansion Packaged units to cool Telephone Exchangers and Telecommunication Shelters.
The units are completely reliable, designed for continuous operation 24/7, 365 days a year, offering low energy consumption and easy inspection to guarantee complete site autonomy and management.

The range includes Outdoor and Indoor units, for operation both for standard and high ambient air temperature up to 52°C.
The range:

CZ:
PACKAGED OUTDOOR UNIT.

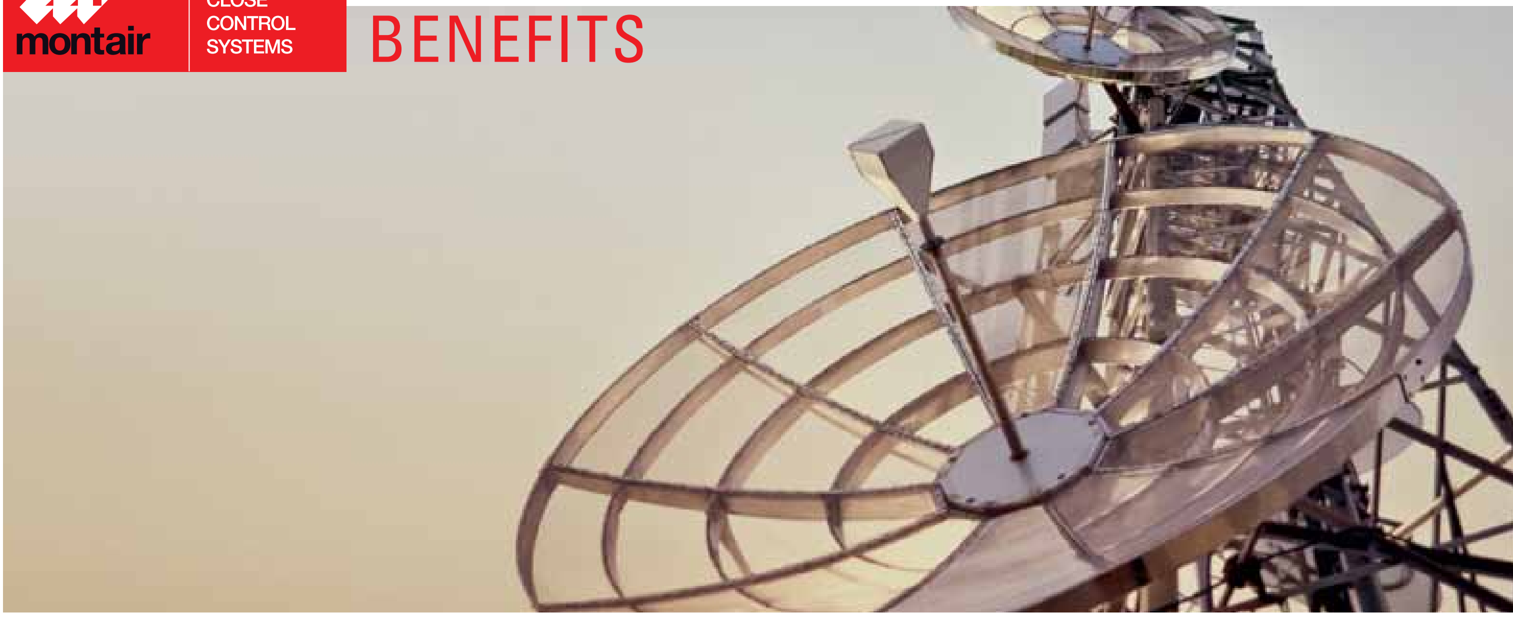
CY:
PACKAGED INDOOR UNIT.

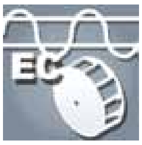
CZ...XT:
PACKAGED OUTDOOR UNIT FOR HIGH EXTERNAL AMBIENT TEMPERATURE (UP TO 52°C).

CY...XT:
PACKAGED INDOOR UNIT FOR HIGH EXTERNAL AMBIENT TEMPERATURE (UP TO 52°C).

Units are available in two configurations: with top and bottom air discharge, also with Free-Cooling technology for maximum energy saving.

BENEFITS





INVERTER
EC PLUG FANS

ENERGY SAVING.

EC INVERTER Plug-Fans* manage a variable air flow based on the requested real thermal load, reducing the energy consumption even more, especially at partial loads.

R410A AND R134a
REFRIGERANTS

ENVIRONMENT AND EFFICIENCY.

Thanks to **R410A** and **R134a** refrigerants, ranges ensure environment respect and energy efficiency.

FREE-COOLING

FREE-COOLING.

Units with Free-Cooling technology make it possible to reduce energy consumption up to 50%. During the cold season, when the outdoor air temperature is low, shelter cooling can be carried out using energy from external air, without turning on the compressors. The Free-Cooling logic is completely managed by the microprocessor which also makes it possible to control the air in the room by mixing outdoor air with air from the intake, guaranteeing a renewal of fresh air.

HIGH EXTERNAL
AMBIENT TEMPERATURE

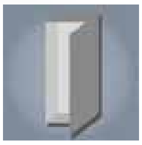
SUITABLE FOR HIGH EXTERNAL AMBIENT TEMPERATURE.

XT ranges are specifically designed to operate at high external ambient temperature, **up to 52°C**.

* Available as accessory.

EASY POSITIONING AND MAINTENANCE.

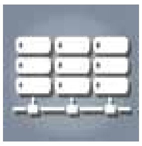
Front access makes it possible to position the units side by side to reduce overall dimensions and easily perform maintenance activities.



FRONT ACCESS

SITE PROTECTION AND SELF-MANAGEMENT.

- The units are equipped with a microprocessor that makes it possible to set up a **network of units** and manage operation in series with **automatic rotation**.
- The microprocessor independently manages the start-up of units in stand-by in case of **alarm** and simultaneous operation if temperature limits are exceeded.
- For units with Free-Cooling technology the microprocessor is electrically powered by the emergency system of the telephone site and guarantees the operation in Free-Cooling mode in the case of power outages.



NETWORK

ALARMS

REMOTE CONTROL.

The units can be equipped with serial interfaces, whereby it is possible to control the operations remotely and verify and change the operating parameters, in order to always guarantee the correct operating status of the station.

REMOTE CONTROL

INDEX

LEGENDA

COMPRESSOR:	FAN:		EXCHANGER:
Rotary	Axial	Plug-Fan	Plate
Inverter Scroll	EC Axial	EC Plug-Fan	Flooded Shell & Tube
Scroll	Radial	High ESP EC Plug-Fan	Microchannel
Inverter Screw	High ESP Radial		
Screw			
Turbocor			

SOLUTION:		REFRIGERANT:
DX Direct expansion	HT High water temperature	R410A
DF Direct expansion dual fluid	SL Silenced	R134a
Chilled water	SSL Super silenced	
Chilled water dual coil	XT High external ambient temperature (up to 52°C)	
FC Free-Cooling		

CHAPTER 1

XIP

AIRCOOLED DIRECT EXPANSION UNITS WITH INVERTER SCROLL COMPRESSORS AND EC INVERTER PLUG-FANS

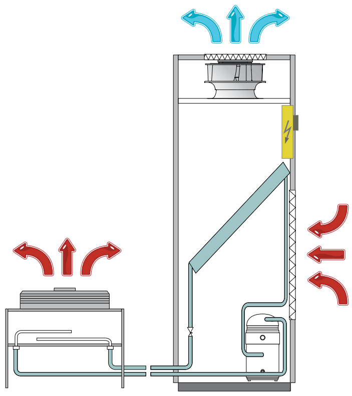
Cooling capacity from 17 to 136 kW (from 5 to 39 TON)

DX | HIGH ESP | EC | R410A

INVERTER COMPRESSOR TECHNOLOGY

EC INVERTER PLUG FAN

High efficiency aircooled direct expansion units. The Inverter Scroll compressor and the EC Inverter Plug-Fans vary their delivered power and absorbed power depending on the real requested thermal load. Up to 88% difference between minimum and maximum absorbed power is reachable.
The XIP range features EC Inverter Plug-Fans; high ESP fans are also available as accessory.
The range features electronic expansion valve already included.
The XIP range is available in two air discharge versions: XIPT with top air discharge and XIPB with bottom air discharge.
The units can operate at high external ambient temperature (up to 52°C) with dedicated combination with remote condensers.



AIR DISCHARGE

XIPT...	Top air discharge and frontal intake
XIPB...	Bottom air discharge and upper intake

VERSIONS

XIP.../C	Cooling only
XIP.../E	Cooling and heating
XIP.../U	Cooling and humidification
XIP.../D	Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
SL	Unit silencement
CM	Scheduler
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
AT	Constant air flow regulation control
AT/P	Constant available static pressure regulation control
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
PG	Hot gas post-heating coil (with valve)
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

XIPT … TOP AIR DISCHARGE
XIPB … BOTTOM AIR DISCHARGE

		1017	1027	1054	2063	2095	3136
PERFORMANCES							
Total cooling capacity - Max. (1)	kW	17,2	26,9	54,1	63,2	95,0	136
	TON	4,9	7,6	15,4	18,0	27,0	38,7
Total cooling capacity - Min. (1)	kW	6,0	9,4	19,2	10,3	18,8	25,0
	TON	1,7	2,7	5,5	2,9	5,4	7,1
Sensible cooling capacity - Max. (1)	kW	15,2	22,6	47	59,7	83,2	110
	TON	4,3	6,4	13,4	17,0	23,7	31,3
Sensible cooling capacity - Min. (1)	kW	6,0	9,4	19,2	10,3	18,8	25,0
	TON	1,7	2,7	5,5	2,9	5,4	7,1
SHR - Max. (1)	%	88%	84%	87%	94%	88%	81%
SHR - Min. (1)	%	100%	100%	100%	100%	100%	100%
Total absorbed power - Max. (1)	kW	5,3	7,9	15,9	17,1	26,4	37,6
Total absorbed power - Min. (1)	kW	1,9	2,8	5,9	4,4	7,6	9,5
EER - Max. (1)		3,28	3,39	3,41	3,70	3,60	3,61
EER - Min. (1)		3,05	3,29	3,20	2,28	2,40	2,55
COOLING CIRCUIT							
Cooling circuits	n°	1	1	1	2	2	2
Compressors	n°	1	1	1	2	2	3
FAN SECTION							
Fans	n°	1	1	1	2	2	3
Air flow (2)	m³/h	3900	5600	11500	16000	21000	25500
	cfm	2300	3300	6770	9420	12360	15010
Max. available static pressure - STD fans	Pa	130	100	100	350	170	310
	in WG	0,5	0,4	0,4	1,4	0,7	1,2
Max. available static pressure - High ESP fans	Pa	280	380	210	530	330	480
	in WG	1,1	1,5	0,8	2,1	1,3	1,9
Filters	type	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS							
Power supply	V/Ph/Hz	400/3+N/50					
SOUND PRESSURE							
XIPT - Top Air Discharge version (3)	dB(A)	63	66	70	70	71	74
XIPB - Bottom Air Discharge version (3)	dB(A)	57	60	65	64	66	68

ACCESSORIES & ADDITIONAL SECTIONS							
Electrical heating							
Steps	n°	3	3	3	3	3	3
Electrical power	kW	4,5	7,5	13,5	16,5	22,5	27,0
Hot water coil							
Heating capacity (4)	kW	4,6	5,2	12,7	17,4	24,2	31,1
	TON	1,3	1,5	3,6	4,9	6,9	8,8
Water flow (4)	l/s	0,22	0,25	0,61	0,83	1,16	1,49
	gpm	3,5	4,0	9,7	13,2	18,4	23,6
Total pressure drops (4)	kPa	34	27	33	32	40	38
	ft WG	11,3	9,0	11,0	10,7	13,3	12,7
Hot gas coil							
Heating capacity (5)	kW	3,6	4,2	10,3	14,1	19,6	25,3
Electrodes steam humidifier							
Nominal steam production	kg/h	4	4	8	8	15	15
Nominal power	kW	3,0	3,0	6,0	6,0	11,3	11,3

	1017	1027	1054	2063	2095	3136
COMBINATIONS REMOTE CONDENSERS						
UCM	1514	1523	1623T	2x1622T/2624	2x1623T/2634	2x1632/2644
UCM/SL	1522	1622M	1632	2x1622T/2633	2x1624/2644	2x1633/2843
UCM/SSL	1523	1622	1634	2x1624/2643	2x1633/2842	2x1643/2844
COMBINATIONS REMOTE CONDENSERS XT - UP TO 52°C EXTERNAL AMBIENT TEMPERATURE						
UCM	1523	1623M	1633	2x1622T/2633	2x1633/2644	2x1634/2844
UCM/SL	1622M	1623M	1634	2x1623T/2643	2x1633/2843	2x1644/2854

		1017	1027	1054	2063	2095	3136
DIMENSIONS							
L	mm	675	875	1350	1750	2225	2625
W	mm	675	675	890	890	890	890
H	mm	1980	1980	1980	1980	1980	1980
WEIGHTS							
Transport weight XIPT - Top Air Discharge	kg	252	295	481	624	786	990
Transport weight XIPB - Bottom Air Discharge	kg	270	313	499	653	815	1025
Operating weight XIPT - Top Air Discharge	kg	242	284	461	602	758	957
Operating weight XIPB - Bottom Air Discharge	kg	260	302	479	631	787	992

Notes

1. Ambient air temperature 24°C - R.H. 50%, condensing temperature 45°C.
2. Air flow calculated with Available Static Pressure of 20 Pa.
3. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
4. Ambient air temperature 20°C, water temperature 45°C / 40°C.
5. Ambient air temperature 20°C.

montair CLOSE CONTROL SYSTEMS

TIP

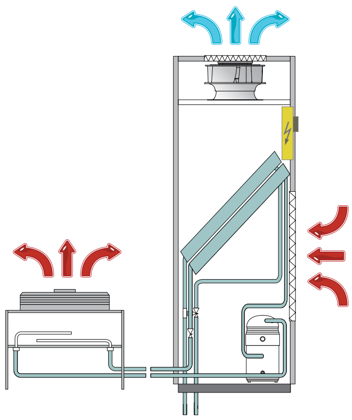
AIRCOOLED DIRECT EXPANSION DUAL FLUID UNITS WITH INVERTER SCROLL COMPRESSORS AND EC INVERTER PLUG-FANS

Cooling capacity from 27 to 120 kW (from 8 to 34 TON)

INVERTER COMPRESSOR TECHNOLOGY

EC INVERTER PLUG FAN

High efficiency aircooled direct expansion Dual Fluid units with double circuit: one aircooled direct expansion circuit and one chilled water circuit. The circuits are separated, with non-simultaneous start-up, for back-up operation.
The Inverter Scroll compressor and the EC Inverter Plug-Fans vary their delivered power and absorbed power depending on the real requested thermal load. Up to 88% difference between minimum and maximum absorbed power is reachable.
The TIP range features EC Inverter Plug-Fans; high ESP fans are also available as accessory.
The range features electronic expansion valve already included.
The TIP range is available in two air discharge versions: TIPT with top air discharge and TIPB with bottom air discharge.
The units can operate at high external ambient temperature (up to 52°C) with dedicated combination with remote condensers.



AIR DISCHARGE

TIPT…	Top air discharge and frontal intake
TIPB…	Bottom air discharge and upper intake

VERSIONS

TIP…/C	Cooling only
TIP…/E	Cooling and heating
TIP…/U	Cooling and humidification
TIP…/D	Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
SL	Unit silencement
CM	Scheduler
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
AT	Constant air flow regulation control
AT/P	Constant available static pressure regulation control
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
PG	Hot gas post-heating coil (with valve)
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
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CR	Remote display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

TIPT … TOP AIR DISCHARGE
TIPB … BOTTOM AIR DISCHARGE

		1026	1048	2061	2087	3120
DIRECT EXPANSION CIRCUIT PERFORMANCES						
Total cooling capacity - Max. (1)	kW	26,5	48,5	61,4	87,5	120
	TON	7,5	13,8	17,5	24,9	34,1
Total cooling capacity - Min. (1)	kW	9,4	18,6	10,0	18,4	24,3
	TON	2,7	5,3	2,8	5,2	6,9
Sensible cooling capacity - Max. (1)	kW	22,1	41,5	56,2	77,2	101
	TON	6,3	11,8	16,0	22,0	28,7
Sensible cooling capacity - Min. (1)	kW	9,4	18,6	10,0	18,4	24,3
	TON	2,7	5,3	2,8	5,2	6,9
SHR - Max. (1)	%	83%	86%	92%	88%	84%
SHR - Min. (1)	%	100%	100%	100%	100%	100%
Total absorbed power - Max. (1)	kW	8,0	14,1	17,1	25,3	34,5
Total absorbed power - Min. (1)	kW	2,7	5,5	4,2	7,3	9,5
EER - Max. (1)		3,32	3,45	3,58	3,46	3,48
EER - Min. (1)		3,44	3,36	2,38	2,51	2,57
CHILLED WATER CIRCUIT PERFORMANCES						
Total cooling capacity (2)	kW	20,5	42,4	60,3	81,7	102
	TON	5,8	12,1	17,1	23,2	29,0
Sensible cooling capacity (2)	kW	19,8	39,7	55,9	75,4	94,3
	TON	5,6	11,3	15,9	21,4	26,8
SHR (2)	%	97%	94%	93%	92%	92%
Water flow (2)	l/s	1,0	2,0	2,9	3,9	4,9
	gpm	15,5	32,2	45,6	61,8	77,2
Total pressure drops (2)	kPa	42	51	44	42	54
	ft WG	14,0	17,0	14,7	14,0	18,0
COOLING CIRCUIT						
Cooling circuits	n°	1	1	1	2	2
Compressors	n°	1	1	1	2	3
FAN SECTION						
Fans	n°	1	1	2	2	3
Air flow (3)	m³/h	5200	10000	14200	19200	24000
	cfm	3060	5890	8360	11300	14130
Max. available static pressure - STD fans	Pa	100	240	370	250	320
	in WG	0,4	1,0	1,5	1,0	1,3
Max. available static pressure - High ESP fans	Pa	390	370	530	380	440
	in WG	1,6	1,5	2,1	1,5	1,8
Filters	type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz			400/3+N/50		
SOUND PRESSURE						
TIPT - Top Air Discharge version (4)	dB(A)	66	68	69	71	73
TIPB - Bottom Air Discharge version (4)	dB(A)	60	62	63	65	66

ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	3	3	3	3	3
Electrical power	kW	7,5	13,5	16,5	22,5	27,0
Hot water coil						
Heating capacity (5)	kW	5,2	13,0	17,7	24,5	31,6
	TON	1,5	3,7	5,0	7,0	9,0
Water flow (5)	l/s	0,25	0,62	0,85	1,17	1,51
	gpm	4,0	9,8	13,5	18,5	23,9
Total pressure drops (5)	kPa	29	36	35	43	41
	ft WG	9,7	12,0	11,7	14,3	13,7
Hot gas coil						
Heating capacity (6)	kW	5,9	10,5	14,3	19,8	25,6
Electrodes steam humidifier						
Nominal steam production	kg/h	4	8	8	15	15
Nominal power	kW	3,0	6,0	6,0	11,3	11,3

	1026	1048	2061	2087	3120
COMBINATIONS REMOTE CONDENSERS					
UCM	1523	1623T	2x1622T/2624	2x1622T/2633	2x1632/2644
UCM/SL	1622M	1624	2x1622T/2633	2x1623T/2643	2x1633/2843
UCM/SSL	1622	1633	2x1624/2643	2x1633/2833	2x1643/2844
COMBINATIONS REMOTE CONDENSERS XT - UP TO 52°C EXTERNAL AMBIENT TEMPERATURE					
UCM	1623M	1632	2x1622T/2633	2x1632/2644	2x1633/2843
UCM/SL	1623M	1633	2x1623T/2643	2x1633/2843	2x1643/2854

		1026	1048	2061	2087	3120
DIMENSIONS						
L	mm	875	1350	1750	2225	2625
W	mm	675	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight TIPT - Top Air Discharge	kg	311	520	664	838	1038
Transport weight TIPB - Bottom Air Discharge	kg	339	556	713	893	1103
Operating weight TIPT - Top Air Discharge	kg	301	502	644	813	1008
Operating weight TIPB - Bottom Air Discharge	kg	329	537	693	867	1074

Notes

1. Ambient air temperature 24°C - R.H. 50%, condensing temperature 45°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.
6. Ambient air temperature 20°C.

CHAPTER 2

CLOSE CONTROL UNITS

CLOSE CONTROL SYSTEMS

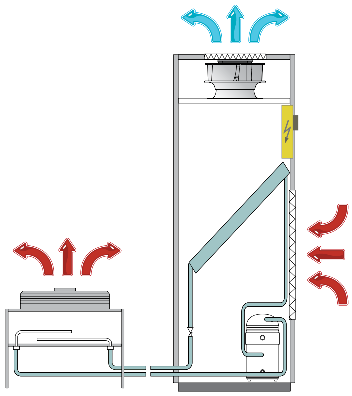
XOP

AIRCOOLED DIRECT EXPANSION UNITS WITH SCROLL COMPRESSORS AND EC INVERTER PLUG-FANS

Cooling capacity from 9 to 141 kW (from 3 to 40 TON)

EC INVERTER ***PLUG FAN***

Aircooled direct expansion units. The XOP range features EC Inverter Plug-Fans; high ESP fans are also available as accessory.
The EC Inverter Plug-Fans allow consumption reduction at partial loads up to 61% comparing radial fans, with the modulation of absorbed power depending on the real thermal load.
The XOP range is available in two air discharge versions: XOPT with top air discharge and XOPB with bottom air discharge.
The units can operate at high external ambient temperature (up to 52°C) with dedicated combination with remote condensers.



AIR DISCHARGE

XOPT... Top air discharge and frontal intake

XOPB... Bottom air discharge and upper intake

VERSIONS

XOP.../C Cooling only

XOP.../E Cooling and heating

XOP.../U Cooling and humidification

XOP.../D Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
SL	Unit silencement
CM	Scheduler
TE	Electronic expansion valve
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
AT	Constant air flow regulation control
AT/P	Constant available static pressure regulation control
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
PG	Hot gas post-heating coil (with valve)
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

XOPT … TOP AIR DISCHARGE
XOPB … BOTTOM AIR DISCHARGE

		1009	1011	1015	1020	1025	1030	2035
PERFORMANCES								
Total cooling capacity (1)	kW	9,2	11,5	15,5	19,9	24,4	30,0	35,3
	TON	2,6	3,3	4,4	5,7	6,9	8,5	10,0
Sensible cooling capacity (1)	kW	7,9	9,5	12,7	16,2	20,5	24	34,9
	TON	2,2	2,7	3,6	4,6	5,8	6,8	9,9
SHR (1)	%	86%	83%	82%	81%	84%	80%	99%
Total absorbed power (1)	kW	2,4	3,4	4,2	5,6	6,6	8,1	10,2
EER (1)		3,79	3,41	3,70	3,55	3,69	3,73	3,47
COOLING CIRCUIT								
Cooling circuits	n°	1	1	1	1	1	1	2
Compressors	n°	1	1	1	1	1	1	2
FAN SECTION								
Fans	n°	1	1	1	1	1	1	1
Air flow (2)	m³/h	2500	3000	3300	3900	5600	5600	11500
	cfm	1470	1770	1940	2300	3300	3300	6770
Max. available static pressure - STD fans	Pa	430	310	250	130	120	100	150
	in WG	1,7	1,2	1,0	0,5	0,5	0,4	0,6
Max. available static pressure - High ESP fans	Pa	710	640	430	280	410	380	270
	in WG	2,9	2,6	1,7	1,1	1,6	1,5	1,1
Filters	type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz	230/1/50		400/3+N/50				
SOUND PRESSURE								
XOPT - Top Air Discharge version (3)	dB(A)	53	56	58	61	62	62	65
XOPB - Bottom Air Discharge version (3)	dB(A)	48	51	53	56	57	57	60
ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	3	3	3	3	3	3	3
Electrical power	kW	4,5	4,5	4,5	4,5	7,5	7,5	13,5
Hot water coil								
Heating capacity (4)	kW	3,5	3,8	4,1	4,6	5,2	5,2	12,7
	TON	1,0	1,1	1,2	1,3	1,5	1,5	3,6
Water flow (4)	l/s	0,17	0,18	0,20	0,22	0,25	0,25	0,61
	gpm	2,7	2,9	3,2	3,5	4,0	4,0	9,7
Total pressure drops (4)	kPa	20	23	26	34	27	27	33
	ft WG	6,7	7,7	8,7	11,3	9,0	9,0	11,0
Hot gas coil								
Heating capacity (5)	kW	2,9	3,2	3,4	3,6	4,2	4,2	10,3
Electrodes steam humidifier								
Nominal steam production	kg/h	4	4	4	4	4	4	8
Nominal power	kW	3,0	3,0	3,0	3,0	3,0	3,0	6,0

	1009	1011	1015	1020	1025	1030	2035
COMBINATIONS REMOTE CONDENSERS							
UCM	1512	1513	1514	1514	1522	1523	2x1514/2622
UCM/SL	1512	1513	1522	1522	1523	1622M	2x1522/2622
UCM/SSL	1513	1522	1522	1523	1622	1622	2x1523/2624
COMBINATIONS REMOTE CONDENSERS XT - UP TO 52°C EXTERNAL AMBIENT TEMPERATURE							
UCM	1513	1514	1522	1523	1524	1623M	2x1523/2623
UCM/SL	1513	1522	1523	1622M	1622M	1623M	2x1523/2624

		1009	1011	1015	1020	1025	1030	2035
DIMENSIONS								
L	mm	675	675	675	675	875	875	1350
W	mm	675	675	675	675	675	675	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight XOPT - Top Air Discharge	kg	237	246	249	253	288	305	484
Transport weight XOPB - Bottom Air Discharge	kg	255	263	267	270	306	322	502
Operating weight XOPT - Top Air Discharge	kg	227	236	239	243	277	294	464
Operating weight XOPB - Bottom Air Discharge	kg	245	253	257	260	295	311	482

Notes

1. Ambient air temperature 24°C - R.H. 50%, condensing temperature 45°C.
2. Air flow calculated with Available Static Pressure of 20 Pa.
3. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
4. Ambient air temperature 20°C, water temperature 45°C / 40°C.
5. Ambient air temperature 20°C.

XOPT ... TOP AIR DISCHARGE
XOPB ... BOTTOM AIR DISCHARGE

		1040	2048	2055	2065	1070	2080	2090
PERFORMANCES								
Total cooling capacity (1)	kW	40,4	48,2	54,9	65,4	70,2	79,1	90,2
	TON	11,5	13,7	15,6	18,6	20,0	22,5	25,6
Sensible cooling capacity (1)	kW	39,4	43,0	47,0	58,4	62,1	66,5	80,4
	TON	11,2	12,2	13,4	16,6	17,7	18,9	22,9
SHR (1)	%	98%	89%	86%	89%	88%	84%	89%
Total absorbed power (1)	kW	11,3	13,0	14,2	17,4	18,3	21,6	24,6
EER (1)		3,57	3,70	3,86	3,76	3,84	3,67	3,67
COOLING CIRCUIT								
Cooling circuits	n°	1	2	2	2	1	2	2
Compressors	n°	1	2	2	2	1	2	2
FAN SECTION								
Fans	n°	1	1	1	2	2	2	2
Air flow (2)	m³/h	11500	11500	11500	16000	16000	16000	21000
	cfm	6770	6770	6770	9420	9420	9420	12360
Max. available static pressure - STD fans	Pa	120	120	100	370	350	350	190
	in WG	0,5	0,5	0,4	1,5	1,4	1,4	0,8
Max. available static pressure - High ESP fans	Pa	230	230	210	550	530	530	360
	in WG	0,9	0,9	0,8	2,2	2,1	2,1	1,4
Filters	type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz				400/3+N/50			
SOUND PRESSURE								
XOPT - Top Air Discharge version (3)	dB(A)	65	65	66	64	68	63	67
XOPB - Bottom Air Discharge version (3)	dB(A)	60	60	60	58	62	58	62

ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	3	3	3	3	3	3	3
Electrical power	kW	13,5	13,5	13,5	16,5	16,5	16,5	22,5
Hot water coil								
Heating capacity (4)	kW	12,7	12,7	12,7	17,4	17,4	17,4	24,2
	TON	3,6	3,6	3,6	4,9	4,9	4,9	6,9
Water flow (4)	l/s	0,61	0,61	0,61	0,83	0,83	0,83	1,16
	gpm	9,7	9,7	9,7	13,2	13,2	13,2	18,4
Total pressure drops (4)	kPa	33	33	33	32	32	32	40
	ft WG	11,0	11,0	11,0	10,7	10,7	10,7	13,3
Hot gas coil								
Heating capacity (5)	kW	10,3	10,3	10,3	14,1	14,1	14,1	19,6
Electrodes steam humidifier								
Nominal steam production	kg/h	8	8	8	8	8	8	15
Nominal power	kW	6,0	6,0	6,0	6,0	6,0	6,0	11,3

	1040	2048	2055	2065	1070	2080	2090
COMBINATIONS REMOTE CONDENSERS							
UCM	1622T	2x1522/2622	2x1523/2623	2x1622T/2624	1633	2x1622T/2633	2x1622T/2633
UCM/SL	1623T	2x1523/2623	2x1622M/2632	2x1622T/2633	1634	2x1623T/2643	2x1623T/2643
UCM/SSL	1633	2x1622/2633	2x1622/2634	2x1624/2643	1644	2x1633/2833	2x1633/2833
COMBINATIONS REMOTE CONDENSERS XT - UP TO 52°C EXTERNAL AMBIENT TEMPERATURE							
UCM	1623T	2x1524/2624	2x1524/2633	2x1623T/2633	1634	2x1623T/2643	2x1632/2644
UCM/SL	1632	2x1622M/2633	2x1623M/2634	2x1623T/2643	1644	2x1632/2834	2x1633/2843

		1040	2048	2055	2065	1070	2080	2090
DIMENSIONS								
L	mm	1350	1350	1350	1750	1750	1750	2225
W	mm	890	890	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight XOPT - Top Air Discharge	kg	480	499	534	621	641	679	771
Transport weight XOPB - Bottom Air Discharge	kg	498	517	551	650	670	708	800
Operating weight XOPT - Top Air Discharge	kg	460	479	514	599	619	657	743
Operating weight XOPB - Bottom Air Discharge	kg	478	497	531	628	648	686	772

Notes

1. Ambient air temperature 24°C - R.H. 50%, condensing temperature 45°C.
2. Air flow calculated with Available Static Pressure of 20 Pa.
3. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
4. Ambient air temperature 20°C, water temperature 45°C / 40°C.
5. Ambient air temperature 20°C.

XOPT ... TOP AIR DISCHARGE
XOPB ... BOTTOM AIR DISCHARGE

		2100	4110	4120	4130	2140
PERFORMANCES						
Total cooling capacity (1)	kW	101	111	120	131	141
	TON	28,7	31,6	34,1	37,2	40,1
Sensible cooling capacity (1)	kW	85,8	101	103	108	113
	TON	24,4	28,7	29,3	30,7	32,1
SHR (1)	%	85%	91%	86%	82%	80%
Total absorbed power (1)	kW	28,0	28,5	31,5	34,7	36,7
EER (1)		3,61	3,90	3,82	3,77	3,84
COOLING CIRCUIT						
Cooling circuits	n°	2	2	2	2	2
Compressors	n°	2	4	4	4	2
FAN SECTION						
Fans	n°	2	3	3	3	3
Air flow (2)	m³/h	21000	25500	25500	25500	25500
	cfm	12360	15010	15010	15010	15010
Max. available static pressure - STD fans	Pa	170	330	330	310	310
	in WG	0,7	1,3	1,3	1,2	1,2
Max. available static pressure - High ESP fans	Pa	330	500	500	480	480
	in WG	1,3	2,0	2,0	1,9	1,9
Filters	type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz	400/3+N/50				
SOUND PRESSURE						
XOPT - Top Air Discharge version (3)	dB(A)	68	66	67	67	71
XOPB - Bottom Air Discharge version (3)	dB(A)	63	61	61	61	65

ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	3	3	3	3	3
Electrical power	kW	22,5	27,0	27,0	27,0	27,0
Hot water coil						
Heating capacity (4)	kW	24,2	31,1	31,1	31,1	31,1
	TON	6,9	8,8	8,8	8,8	8,8
Water flow (4)	l/s	1,16	1,49	1,49	1,49	1,49
	gpm	18,4	23,6	23,6	23,6	23,6
Total pressure drops (4)	kPa	40	38	38	39	39
	ft WG	13,3	12,7	12,7	12,7	12,7
Hot gas coil						
Heating capacity (5)	kW	19,6	25,3	25,3	25,3	25,3
Electrodes steam humidifier						
Nominal steam production	kg/h	15	15	15	15	15
Nominal power	kW	11,3	11,3	11,3	11,3	11,3

	2100	4110	4120	4130	2140
COMBINATIONS REMOTE CONDENSERS					
UCM	2x1623T/2634	2x1623T/2643	2x1632/2643	2x1632/2644	2x1632/2834
UCM/SL	2x1624/2644	2x1632/2834	2x1633/2834	2x1633/2843	2x1634/2843
UCM/SSL	2x1634/2842	2x1634/2843	2x1643/2843	2x1643/2844	2x1644/2853
COMBINATIONS REMOTE CONDENSERS XT - UP TO 52°C EXTERNAL AMBIENT TEMPERATURE					
UCM	2x1633/2834	2x1633/2834	2x1633/2843	2x1633/2844	2x1634/2844
UCM/SL	2x1633/2843	2x1634/2844	2x1643/2853	2x1643/2854	2x1644/2854

		2100	4110	4120	4130	2140
DIMENSIONS						
L	mm	2225	2625	2625	2625	2625
W	mm	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight XOPT - Top Air Discharge	kg	798	982	1008	1006	1031
Transport weight XOPB - Bottom Air Discharge	kg	827	1017	1044	1042	1067
Operating weight XOPT - Top Air Discharge	kg	770	949	975	973	998
Operating weight XOPB - Bottom Air Discharge	kg	799	984	1011	1009	1034

Notes

1. Ambient air temperature 24°C - R.H. 50%, condensing temperature 45°C.
2. Air flow calculated with Available Static Pressure of 20 Pa.
3. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
4. Ambient air temperature 20°C, water temperature 45°C / 40°C.
5. Ambient air temperature 20°C.

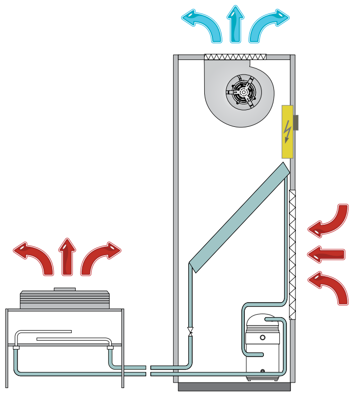
montair CLOSE CONTROL SYSTEMS

XOC

AIRCOOLED DIRECT EXPANSION UNITS WITH SCROLL COMPRESSORS AND RADIAL FANS

Cooling capacity from 9 to 141 kW (from 3 to 40 TON)

Aircooled direct expansion units.
The XOC range features radial fans; high ESP fans are also available as accessory.
The XOC range is available in two air discharge versions: XOCT with top air discharge and XOCB with bottom air discharge.
The units can operate at high external ambient temperature (up to 52°C) with dedicated combination with remote condensers.



AIR DISCHARGE

XOCT... Top air discharge and frontal intake

XOCB... Bottom air discharge and upper intake

VERSIONS

XOC.../C Cooling only

XOC.../E Cooling and heating

XOC.../U Cooling and humidification

XOC.../D Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
SL	Unit silencement
CM	Scheduler
TE	Electronic expansion valve
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
PG	Hot gas post-heating coil (with valve)
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

XOCT ... TOP AIR DISCHARGE
XOCB ... BOTTOM AIR DISCHARGE

		1009	1011	1015	1020	1025	1030	2035
PERFORMANCES								
Total cooling capacity (1)	kW	9,2	11,5	15,5	19,9	24,4	30,0	35,3
	TON	2,6	3,3	4,4	5,7	6,9	8,5	10,0
Sensible cooling capacity (1)	kW	7,9	9,5	12,7	16,2	20,5	24,0	34,9
	TON	2,2	2,7	3,6	4,6	5,8	6,8	9,9
SHR (1)	%	86%	83%	82%	81%	84%	80%	99%
Total absorbed power (1)	kW	3,1	3,9	4,7	6,3	8,0	9,4	13,2
EER (1)		3,00	2,99	3,31	3,14	3,05	3,19	2,67
COOLING CIRCUIT								
Cooling circuits	n°	1	1	1	1	1	1	2
Compressors	n°	1	1	1	1	1	1	2
FAN SECTION								
Fans - STD fans	n°	1	1	1	1	1	1	2
Fans - High ESP fans	n°	-	-	-	-	1	1	2
Air flow (2)	m³/h	2500	3000	3300	3900	5600	5600	11500
	cfm	1470	1770	1940	2300	3300	3300	6770
Max. available static pressure - STD fans	Pa	220	170	60	40	170	140	190
	in WG	0,9	0,7	0,2	0,2	0,7	0,6	0,8
Max. available static pressure - High ESP fans	Pa	-	-	-	-	340	310	360
	in WG	-	-	-	-	1,4	1,2	1,4
Filters	type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz	230/1/50		400/3+N/50				
SOUND PRESSURE								
XOCT - Top Air Discharge version (3)	dB(A)	63	59	60	64	70	70	73
XOCB - Bottom Air Discharge version (3)	dB(A)	58	54	55	59	65	65	68

ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	2	2	2	2	2	2	2
Electrical power	kW	4,5	4,5	4,5	4,5	7,5	7,5	12
Hot water coil								
Heating capacity (4)	kW	3,5	3,8	4,1	4,6	5,2	5,2	12,7
	TON	1,0	1,1	1,2	1,3	1,5	1,5	3,6
Water flow (4)	l/s	0,17	0,18	0,20	0,22	0,25	0,25	0,61
	gpm	2,7	2,9	3,2	3,5	4,0	4,0	9,7
Total pressure drops (4)	kPa	20	23	26	34	27	27	33
	ft WG	6,7	7,7	8,7	11,3	9,0	9,0	11,0
Hot gas coil								
Heating capacity (5)	kW	2,9	3,2	3,4	3,6	4,2	4,2	10,3
Electrodes steam humidifier								
Nominal steam production	kg/h	4	4	4	4	4	4	8
Nominal power	kW	3,0	3,0	3,0	3,0	3,0	3,0	6,0

	1009	1011	1015	1020	1025	1030	2035
COMBINATIONS REMOTE CONDENSERS							
UCM	1512	1513	1514	1514	1522	1523	2x1514/2622
UCM/SL	1512	1513	1522	1522	1523	1622M	2x1522/2622
UCM/SSL	1513	1522	1522	1523	1622	1622	2x1523/2624
COMBINATIONS REMOTE CONDENSERS XT - UP TO 52°C EXTERNAL AMBIENT TEMPERATURE							
UCM	1513	1514	1522	1523	1524	1623M	2x1523/2623
UCM/SL	1513	1522	1523	1622M	1622M	1623M	2x1523/2624

		1009	1011	1015	1020	1025	1030	2035
DIMENSIONS								
L	mm	675	675	675	675	875	875	1350
W	mm	675	675	675	675	675	675	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight XOCT - Top Air Discharge	kg	240	247	256	260	302	319	513
Transport weight XOCB - Bottom Air Discharge	kg	258	265	274	277	320	336	531
Operating weight XOCT - Top Air Discharge	kg	230	237	246	250	291	308	493
Operating weight XOCB - Bottom Air Discharge	kg	248	255	264	267	309	325	511

Notes

1. Ambient air temperature 24°C - R.H. 50%, condensing temperature 45°C.
2. Air flow calculated with Available Static Pressure of 20 Pa.
3. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
4. Ambient air temperature 20°C, water temperature 45°C / 40°C.
5. Ambient air temperature 20°C.

XOC

XOCT ... TOP AIR DISCHARGE
XOCB ... BOTTOM AIR DISCHARGE

		1040	2048	2055	2065	1070	2080	2090
PERFORMANCES								
Total cooling capacity (1)	kW	40,4	48,2	54,9	65,4	70,2	79,1	90,2
	TON	11,5	13,7	15,6	18,6	20,0	22,5	25,6
Sensible cooling capacity (1)	kW	39,4	43,0	47,0	58,4	62,1	66,5	80,4
	TON	11,2	12,2	13,4	16,6	17,7	18,9	22,9
SHR (1)	%	98%	89%	86%	89%	88%	84%	89%
Total absorbed power (1)	kW	14,2	15,9	17,0	22,8	23,5	26,8	31,4
EER (1)		2,84	3,03	3,23	2,87	2,99	2,95	2,87
COOLING CIRCUIT								
Cooling circuits	n°	1	2	2	2	1	2	2
Compressors	n°	1	2	2	2	1	2	2
FAN SECTION								
Fans - STD fans	n°	2	2	2	2	2	2	3
Fans - High ESP fans	n°	2	2	2	3	3	3	3
Air flow (2)	m³/h	11500	11500	11500	16000	16000	16000	21000
	cfm	6769	6769	6769	9417	9417	9417	12360
Max. available static pressure - STD fans	Pa	150	150	120	50	40	40	110
	in WG	0,6	0,6	0,5	0,2	0,2	0,2	0,4
Max. available static pressure - High ESP fans	Pa	320	320	290	350	320	320	230
	in WG	1,3	1,3	1,2	1,4	1,3	1,3	0,9
Filters	type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz	400/3+N/50						
SOUND PRESSURE								
XOCT - Top Air Discharge version (3)	dB(A)	73	73	73	73	74	73	76
XOCB - Bottom Air Discharge version (3)	dB(A)	68	68	68	68	69	68	71

		1040	2048	2055	2065	1070	2080	2090
ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	2	2	2	2	2	2	2
Electrical power	kW	12	12	12	15	15	15	21
Hot water coil								
Heating capacity (4)	kW	12,7	12,7	12,7	17,4	17,4	17,4	24,2
	TON	3,6	3,6	3,6	4,9	4,9	4,9	6,9
Water flow (4)	l/s	0,61	0,61	0,61	0,83	0,83	0,83	1,16
	gpm	9,7	9,7	9,7	13,2	13,2	13,2	18,4
Total pressure drops (4)	kPa	33	33	33	32	32	32	40
	ft WG	11,0	11,0	11,0	10,7	10,7	10,7	13,3
Hot gas coil								
Heating capacity (5)	kW	10,3	10,3	10,3	14,1	14,1	14,1	19,6
Electrodes steam humidifier								
Nominal steam production	kg/h	8	8	8	8	8	8	15
Nominal power	kW	6,0	6,0	6,0	6,0	6,0	6,0	11,3

	1040	2048	2055	2065	1070	2080	2090
COMBINATIONS REMOTE CONDENSERS							
UCM	1622T	2x1522/2622	2x1523/2623	2x1622T/2624	1633	2x1622T/2633	2x1622T/2633
UCM/SL	1623T	2x1523/2623	2x1622M/2632	2x1622T/2633	1634	2x1623T/2643	2x1623T/2643
UCM/SSL	1633	2x1622/2633	2x1622/2634	2x1624/2643	1644	2x1633/2833	2x1633/2833
COMBINATIONS REMOTE CONDENSERS XT - UP TO 52°C EXTERNAL AMBIENT TEMPERATURE							
UCM	1623T	2x1524/2624	2x1524/2633	2x1623T/2633	1634	2x1623T/2643	2x1632/2644
UCM/SL	1632	2x1622M/2633	2x1623M/2634	2x1623T/2643	1644	2x1632/2834	2x1633/2843

		1040	2048	2055	2065	1070	2080	2090
DIMENSIONS								
L	mm	1350	1350	1350	1750	1750	1750	2225
W	mm	890	890	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight XOCT - Top Air Discharge	kg	509	528	563	633	653	691	812
Transport weight XOCB - Bottom Air Discharge	kg	527	546	580	662	682	720	841
Operating weight XOCT - Top Air Discharge	kg	489	508	543	611	631	669	784
Operating weight XOCB - Bottom Air Discharge	kg	507	526	560	640	660	698	814

Notes

1. Ambient air temperature 24°C - R.H. 50%, condensing temperature 45°C.
2. Air flow calculated with Available Static Pressure of 20 Pa.
3. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
4. Ambient air temperature 20°C, water temperature 45°C / 40°C.
5. Ambient air temperature 20°C.

XOCT … TOP AIR DISCHARGE
XOCB … BOTTOM AIR DISCHARGE

		2100	4110	4120	4130	2140
PERFORMANCES						
Total cooling capacity (1)	kW	101	111	120	131	141
	TON	28,7	31,6	34,1	37,2	40,1
Sensible cooling capacity (1)	kW	85,8	101	103	108	113
	TON	24,4	28,7	29,3	30,7	32,1
SHR (1)	%	85%	91%	86%	82%	80%
Total absorbed power (1)	kW	34,6	34,8	37,8	40,8	42,8
EER (1)		2,92	3,19	3,17	3,21	3,29
COOLING CIRCUIT						
Cooling circuits	n°	2	2	2	2	2
Compressors	n°	2	4	4	4	2
FAN SECTION						
Fans - STD fans	n°	3	4	4	4	4
Fans - High ESP fans	n°	3	4	4	4	4
Air flow (2)	m³/h	21000	25500	25500	25500	25500
	cfm	12360	15009	15009	15009	15009
Max. available static pressure - STD fans	Pa	80	50	50	40	40
	in WG	0,3	0,2	0,2	0,2	0,2
Max. available static pressure - High ESP fans	Pa	200	270	270	240	240
	in WG	0,8	1,1	1,1	1,0	1,0
Filters	type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz			400/3+N/50		
SOUND PRESSURE						
XOPC - Top Air Discharge version (3)	dB(A)	76	72	72	72	73
XOPC - Bottom Air Discharge version (3)	dB(A)	71	67	67	67	68

ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	2	2	2	2	2
Electrical power	kW	21	24	24	24	24
Hot water coil						
Heating capacity (4)	kW	24,2	31,1	31,1	31,1	31,1
	TON	6,9	8,8	8,8	8,8	8,8
Water flow (4)	l/s	1,16	1,49	1,49	1,49	1,49
	gpm	18,4	23,6	23,6	23,6	23,6
Total pressure drops (4)	kPa	40	38	38	38	38
	ft WG	13,3	12,7	12,7	12,7	12,7
Hot gas coil						
Heating capacity (5)	kW	19,6	25,3	25,3	25,3	25,3
Electrodes steam humidifier						
Nominal steam production	kg/h	15	15	15	15	15
Nominal power	kW	11,3	11,3	11,3	11,3	11,3

	2100	4110	4120	4130	2140
COMBINATIONS REMOTE CONDENSERS					
UCM	2x1623T/2634	2x1623T/2643	2x1632/2643	2x1632/2644	2x1632/2834
UCM/SL	2x1624/2644	2x1632/2834	2x1633/2834	2x1633/2843	2x1634/2843
UCM/SSL	2x1634/2842	2x1634/2843	2x1643/2843	2x1643/2844	2x1644/2853
COMBINATIONS REMOTE CONDENSERS XT - UP TO 52°C EXTERNAL AMBIENT TEMPERATURE					
UCM	2x1633/2834	2x1633/2834	2x1633/2843	2x1633/2844	2x1634/2844
UCM/SL	2x1633/2843	2x1634/2844	2x1643/2853	2x1643/2854	2x1644/2854

		2100	4110	4120	4130	2140
DIMENSIONS						
L	mm	2225	2625	2625	2625	2625
W	mm	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight XOPT - Top Air Discharge	kg	839	1029	1055	1053	1078
Transport weight XOPB - Bottom Air Discharge	kg	868	1064	1091	1089	1114
Operating weight XOPT - Top Air Discharge	kg	811	996	1022	1020	1045
Operating weight XOPB - Bottom Air Discharge	kg	841	1031	1058	1056	1081

Notes

1. Ambient air temperature 24°C - R.H. 50%, condensing temperature 45°C.
2. Air flow calculated with Available Static Pressure of 20 Pa.
3. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
4. Ambient air temperature 20°C, water temperature 45°C / 40°C.
5. Ambient air temperature 20°C.

CLOSE CONTROL SYSTEMS

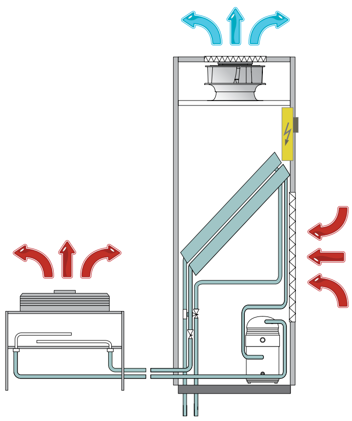
TOP

AIRCOOLED DIRECT EXPANSION DUAL FLUID UNITS WITH SCROLL COMPRESSORS AND EC INVERTER PLUG-FANS

Cooling capacity from 26 to 118 kW (from 7 to 34 TON)

***EC INVERTER** PLUG FAN*

Aircooled direct expansion Dual Fluid units with double circuit: one aircooled direct expansion circuit and one chilled water circuit.
The circuits are separated, with non-simultaneous start-up, for back-up operation.
The TOP range features EC Inverter Plug-Fans; high ESP fans are also available as accessory.
The EC Inverter Plug-Fans allow consumptions reduction at partial loads up to 61% comparing to radial fans, with the modulation of absorbed power depending on the real thermal load.
The TOP range is available in two air discharge versions: TOPT with top air discharge and TOPB with bottom air discharge.
The units can operate at high external ambient temperature (up to 52°C) with dedicated combination with remote condensers.



AIR DISCHARGE

TOPT... Top air discharge and frontal intake

TOPB... Bottom air discharge and upper intake

VERSIONS

TOP.../C Cooling only

TOP.../E Cooling and heating

TOP.../U Cooling and humidification

TOP.../D Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
SL	Unit silencement
CM	Scheduler
TE	Electronic expansion valve
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
AT	Constant air flow regulation control
AT/P	Constant available static pressure regulation control
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
PG	Hot gas post-heating coil (with valve)
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

TOPT … TOP AIR DISCHARGE
TOPB … BOTTOM AIR DISCHARGE

		1025	1041	1050	2066	2080	4104	4118
DIRECT EXPANSION CIRCUIT PERFORMANCES								
Total cooling capacity (1)	kW	25,7	41,5	50,3	66,5	80,0	104	118
	TON	7,3	11,8	14,3	18,9	22,7	29,6	33,6
Sensible cooling capacity (1)	kW	21,9	38,8	42,5	58,3	75,0	95,1	100
	TON	6,2	11,0	12,1	16,6	21,3	27,0	28,4
SHR (1)	%	85%	93%	84%	88%	94%	91%	85%
Total absorbed power (1)	kW	7,0	11,4	14,0	17,8	22,7	28,7	32,5
EER (1)		3,67	3,64	3,59	3,73	3,53	3,63	3,63
CHILLED WATER CIRCUIT PERFORMANCES								
Total cooling capacity (2)	kW	20,5	42,4	42,4	60,3	81,7	102	102
	TON	5,8	12,1	12,1	17,1	23,2	29,0	29,0
Sensible cooling capacity (2)	kW	19,8	39,3	39,3	55,9	75,0	94,3	94,3
	TON	5,6	11,2	11,2	15,9	21,3	26,8	26,8
SHR (2)	%	97%	93%	93%	93%	92%	92%	92%
Water flow (2)	l/s	0,98	2,03	2,03	2,88	3,90	4,87	4,87
	gpm	15,5	32,2	32,2	45,6	61,8	77,2	77,2
Total pressure drops (2)	kPa	42	51	51	44	42	54	54
	ft WG	14,0	17,0	17,0	14,7	14,0	18,0	18,0
COOLING CIRCUIT								
Cooling circuits	n°	1	1	1	2	2	2	2
Compressors	n°	1	1	1	2	2	4	4
FAN SECTION								
Fans	n°	1	1	1	2	2	3	3
Air flow (3)	m³/h	5200	10000	10000	14200	19200	24000	24000
	cfm	3060	5890	5890	8360	11300	14130	14130
Max. available static pressure - STD fans	Pa	100	230	230	360	240	320	320
	in WG	0,4	0,9	0,9	1,4	1,0	1,3	1,3
Max. available static pressure - High ESP fans	Pa	390	370	370	530	380	470	470
	in WG	1,6	1,5	1,5	2,1	1,5	1,9	1,9
Filters	type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz	400/3+N/50						
SOUND PRESSURE								
TOPT - Top Air Discharge version (4)	dB(A)	61	63	64	63	66	66	66
TOPB - Bottom Air Discharge version (4)	dB(A)	56	58	59	57	60	60	60

ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	3	3	3	3	3	3	3
Electrical power	kW	7,5	13,5	13,5	16,5	22,5	27,0	27,0
Hot water coil								
Heating capacity (5)	kW	5,2	13,0	13,0	17,7	24,5	31,6	31,6
	TON	1,5	3,7	3,7	5,0	7,0	9,0	9,0
Water flow (5)	l/s	0,25	0,62	0,62	0,85	1,17	1,51	1,51
	gpm	4,0	9,8	9,8	13,5	18,5	23,9	23,9
Total pressure drops (5)	kPa	29	36	36	35	43	41	41
	ft WG	9,7	12,0	12,0	11,7	14,3	13,7	13,7
Hot gas coil								
Heating capacity (6)	kW	5,9	10,5	10,5	14,3	19,8	25,6	25,6
Electrodes steam humidifier								
Nominal steam production	kg/h	4	8	8	8	15	15	15
Nominal power	kW	3,0	6,0	6,0	6,0	11,3	11,3	11,3

	1025	1041	1050	2066	2080	4104	4118
COMBINATIONS REMOTE CONDENSERS							
UCM	1523	1622T	1623T	2x1622T/2624	2x1622T/2633	2x1623T/2634	2x1632/2643
UCM/SL	1523	1623T	1624	2x1622T/2633	2x1623T/2643	2x1632/2644	2x1633/2834
UCM/SSL	1622	1633	1633	2x1624/2643	2x1633/2833	2x1634/2843	2x1643/2843
COMBINATIONS REMOTE CONDENSERS XT - UP TO 52°C EXTERNAL AMBIENT TEMPERATURE							
UCM	1524	1623T	1633	2x1623T/2634	2x1623T/2643	2x1633/2834	2x1633/2843
UCM/SL	1622M	1632	1633	2x1623T/2643	2x1632/2834	2x1634/2844	2x1643/2853

		1025	1041	1050	2066	2080	4104	4118
DIMENSIONS								
L	mm	875	1350	1350	1750	2225	2625	2625
W	mm	675	890	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight TOPT - Top Air Discharge	kg	324	525	537	676	839	1050	1050
Transport weight TOPB - Bottom Air Discharge	kg	341	542	554	705	868	1085	1085
Operating weight TOPT - Top Air Discharge	kg	313	505	517	654	811	1017	1017
Operating weight TOPB - Bottom Air Discharge	kg	330	522	534	683	840	1052	1052

Notes

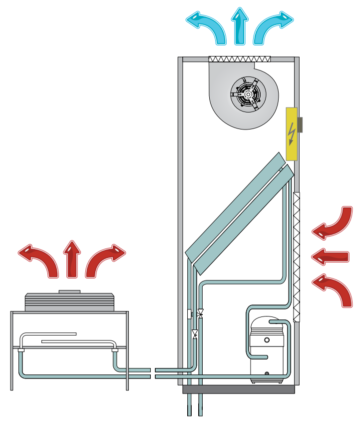
1. Ambient air temperature 24°C - R.H. 50%, condensing temperature 45°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.
6. Ambient air temperature 20°C.

TOC

AIRCOOLED DIRECT EXPANSION DUAL FLUID UNITS WITH SCROLL COMPRESSORS AND RADIAL FANS

Cooling capacity from 26 to 118 kW (from 7 to 34 TON)

Aircooled direct expansion Dual Fluid units with double circuit: one aircooled direct expansion circuit and one chilled water circuit.
The circuits are separated, with non-simultaneous start-up, for back-up operation.
The TOC range features radial fans; high ESP fans are also available as accessory.
The TOC range is available in two air discharge versions: TOCT with top air discharge and TOCB with bottom air discharge.
The units can operate at high external ambient temperature (up to 52°C) with dedicated combination with remote condensers.



AIR DISCHARGE

TOCT... Top air discharge and frontal intake

TOCB... Bottom air discharge and upper intake

VERSIONS

TOC.../C Cooling only

TOC.../E Cooling and heating

TOC.../U Cooling and humidification

TOC.../D Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
SL	Unit silencement
CM	Scheduler
TE	Electronic expansion valve
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
PG	Hot gas post-heating coil (with valve)
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

TOCT … TOP AIR DISCHARGE
TOCB … BOTTOM AIR DISCHARGE

		1025	1041	1050	2066	2080	4104	4118
DIRECT EXPANSION CIRCUIT PERFORMANCES								
Total cooling capacity (1)	kW	25,7	41,5	50,3	66,5	80,0	104	118
	TON	7,3	11,8	14,3	18,9	22,7	29,6	33,6
Sensible cooling capacity (1)	kW	21,9	38,8	42,5	58,3	75,0	95,1	100
	TON	6,2	11,0	12,1	16,6	21,3	27,0	28,4
SHR (1)	%	85%	93%	84%	88%	94%	91%	85%
Total absorbed power (1)	kW	8,2	13,6	16,2	21,9	28,4	34,0	37,8
EER (1)		3,15	3,06	3,11	3,03	2,82	3,06	3,12
CHILLED WATER CIRCUIT PERFORMANCES								
Total cooling capacity (2)	kW	20,5	42,4	42,4	60,3	81,7	102	102
	TON	5,8	12,1	12,1	17,1	23,2	29,0	29,0
Sensible cooling capacity (2)	kW	19,8	39,3	39,3	55,9	75,0	94,3	94,3
	TON	5,6	11,2	11,2	15,9	21,3	26,8	26,8
SHR (2)	%	0,97	0,93	0,93	0,93	0,92	0,92	0,92
Water flow (2)	l/s	0,98	2,03	2,03	2,88	3,90	4,87	4,87
	gpm	15,5	32,2	32,2	45,6	61,8	77,2	77,2
Total pressure drops (2)	kPa	42	51	51	44	42	54	54
	ft WG	14	17	17	14,7	14	18	18
COOLING CIRCUIT								
Cooling circuits	n°	1	1	1	2	2	2	2
Compressors	n°	1	1	1	2	2	4	4
FAN SECTION								
Fans - STD fans	n°	1	2	2	2	3	4	4
Fans - High ESP fans	n°	1	2	2	3	3	4	4
Air flow (3)	m³/h	5200	10000	10000	14200	19200	24000	24000
	cfm	3060	5890	5890	8360	11300	14130	14130
Max. available static pressure - STD fans	Pa	130	140	140	140	140	60	60
	in WG	0,5	0,6	0,6	0,6	0,6	0,2	0,2
Max. available static pressure - High ESP fans	Pa	300	320	320	330	250	240	240
	in WG	1,2	1,3	1,3	1,3	1,0	1,0	1,0
Filters	type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz	400/3+N/50						
SOUND PRESSURE								
TOCT - Top Air Discharge version (4)	dB(A)	70	72	72	72	76	72	72
TOCB - Bottom Air Discharge version (4)	dB(A)	65	67	67	67	71	67	67

		1025	1041	1050	2066	2080	4104	4118
ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	2	2	2	2	2	2	2
Electrical power	kW	7,5	12	12	15	21	24	24
Hot water coil								
Heating capacity (5)	kW	5,2	13	13	17,7	24,5	31,6	31,6
	TON	1,5	3,7	3,7	5	7	9	9
Water flow (5)	l/s	0,25	0,62	0,62	0,85	1,17	1,51	1,51
	gpm	4	9,8	9,8	13,5	18,5	23,9	23,9
Total pressure drops (5)	kPa	29	36	36	35	43	41	41
	ft WG	9,7	12	12	11,7	14,3	13,7	13,7
Hot gas coil								
Heating capacity (6)	kW	5,9	10,5	10,5	14,3	19,8	25,6	25,6
Electrodes steam humidifier								
Nominal steam production	kg/h	4	8	8	8	15	15	15
Nominal power	kW	3,0	6,0	6,0	6,0	11,3	11,3	11,3

	1025	1041	1050	2066	2080	4104	4118
COMBINATIONS REMOTE CONDENSERS							
UCM	1523	1622T	1623T	2x1622T/2624	2x1622T/2633	2x1623T/2634	2x1632/2643
UCM/SL	1523	1623T	1624	2x1622T/2633	2x1623T/2643	2x1632/2644	2x1633/2834
UCM/SSL	1622	1633	1633	2x1624/2643	2x1633/2833	2x1634/2843	2x1643/2843
COMBINATIONS REMOTE CONDENSERS XT - UP TO 52°C EXTERNAL AMBIENT TEMPERATURE							
UCM	1524	1623T	1633	2x1623T/2634	2x1623T/2643	2x1633/2834	2x1633/2843
UCM/SL	1622M	1632	1633	2x1623T/2643	2x1632/2834	2x1634/2844	2x1643/2853

		1025	1041	1050	2066	2080	4104	4118
DIMENSIONS								
L	mm	875	1350	1350	1750	2225	2625	2625
W	mm	675	890	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight TOCT - Top Air Discharge	kg	338	554	566	688	880	1097	1097
Transport weight TOCB - Bottom Air Discharge	kg	355	571	583	717	909	1132	1132
Operating weight TOCT - Top Air Discharge	kg	327	534	546	666	852	1064	1064
Operating weight TOCB - Bottom Air Discharge	kg	344	551	564	695	882	1099	1099

Notes

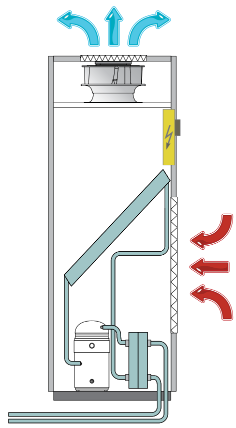
1. Ambient air temperature 24°C - R.H. 50%, condensing temperature 45°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.
6. Ambient air temperature 20°C.

CLOSE CONTROL SYSTEMS

HOP

WATERCOOLED DIRECT EXPANSION UNITS WITH SCROLL COMPRESSORS AND EC INVERTER PLUG-FANS

Cooling capacity from 10 to 152 kW (from 3 to 40 TON)



EC INVERTER PLUG FAN

Watercooled direct expansion units. The room air is treated in the evaporator coil where the refrigerant flows; the condensation heat is discharged in an internal plate exchanger, connected with a water circuit with well water, local water supply or closed systems such as evaporative towers and/or dry coolers. The HOP range features EC Inverter Plug-Fans; high ESP fans are also available as accessory.
The EC Inverter Plug-Fans allow consumptions reduction at partial loads up to 61% comparing to radial fans, with the modulation of absorbed power depending on the real thermal load.
The HOP range is available in two air discharge versions: HOPT with top air discharge and HOPB with bottom air discharge.

AIR DISCHARGE

HOPT... Top air discharge and frontal intake

HOPB... Bottom air discharge and upper intake

VERSIONS

HOP.../C Cooling only

HOP.../E Cooling and heating

HOP.../U Cooling and humidification

HOP.../D Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
PL	Plate exchanger for well water, with 2-way pressostatic valve
PV	2-way pressostatic valve
SL	Unit silencement
CM	Scheduler
TE	Electronic expansion valve
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
AT	Constant air flow regulation control
AT/P	Constant available static pressure regulation control
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
PG	Hot gas post-heating coil (with valve)
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

HOPT … TOP AIR DISCHARGE
HOPB … BOTTOM AIR DISCHARGE

		1009	1013	1017	1019	1023	1029	1037
PERFORMANCES - WATER TEMPERATURE 30°C / 35°C								
Total cooling capacity (1)	kW	9,6	13,1	17,2	18,8	23,1	28,8	37,3
	TON	2,7	3,7	4,9	5,3	6,6	8,2	10,6
Sensible cooling capacity (1)	kW	8,1	11,1	14,0	15,7	20,0	23,4	35,6
	TON	2,3	3,2	4,0	4,5	5,7	6,7	10,1
SHR (1)	%	84%	85%	81%	84%	87%	81%	95%
Total absorbed power (1)	kW	2,2	2,9	3,7	4,4	5,3	6,4	8,8
EER (1)		4,30	4,56	4,66	4,27	4,35	4,54	4,25
PERFORMANCES - WATER TEMPERATURE 15°C / 30°C								
Total cooling capacity (2)	kW	9,5	13,2	17,2	18,8	23,3	29,1	37,3
	TON	2,7	3,8	4,9	5,3	6,6	8,3	10,6
Sensible cooling capacity (2)	kW	8,1	11,2	14,0	15,7	20,1	23,6	35,7
	TON	2,3	3,2	4,0	4,5	5,7	6,7	10,2
SHR (2)	%	85%	85%	81%	84%	86%	81%	96%
Total absorbed power (2)	kW	2,2	2,9	3,7	4,5	5,2	6,3	8,8
EER (2)		4,26	4,60	4,66	4,18	4,47	4,66	4,25
COOLING CIRCUIT								
Cooling circuits	n°	1	1	1	1	1	1	1
Compressors	n°	1	1	1	1	1	1	1
WATERCOOLED CONDENSER - WATER TEMPERATURE 30°C / 35°C								
Water flow (1)	l/s	0,55	0,75	0,97	1,07	1,31	1,63	2,11
	gpm	8,7	11,9	15,4	17,0	20,8	25,8	33,4
Total pressure drops (1)	kPa	42	35	27	32	42	33	34
	ft WG	14,0	11,7	9,0	10,7	14,0	11,0	11,3
WATERCOOLED CONDENSER - WATER TEMPERATURE 15°C / 30°C								
Water flow (2)	l/s	0,18	0,25	0,32	0,36	0,44	0,55	0,70
	gpm	2,9	4,0	5,1	5,7	7,0	8,7	11,1
Total pressure drops (2)	kPa	55	41	53	64	50	56	59
	ft WG	18,3	13,7	17,7	21,3	16,7	18,7	19,7
FAN SECTION								
Fans	n°	1	1	1	1	1	1	1
Air flow (3)	m³/h	2500	3000	3300	3900	5600	5600	11500
	cfm	1470	1770	1940	2300	3300	3300	6770
Max. available static pressure - STD version	Pa	430	310	250	130	120	100	150
	in WG	1,7	1,2	1,0	0,5	0,5	0,4	0,6
Max. available static pressure - High ESP version	Pa	710	640	430	280	410	380	270
	in WG	2,9	2,6	1,7	1,1	1,6	1,5	1,1
Filters	Type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz	230/1/50		400/3+N/50				
SOUND PRESSURE								
HOPT - Top Air Discharge version (4)	dB(A)	53	56	58	61	62	62	65
HOPB - Bottom Air Discharge version (4)	dB(A)	48	51	53	56	57	57	60

ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	3	3	3	3	3	3	3
Electrical power	kW	4,5	4,5	4,5	4,5	7,5	7,5	13,5
Hot water coil								
Heating capacity (5)	kW	3,5	3,8	4,1	4,6	5,2	5,2	12,7
	TON	1,0	1,1	1,2	1,3	1,5	1,5	3,6
Water flow (5)	l/s	0,17	0,18	0,2	0,22	0,25	0,25	0,61
	gpm	2,7	2,9	3,2	3,5	4,0	4,0	9,7
Total pressure drops (5)	kPa	20	23	26	34	27	27	33
	ft WG	6,7	7,7	8,7	11,3	9,0	9,0	11,0
Hot gas coil								
Heating capacity (6)	kW	2,9	3,2	3,4	3,6	4,2	4,2	10,3
Electrodes steam humidifier								
Nominal steam production	kg/h	4	4	4	4	4	4	8
Nominal power	kW	3,0	3,0	3,0	3,0	3,0	3,0	6,0

		1009	1013	1017	1019	1023	1029	1037
DIMENSIONS								
L	mm	675	675	675	675	875	875	1350
W	mm	675	675	675	675	675	675	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight HOPT - Top Air Discharge	kg	237	244	253	253	287	305	448
Transport weight HOPB - Bottom Air Discharge	kg	257	265	278	278	313	332	477
Operating weight HOPT - Top Air Discharge	kg	227	234	243	243	276	294	428
Operating weight HOPB - Bottom Air Discharge	kg	248	255	268	268	302	321	458

Note

1. Ambient air temperature 24°C - R.H. 50%, water temperature 30°C / 35°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 15°C / 30°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40 °C.
6. Ambient air temperature 20°C.

		1043	2051	2058	2072	1074
PERFORMANCES - WATER TEMPERATURE 30°C / 35°C						
Total cooling capacity (1)	kW	42,7	50,8	58,2	71,6	74,2
	TON	12,1	14,4	16,5	20,4	21,1
Sensible cooling capacity (1)	kW	40,4	44,7	48,5	63,3	63,7
	TON	11,5	12,7	13,8	18,0	18,1
SHR (1)	%	95%	88%	83%	88%	86%
Total absorbed power (1)	kW	10,3	11,8	12,7	15,9	16,5
EER (1)		4,14	4,31	4,58	4,50	4,51
PERFORMANCES - WATER TEMPERATURE 15°C / 30°C						
Total cooling capacity (2)	kW	42,9	51,1	58,8	72,6	76,2
	TON	12,2	14,5	16,7	20,6	21,7
Sensible cooling capacity (2)	kW	40,5	44,9	48,8	63,7	64,6
	TON	11,5	12,9	13,9	18,1	18,4
SHR (2)	%	94%	88%	83%	88%	85%
Total absorbed power (2)	kW	10,2	11,6	12,4	15,5	15,6
EER (2)		4,20	4,41	4,74	4,68	4,89
COOLING CIRCUIT						
Cooling circuits	n°	1	2	2	2	1
Compressors	n°	1	2	2	2	1
WATERCOOLED CONDENSER - WATER TEMPERATURE 30°C / 35°C						
Water flow (1)	l/s	2,43	2,90	3,29	4,05	4,2
	gpm	38,5	46,0	52,1	64,2	66,6
Total pressure drops (1)	kPa	35	37	34	30	46
	ft WG	11,7	12,3	11,3	10,0	15,3
WATERCOOLED CONDENSER - WATER TEMPERATURE 15°C / 30°C						
Water flow (2)	l/s	0,81	0,89	1,02	1,26	1,42
	gpm	12,8	14,1	16,2	20,0	22,5
Total pressure drops (2)	kPa	64	35	57	45	67
	ft WG	21,3	18,3	19.0	15,0	22,3
FAN SECTION						
Fans	n°	1	1	1	2	2
Air flow (3)	m³/h	11500	11500	11500	16000	16000
	cfm	6770	6770	6770	9420	9420
Max. available static pressure - STD version	Pa	120	150	150	370	350
	in WG	0,5	0,6	0,6	1,5	1,4
Max. available static pressure - High ESP version	Pa	230	230	210	550	530
	in WG	0,9	0,9	0,8	2,2	2,1
Filters	Type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz			400/3+N/50		
SOUND PRESSURE						
HOPT - Top Air Discharge version (4)	dB(A)	65	65	66	64	68
HOPB - Bottom Air Discharge version (4)	dB(A)	60	60	60	58	62

ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	3	3	3	3	3
Electrical power	kW	13,5	16,5	16,5	16,5	16,5
Hot water coil						
Heating capacity (5)	kW	12,7	16,3	16,3	17,4	17,4
	TON	3,6	4,6	4,6	4,9	4,9
Water flow (5)	l/s	0,61	0,78	0,78	0,83	0,83
	gpm	9,7	12,4	12,4	13,2	13,2
Total pressure drops (5)	kPa	33	28	28	32	32
	ft WG	11,0	9,3	9,3	10,7	10,7
Hot gas coil						
Heating capacity (6)	kW	10,3	14,1	14,1	14,1	14,1
Electrodes steam humidifier						
Nominal steam production	kg/h	8	8	8	8	8
Nominal power	kW	6,0	6,0	6,0	6,0	6,0

		1043	2051	2058	2072	1074
DIMENSIONS						
L	mm	1350	1750	1750	1750	1750
W	mm	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight HOPT - Top Air Discharge	kg	480	518	541	636	641
Transport weight HOPB - Bottom Air Discharge	kg	511	554	578	690	691
Operating weight HOPT - Top Air Discharge	kg	460	496	519	614	619
Operating weight HOPB - Bottom Air Discharge	kg	492	532	556	668	669

Note

1. Ambient air temperature 24°C - R.H. 50%, water temperature 30°C / 35°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 15°C / 30°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40 °C.
6. Ambient air temperature 20°C.

HOPT ... TOP AIR DISCHARGE
HOPB ... BOTTOM AIR DISCHARGE

		2088	2099	2110	2117	2152
PERFORMANCES - WATER TEMPERATURE 30°C / 35°C						
Total cooling capacity (1)	kW	88,1	99,5	110	117	152
	TON	25,1	28,3	31,3	33,3	43,2
Sensible cooling capacity (1)	kW	70,4	85,4	90,8	103	118
	TON	20,0	24,3	25,8	29,3	33,6
SHR (1)	%	80%	86%	83%	88%	78%
Total absorbed power (1)	kW	18,9	22,5	25,9	26,6	33,0
EER (1)		4,66	4,42	4,25	4,41	4,60
PERFORMANCES - WATER TEMPERATURE 15°C / 30°C						
Total cooling capacity (2)	kW	89,9	102	114	121	153
	TON	25,6	29,0	32,4	34,4	43,5
Sensible cooling capacity (2)	kW	71,2	86,6	92,2	105	118
	TON	20,2	24,6	26,2	29,9	33,6
SHR (2)	%	79%	85%	81%	87%	77%
Total absorbed power (2)	kW	18,1	21,3	24,5	25,1	32,8
EER (2)		4,97	4,79	4,65	4,83	4,66
COOLING CIRCUIT						
Cooling circuits	n°	2	2	2	2	2
Compressors	n°	2	2	2	2	2
WATERCOOLED CONDENSER - WATER TEMPERATURE 30°C / 35°C						
Water flow (1)	l/s	5,02	5,64	6,29	6,65	8,61
	gpm	79,6	89,4	100	105	137
Total pressure drops (1)	kPa	37	35	40	43	51
	ft WG	12,3	11,7	13,3	14,3	17,0
WATERCOOLED CONDENSER - WATER TEMPERATURE 15°C / 30°C						
Water flow (2)	l/s	1,56	1,76	1,98	2,09	2,66
	gpm	24,7	27,9	31,4	33,1	42,2
Total pressure drops (2)	kPa	68	64	49	53	67
	ft WG	22,7	21,3	16,3	17,7	22,3
FAN SECTION						
Fans	n°	2	2	2	3	3
Air flow (3)	m³/h	16000	21000	21000	25500	25500
	cfm	9420	12360	12360	15010	15010
Max. available static pressure - STD version	Pa	350	190	170	330	310
	in WG	1,4	0,8	0,7	1,3	1,2
Max. available static pressure - High ESP version	Pa	530	360	300	500	480
	in WG	2,1	1,4	1,2	2,0	1,9
Filters	Type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz			400/3+N/50		
SOUND PRESSURE						
HOPT - Top Air Discharge version (4)	dB(A)	63	67	68	67	71
HOPB - Bottom Air Discharge version (4)	dB(A)	58	62	63	61	65

ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	3	3	3	3	3
Electrical power	kW	22,5	22,5	22,5	27,0	27,0
Hot water coil						
Heating capacity (5)	kW	22,7	24,2	24,2	31,1	31,1
	TON	6,5	6,9	6,9	8,8	8,8
Water flow (5)	l/s	1,08	1,16	1,16	1,49	1,49
	gpm	17,1	18,4	18,4	23,6	23,6
Total pressure drops (5)	kPa	35	40	40	38	38
	ft WG	11,7	13,3	13,3	12,7	12,7
Hot gas coil						
Heating capacity (6)	kW	19,6	19,6	19,6	25,3	25,3
Electrodes steam humidifier						
Nominal steam production	kg/h	15	15	15	15	15
Nominal power	kW	11,3	11,3	11,3	11,3	11,3

		2088	2099	2110	2117	2152
DIMENSIONS						
L	mm	2225	2225	2225	2625	2625
W	mm	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight HOPT - Top Air Discharge	kg	772	791	818	925	1033
Transport weight HOPB - Bottom Air Discharge	kg	829	851	880	993	1110
Operating weight HOPT - Top Air Discharge	kg	745	764	791	892	1000
Operating weight HOPB - Bottom Air Discharge	kg	801	823	853	960	1077

Note

1. Ambient air temperature 24°C - R.H. 50%, water temperature 30°C / 35°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 15°C / 30°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40 °C.
6. Ambient air temperature 20°C.

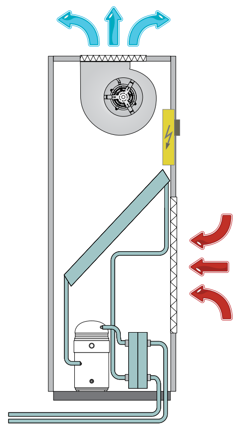
montair CLOSE CONTROL SYSTEMS

HOC

WATERCOOLED DIRECT EXPANSION UNITS WITH SCROLL COMPRESSORS AND RADIAL FANS

Cooling capacity from 10 to 152 kW (from 3 to 40 TON)

Watercooled direct expansion units. The room air is treated in the evaporator coil where the refrigerant flows; the condensation heat is discharged in an internal plate exchanger, connected with a water circuit with well water, local water supply or closed systems such as evaporative towers and/or dry coolers. The HOC range features radial fans; high ESP fans are also available as accessory.
The HOC range is available in two air discharge versions: HOCT with top air discharge and HOCB with bottom air discharge.



AIR DISCHARGE

HOCT... Top air discharge and frontal intake

HOCB... Bottom air discharge and upper intake

VERSIONS

HOC.../C Cooling only

HOC.../E Cooling and heating

HOC.../U Cooling and humidification

HOC.../D Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
PL	Plate exchanger for well water, with 2-way pressostatic valve
PV	2-way pressostatic valve
SL	Unit silencement
CM	Scheduler
TE	Electronic expansion valve
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
PG	Hot gas post-heating coil (with valve)
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

HOCT ... TOP AIR DISCHARGE
HOCB ... BOTTOM AIR DISCHARGE

		1009	1013	1017	1019	1023	1029	1037
PERFORMANCES - WATER TEMPERATURE 30°C / 35°C								
Total cooling capacity (1)	kW	9,6	13,1	17,2	18,8	23,1	28,8	37,3
	TON	2,7	3,7	4,9	5,3	6,6	8,2	10,6
Sensible cooling capacity (1)	kW	8,1	11,1	14,0	15,7	20,0	23,4	35,6
	TON	2,3	3,2	4,0	4,5	5,7	6,7	10,1
SHR (1)	%	84%	85%	81%	84%	87%	81%	95%
Total absorbed power (1)	kW	2,9	3,4	4,2	5,1	6,7	7,7	11,8
EER (1)		3,34	3,91	4,11	3,66	3,44	3,74	3,16
PERFORMANCES - WATER TEMPERATURE 15°C / 30°C								
Total cooling capacity (2)	kW	9,5	13,2	17,2	18,8	23,3	29,1	37,3
	TON	2,7	3,8	4,9	5,3	6,6	8,3	10,6
Sensible cooling capacity (2)	kW	8,1	11,2	14,0	15,7	20,1	23,6	35,7
	TON	2,3	3,2	4,0	4,5	5,7	6,7	10,2
SHR (2)	%	85%	85%	81%	84%	86%	81%	96%
Total absorbed power (2)	kW	2,9	3,4	4,2	5,2	6,6	7,6	11,8
EER (2)		3,31	3,94	4,11	3,59	3,52	3,82	3,16
COOLING CIRCUIT								
Cooling circuits	n°	1	1	1	1	1	1	1
Compressors	n°	1	1	1	1	1	1	1
WATERCOOLED CONDENSER - WATER TEMPERATURE 30°C / 35°C								
Water flow (1)	l/s	0,55	0,75	0,97	1,07	1,31	1,63	2,11
	gpm	8,7	11,9	15,4	17,0	20,8	25,8	33,4
Total pressure drops (1)	kPa	42	35	27	32	42	33	34
	ft WG	14,0	11,7	9,0	10,7	14,0	11,0	11,3
WATERCOOLED CONDENSER - WATER TEMPERATURE 15°C / 30°C								
Water flow (2)	l/s	0,18	0,25	0,32	0,36	0,44	0,55	0,70
	gpm	2,9	4,0	5,1	5,7	7,0	8,7	11,1
Total pressure drops (2)	kPa	37	29	31	37	35	32	43
	ft WG	12,3	9,7	10,3	12,3	11,7	10,7	14,3
FAN SECTION								
Fans - STD	n°	1	1	1	1	1	1	2
Fans - High ESP fans	n°	-	-	-	-	1	1	2
Air flow (3)	m³/h	2500	3000	3300	3900	5600	5600	11500
	cfm	1470	1770	1940	2300	3300	3300	6770
Max. available static pressure - STD version	Pa	220	170	60	40	170	140	190
	in WG	0,9	0,7	0,2	0,2	0,7	0,6	0,8
Max. available static pressure - High ESP version	Pa	-	-	-	-	340	310	360
	in WG	-	-	-	-	1,4	1,2	1,4
Filters	Type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz	230/1/50		400/3+N/50				
SOUND PRESSURE								
HOCT - Top Air Discharge version (4)	dB(A)	63	59	60	64	70	70	73
HOCB - Bottom Air Discharge version (4)	dB(A)	58	54	55	59	65	65	68
ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	2	2	2	2	2	2	2
Electrical power	kW	4,5	4,5	4,5	4,5	7,5	7,5	12,0
Hot water coil								
Heating capacity (5)	kW	3,5	3,8	4,1	4,6	5,2	5,2	12,7
	TON	1,0	1,1	1,2	1,3	1,5	1,5	3,6
Water flow (5)	l/s	0,17	0,18	0,20	0,22	0,25	0,25	0,61
	gpm	2,7	2,9	3,2	3,5	4,0	4,0	9,7
Total pressure drops (5)	kPa	20	23	26	34	27	27	33
	ft WG	6,7	7,7	8,7	11,3	9,0	9,0	11,0
Hot gas coil								
Heating capacity (6)	kW	2,9	3,2	3,4	3,6	4,2	4,2	10,3
Electrodes steam humidifier								
Nominal steam production	kg/h	4	4	4	4	4	4	8
Nominal power	kW	3,0	3,0	3,0	3,0	3,0	3,0	6,0

		1009	1013	1017	1019	1023	1029	1037
DIMENSIONS								
L	mm	675	675	675	675	875	875	1350
W	mm	675	675	675	675	675	675	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight HOCT - Top Air Discharge	kg	240	251	260	260	301	319	477
Transport weight HOCB - Bottom Air Discharge	kg	260	272	285	285	327	346	507
Operating weight HOCT - Top Air Discharge	kg	230	241	250	250	290	308	457
Operating weight HOCB - Bottom Air Discharge	kg	250	262	275	275	316	335	487

Note

1. Ambient air temperature 24°C - R.H. 50%, water temperature 30°C / 35°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 15°C / 30°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.
6. Ambient air temperature 20°C.

		1043	2051	2058	2072	1074
PERFORMANCES - WATER TEMPERATURE 30°C / 35°C						
Total cooling capacity (1)	kW	42,7	50,8	58,2	71,6	74,2
	TON	12,1	14,4	16,5	20,4	21,1
Sensible cooling capacity (1)	kW	40,4	44,7	48,5	63,3	63,7
	TON	11,5	12,7	13,8	18,0	18,1
SHR (1)	%	95%	88%	83%	88%	86%
Total absorbed power (1)	kW	13,2	14,8	15,7	21,1	21,7
EER (1)		3,23	3,43	3,70	3,40	3,42
PERFORMANCES - WATER TEMPERATURE 15°C / 30°C						
Total cooling capacity (2)	kW	42,9	51,1	58,8	72,6	76,2
	TON	12,2	14,5	16,7	20,6	21,7
Sensible cooling capacity (2)	kW	40,5	44,9	48,8	63,7	64,6
	TON	11,5	12,8	13,9	18,1	18,4
SHR (2)	%	94%	88%	83%	88%	85%
Total absorbed power (2)	kW	13,1	14,6	15,4	20,7	20,8
EER (2)		3,27	3,50	3,81	3,51	3,67
COOLING CIRCUIT						
Cooling circuits	n°	1	2	2	2	1
Compressors	n°	1	2	2	2	1
WATERCOOLED CONDENSER - WATER TEMPERATURE 30°C / 35°C						
Water flow (1)	l/s	2,43	2,90	3,29	4,05	4,20
	gpm	38,5	46,0	52,1	64,2	66,6
Total pressure drops (1)	kPa	35	37	34	30	46
	ft WG	11,7	12,3	11,3	10,0	15,3
WATERCOOLED CONDENSER - WATER TEMPERATURE 15°C / 30°C						
Water flow (2)	l/s	0,81	0,89	1,02	1,26	1,42
	gpm	12,8	14,1	16,2	20,0	22,5
Total pressure drops (2)	kPa	42	36	32	30	41
	ft WG	14,0	12,0	10,7	10,0	13,7
FAN SECTION						
Fans - STD	n°	2	2	2	2	2
Fans - High ESP fans	n°	2	2	2	3	3
Air flow (3)	m³/h	11500	11500	11500	16000	16000
	cfm	6770	6770	6770	9420	9420
Max. available static pressure - STD version	Pa	150	150	120	40	40
	in WG	0,6	0,6	0,5	0,2	0,2
Max. available static pressure - High ESP version	Pa	320	400	400	320	320
	in WG	1,3	1,6	1,6	1,3	1,3
Filters	Type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz			400/3+N/50		
SOUND PRESSURE						
HOCT - Top Air Discharge version (4)	dB(A)	73	73	73	73	74
HOCB - Bottom Air Discharge version (4)	dB(A)	68	68	68	68	69

ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	2	2	2	2	2
Electrical power	kW	12,0	15,0	15,0	15,0	15,0
Hot water coil						
Heating capacity (5)	kW	12,7	16,3	16,3	17,4	17,4
	TON	3,6	4,6	4,6	4,9	4,9
Water flow (5)	l/s	0,61	0,78	0,78	0,83	0,83
	gpm	9,7	12,4	12,4	13,2	13,2
Total pressure drops (5)	kPa	33	28	28	32	32
	ft WG	11,0	9,3	9,3	10,7	10,7
Hot gas coil						
Heating capacity (6)	kW	10,3	14,1	14,1	14,1	14,1
Electrodes steam humidifier						
Nominal steam production	kg/h	8	8	8	8	8
Nominal power	kW	6,0	6,0	6,0	6,0	6,0

		1043	2051	2058	2072	1074
DIMENSIONS						
L	mm	1350	1750	1750	1750	1750
W	mm	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight HOCT - Top Air Discharge	kg	509	547	570	648	653
Transport weight HOCB - Bottom Air Discharge	kg	541	583	607	702	703
Operating weight HOCT - Top Air Discharge	kg	489	525	548	626	631
Operating weight HOCB - Bottom Air Discharge	kg	521	561	585	680	681

Note

1. Ambient air temperature 24°C - R.H. 50%, water temperature 30°C / 35°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 15°C / 30°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.
6. Ambient air temperature 20°C.

HOCT … TOP AIR DISCHARGE
HOCB … BOTTOM AIR DISCHARGE

		2088	2099	2110	2117	2152
PERFORMANCES - WATER TEMPERATURE 30°C / 35°C						
Total cooling capacity (1)	kW	88,1	99,5	110	117	152
	TON	25,1	28,3	31,3	33,3	43,2
Sensible cooling capacity (1)	kW	70,4	85,4	90,8	103	118
	TON	20,0	24,3	25,8	29,3	33,6
SHR (1)	%	80%	86%	83%	88%	78%
Total absorbed power (1)	kW	24,8	29,2	32,3	32,9	39,1
EER (1)		3,56	3,40	3,40	3,56	3,89
PERFORMANCES - WATER TEMPERATURE 15°C / 30°C						
Total cooling capacity (2)	kW	89,9	102	114	121	153
	TON	25,6	29,0	32,4	34,4	43,5
Sensible cooling capacity (2)	kW	71,2	86,6	92,2	105	118
	TON	20,2	24,6	26.2	29,9	33,6
SHR (2)	%	79%	85%	81%	87%	77%
Total absorbed power (2)	kW	24,0	28,0	30,9	31,4	38,9
EER (2)		3,75	3,64	3,69	3,85	3,93
COOLING CIRCUIT						
Cooling circuits	n°	2	2	2	2	2
Compressors	n°	2	2	2	2	2
WATERCOOLED CONDENSER - WATER TEMPERATURE 30°C / 35°C						
Water flow (1)	l/s	5,02	5,64	6,29	6,65	8,61
	gpm	79,6	89,4	99,7	105	137
Total pressure drops (1)	kPa	37	35	40	43	51
	ft WG	12,3	11,7	13,3	14,3	17,0
WATERCOOLED CONDENSER - WATER TEMPERATURE 15°C / 30°C						
Water flow (2)	l/s	1,56	1,76	1,98	2,09	2,66
	gpm	24,7	27,9	31,4	33,1	42,2
Total pressure drops (2)	kPa	45	34	34	37	41
	ft WG	15,0	11,3	11,3	12,3	13,7
FAN SECTION						
Fans - STD	n°	2	3	3	4	4
Fans - High ESP fans	n°	3	3	3	4	4
Air flow (3)	m³/h	16000	21000	21000	25500	25500
	cfm	9420	12360	12360	15010	15010
Max. available static pressure - STD version	Pa	110	80	60	40	40
	in WG	0,4	0,3	0,2	0,2	0,2
Max. available static pressure - High ESP version	Pa	400	200	180	270	240
	in WG	1,6	0,8	0,7	1,1	1,0
Filters	Type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz	400/3+N/50				
SOUND PRESSURE						
HOCT - Top Air Discharge version (4)	dB(A)	73	76	76	72	73
HOCB - Bottom Air Discharge version (4)	dB(A)	68	71	71	67	68

		2088	2099	2110	2117	2152
ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	2	2	2	2	2
Electrical power	kW	21,0	21,0	21,0	24,0	24,0
Hot water coil						
Heating capacity (5)	kW	22,7	24,2	24,2	31,1	31,1
	TON	6,5	6,9	6,9	8,8	8,8
Water flow (5)	l/s	1,08	1,16	1,16	1,49	1,49
	gpm	17,1	18,4	18,4	23,6	23,6
Total pressure drops (5)	kPa	35	40	40	38	38
	ft WG	11,7	13,3	13,3	12,7	12,7
Hot gas coil						
Heating capacity (6)	kW	19,6	19,6	19,6	25,3	25,3
Electrodes steam humidifier						
Nominal steam production	kg/h	15	15	15	15	15
Nominal power	kW	11,3	11,3	11,3	11,3	11,3

		2088	2099	2110	2117	2152
DIMENSIONS						
L	mm	2225	2225	2225	2625	2625
W	mm	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight HOCT - Top Air Discharge	kg	814	833	860	972	1080
Transport weight HOCB - Bottom Air Discharge	kg	870	892	922	1040	1157
Operating weight HOCT - Top Air Discharge	kg	786	805	832	939	1047
Operating weight HOCB - Bottom Air Discharge	kg	842	864	894	1007	1124

Note

1. Ambient air temperature 24°C - R.H. 50%, water temperature 30°C / 35°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 15°C / 30°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.
6. Ambient air temperature 20°C.

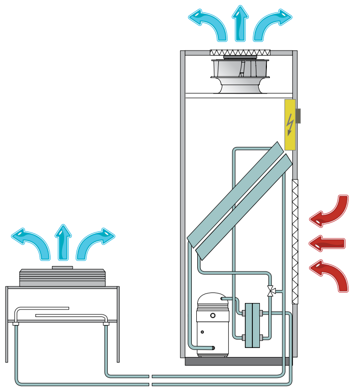
FOP

WATERCOOLED DIRECT EXPANSION FREE-COOLING UNITS WITH SCROLL COMPRESSORS AND EC INVERTER PLUG-FANS

Cooling capacity from 29 to 109 kW (from 8 to 31 TON)

EC INVERTER PLUG FAN

Units with two separate cooling systems, a primary direct expansion circuit (DX) and a secondary chilled water circuit (CW).
The units feature a microprocessor that manages 3 operating modes: DX only, MIXED and CW. Based on the external temperature, it allows to maximize the energy savings by intelligently managing the three operating modes.This type of unit is especially suited for systems requiring particular RELIABILITY and ENERGY SAVING for the entire air-conditioning system.
The FOP range features EC Inverter Plug-Fans; high ESP fans are also available as accessory.
The EC Inverter Plug-Fans allow consumptions reduction at partial loads up to 61% comparing to radial fans, with the modulation of absorbed power depending on the real thermal load.
The FOP range is available in two air discharge versions: FOPT with top air discharge and FOPB with bottom air discharge.



AIR DISCHARGE

FOPT...	Top air discharge and frontal intake
FOPB...	Bottom air discharge and upper intake

VERSIONS

FOP.../C	Cooling only
FOP.../E	Cooling and heating
FOP.../U	Cooling and humidification
FOP.../D	Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
SL	Unit silencement
CM	Scheduler
TE	Electronic expansion valve
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
AT	Constant air flow regulation control
AT/P	Constant available static pressure regulation control
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
PG	Hot gas post-heating coil (with valve)
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

FOPT … TOP AIR DISCHARGE
FOPB … BOTTOM AIR DISCHARGE

		1029	1041	1048	2066	2086	2110
PERFORMANCES							
Total cooling capacity (1)	kW	29,2	41,5	48,3	66,2	85,9	109
	TON	8,3	11,8	13,7	18,8	24,4	31,0
Sensible cooling capacity (1)	kW	24,9	39,0	41,7	57,9	76,6	96,6
	TON	7,1	11,1	11,9	16,5	21,8	27,5
SHR (1)	%	85%	94%	86%	87%	89%	89%
Total absorbed power (1)	kW	6,3	10,3	11,2	14,9	20,6	26,8
EER (2)		4,63	4,03	4,31	4,44	4,17	4,07
COOLING CIRCUIT							
Cooling circuits	n°	1	1	1	2	2	2
Compressors	n°	1	1	1	2	2	2
WATERCOOLED CONDENSER							
Water flow (1)	l/s	1,65	2,38	2,75	3,75	4,90	6,26
	gpm	26,2	37,7	43,6	59,4	77,7	99,2
Total pressure drops (1)	kPa	31	37	36	37	36	39
	ft WG	10,3	12,3	12,0	12,3	12,0	13,0
Total pressure drops with Free-Cooling coil (1)	kPa	77	76	82	79	93	89
	ft WG	25,7	25,3	27,3	26,3	31,0	29,7
FREE-COOLING COIL							
Total cooling capacity (2)	kW	27,9	40,3	41,1	57,9	78,5	97,5
	TON	7,9	11,5	11,7	16,5	22,3	27,7
Sensible cooling capacity (2)	kW	24,9	38,7	39,0	54,8	73,6	92,0
	TON	7,1	11,0	11,1	15,6	20,9	26,2
SHR (2)	%	89%	96%	95%	95%	94%	94%
FAN SECTION							
Fans	n°	1	1	1	2	2	3
Air flow (3)	m^3/h	6000	10000	10000	14200	19200	24000
	cfm	3530	5890	5890	8360	11300	14130
Max. available static pressure - STD version	Pa	120	150	120	370	190	310
	in WG	0,5	0,6	0,5	1,5	0,8	1,2
Max. available static pressure - High ESP version	Pa	20	20	20	20	20	20
	in WG	0,1	0,1	0,1	0,1	0,1	0,1
Filters	Type	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS							
Power supply	V/Ph/Hz	400/3+N/50					
SOUND PRESSURE							
FOPT - Top Air Discharge version (4)	dB(A)	62	63	64	63	66	66
FOPB - Bottom Air Discharge version (4)	dB(A)	67	58	59	57	60	60

ACCESSORIES & ADDITIONAL SECTIONS							
Electrical heating							
Steps	n°	3	3	3	3	3	3
Electrical power	kW	13,5	13,5	13,5	16,5	22,5	27,0
Hot water coil							
Heating capacity (5)	kW	9,8	13	13	17,7	24,5	31,6
	TON	2,8	3,7	3,7	5,0	7,0	9,0
Water flow (5)	l/s	0,47	0,62	0,62	0,85	1,17	1,51
	gpm	7,4	9,8	9,8	13,5	18,5	23,9
Total pressure drops (5)	kPa	23	36	36	35	43	41
	ft WG	7,7	12,0	12,0	11,7	14,3	13,7
Hot gas coil							
Heating capacity (6)	kW	10,5	10,5	10,5	14,3	19,8	25,6
Electrodes steam humidifier							
Nominal steam production	kg/h	8	8	8	8	15	15
Nominal power	kW	6,0	6,0	6,0	6,0	11,3	11,3

		1029	1041	1048	2066	2086	2110
DIMENSIONS							
L	mm	1350	1350	1350	1750	2225	2625
W	mm	890	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980	1980
WEIGHTS							
Transport weight FOPT - Top Air Discharge	kg	490	537	547	702	870	1034
Transport weight FOPB - Bottom Air Discharge	kg	508	554	565	732	900	1070
Operating weight FOPT - Top Air Discharge	kg	471	517	527	680	843	1001
Operating weight FOPB - Bottom Air Discharge	kg	488	534	545	710	872	1037

Note

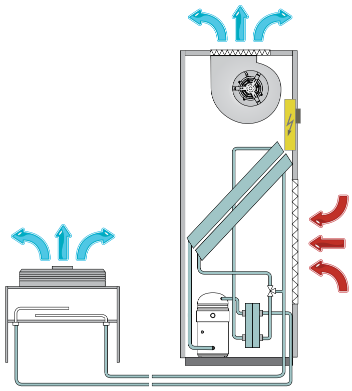
1. Ambient air temperature 24°C - R.H. 50%, water temperature 30°C / 35°C.
2. Ambient air temperature 24°C - R.H. 50%, inlet water temperature 10°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20 °C, water temperature 45 °C / 40 °C.
6. Ambient air temperature 20°C.

CLOSE CONTROL SYSTEMS

FOC

WATERCOOLED DIRECT EXPANSION FREE-COOLING UNITS WITH SCROLL COMPRESSORS AND RADIAL FANS

Cooling capacity from 29 to 109 kW (from 8 to 31 TON)



Units with two separate cooling systems, a primary direct expansion circuit (DX) and a secondary chilled water circuit (CW).
The units feature a microprocessor that manages 3 operating modes: DX only, MIXED and CW. Based on the external temperature, it allows to maximize the energy savings by intelligently managing the three operating modes.This type of unit is especially suited for systems requiring particular RELIABILITY and ENERGY SAVING for the entire air-conditioning system.
The FOC range features radial fans; high ESP fans are also available as accessory.
The FOC range is available in two air discharge versions: FOCT with top air discharge and FOCB with bottom air discharge.

AIR DISCHARGE

FOCT... Top air discharge and frontal intake

FOCB... Bottom air discharge and upper intake

VERSIONS

FOC.../C Cooling only

FOC.../E Cooling and heating

FOC.../U Cooling and humidification

FOC.../D Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
SL	Unit silencement
CM	Scheduler
TE	Electronic expansion valve
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
PG	Hot gas post-heating coil (with valve)
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

FOCT … TOP AIR DISCHARGE
FOCB … BOTTOM AIR DISCHARGE

		1029	1041	1048	2066	2086	2110
PERFORMANCES							
Total cooling capacity (1)	kW	29,2	41,5	48,3	66,2	85,9	109
	TON	8,3	11,8	13,7	18,8	24,4	31,0
Sensible cooling capacity (1)	kW	24,9	39,0	41,7	57,9	76,6	96,6
	TON	7,1	11,1	11,9	16,5	21,8	27,5
SHR (1)	%	85%	94%	86%	87%	89%	89%
Total absorbed power (1)	kW	8,0	12,5	13,4	18,9	26,1	32,1
EER (2)		3,65	3,32	3,60	3,50	3,29	3,40
COOLING CIRCUIT							
Cooling circuits	n°	1	1	1	2	2	2
Compressors	n°	1	1	1	2	2	2
WATERCOOLED CONDENSER							
Water flow (1)	l/s	1,65	2,38	2,75	3,75	4,90	6,26
	gpm	26,2	37,2	43,6	59,4	77,7	99,2
Total pressure drops (1)	kPa	31	37	36	37	36	39
	ft WG	10,3	12,3	12,0	12,3	12,0	13,0
Total pressure drops with Free-Cooling coil (1)	kPa	77	76	82	79	93	89
	ft WG	25,7	25,3	27,3	26,3	31,0	29,7
FREE-COOLING COIL							
Total cooling capacity (2)	kW	27,9	40,3	41,1	57,9	78,5	97,5
	TON	7,9	11,5	11,7	16,5	22,3	27,7
Sensible cooling capacity (2)	kW	24,9	38,7	39,0	54,8	73,6	92,0
	TON	7,1	11,0	11,1	15,6	20,9	26,2
SHR (2)	%	89%	96%	95%	95%	94%	94%
FAN SECTION							
Fans - STD	n°	1	2	2	2	3	4
Fans - High ESP fans	n°	1	2	2	3	3	4
Air flow (3)	m^3/h	6000	10000	10000	14200	19200	24000
	cfm	3530	5890	5890	8360	11300	14130
Max. available static pressure - STD version	Pa	240	135	135	135	120	40
	in WG	1,0	0,5	0,5	0,5	0,5	0,2
Max. available static pressure - High ESP version	Pa	400	310	310	310	250	250
	in WG	1,6	1,2	1,2	1,2	1,0	1,0
Filters	Type	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS							
Power supply	V/Ph/Hz	400/3+N/50					
SOUND PRESSURE							
FOCT - Top Air Discharge version (4)	dB(A)	70	73	73	74	76	73
FOCB - Bottom Air Discharge version (4)	dB(A)	65	68	68	69	71	68

ACCESSORIES & ADDITIONAL SECTIONS							
Electrical heating							
Steps	n°	2	2	2	2	2	2
Electrical power	kW	12	12	12	15	21	24
Hot water coil							
Heating capacity (5)	kW	9,8	13,0	13,0	17,7	24,5	31,6
	TON	2,8	3,7	3,7	5,0	7,0	9,0
Water flow (5)	l/s	0,47	0,62	0,62	0,85	1,17	1,51
	gpm	7,4	9,8	9,8	13,5	18,5	23,9
Total pressure drops (5)	kPa	23	36	36	35	43	41
	ft WG	7,7	12,0	12,0	11,7	14,3	13,7
Hot gas coil							
Heating capacity (6)	kW	10,5	10,5	10,5	14,3	19,8	25,6
Electrodes steam humidifier							
Nominal steam production	kg/h	8	8	8	8	15	15
Nominal power	kW	6,0	6,0	6,0	6,0	11,3	11,3

		1029	1041	1048	2066	2086	2110
DIMENSIONS							
L	mm	1350	1350	1350	1750	2225	2625
W	mm	890	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980	1980
WEIGHTS							
Transport weight FOCT - Top Air Discharge	kg	507	571	581	714	912	1081
Transport weight FOCB - Bottom Air Discharge	kg	525	588	599	743	941	1117
Operating weight FOCT - Top Air Discharge	kg	487	551	561	692	884	1048
Operating weight FOCB - Bottom Air Discharge	kg	505	568	579	721	913	1084

Note

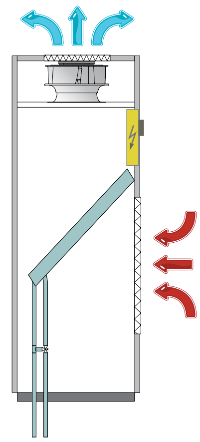
1. Ambient air temperature 24°C - R.H. 50%, water temperature 30°C / 35°C.
2. Ambient air temperature 24°C - R.H. 50%, inlet water temperature 10°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3745.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.
6. Ambient air temperature 20°C.

CLOSE CONTROL SYSTEMS

WOP

CHILLED WATER UNITS WITH EC INVERTER PLUG-FANS

Cooling capacity from 9 to 155 kW (from 2 to 44 TON)



Chilled water units. The Chiller can be watercooled or aircooled, with Free-Cooling technology too.
The liquid flow through the unit water coil is managed by a 3-way internal valve.
The WOP range features EC Inverter Plug-Fans; high ESP fans are also available as accessory.
The EC Inverter Plug-Fans allow consumptions reduction at partial loads up to 61% comparing to traditional units with radial fans, with the modulation of absorbed power depending on the real thermal load.
The WOP range is available in two air discharge versions: WOPT with top air discharge and WOPB with bottom air discharge.
WOP can operate at high water temperature (13/18°C) with dedicated HT accessory: coils are optimized for that setpoint to reach an higher energy efficiency.

EC INVERTER PLUG FAN

AIR DISCHARGE

WOPT... Top air discharge and frontal intake

WOPB... Bottom air discharge and upper intake

VERSIONS

WOP.../C Cooling only

WOP.../E Cooling and heating

WOP.../U Cooling and humidification

WOP.../D Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
HT	High water temperature operation 13/18 °C
CM	Scheduler
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
AT	Constant air flow regulation control
AT/P	Constant available static pressure regulation control
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote control display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

WOPT … TOP AIR DISCHARGE
WOPB … BOTTOM AIR DISCHARGE

		0009	0013	0018	0022	0027	0031	0036
PERFORMANCES								
Total cooling capacity (1)	kW	8,6	13,1	17,6	21,7	27,5	31,4	35,9
	TON	2,4	3,7	5,0	6,2	7,8	8,9	10,2
Sensible cooling capacity (1)	kW	7,7	11,7	15,2	17,6	23,1	25,3	35,6
	TON	2,2	3,3	4,3	5,0	6,6	7,2	10,1
SHR (1)	%	90%	89%	86%	81%	84%	81%	99%
Water flow (1)	l/s	0,41	0,63	0,84	1,04	1,31	1,50	1,72
	gpm	6,5	10,0	13,3	16,5	20,8	23,8	27,3
Total pressure drops (1)	kPa	37	37	39	41	45	47	40
	ft WG	12,3	12,3	13,0	13,7	15,0	15,7	13,3
UNIT PERFORMANCES WITH HT ACCESSORY								
Total cooling capacity (2)	kW	6,3	9,7	12,8	15,6	19,7	22,5	28,4
	TON	1,8	2,8	3,6	4,4	5,6	6,4	8,1
Sensible cooling capacity (2)	kW	6,3	9,7	12,8	14,8	19,2	21,4	28,4
	TON	1,8	2,8	3,6	4,2	5,5	6,1	8,1
SHR (2)	%	100%	100%	100%	95%	97%	95%	100%
Water flow (2)	l/s	0,30	0,46	0,61	0,75	0,94	1,08	1,36
	gpm	4,8	7,3	9,7	11,9	14,9	17,1	21,6
Total pressure drops (2)	kPa	27	39	41	43	37	43	36
	ft WG	9,0	13,0	13,7	14,3	12,3	14,3	12,0
FAN SECTION								
Fans	n°	1	1	1	1	1	1	1
Air flow (3)	m³/h	2500	3300	3900	3900	5600	5600	11500
	cfm	1470	1940	2300	2300	3300	3300	6770
Max. available static pressure - STD fans	Pa	410	200	160	110	90	70	150
	in WG	1,6	0,8	0,6	0,4	0,4	0,3	0,6
Max. available static pressure - High ESP fans	Pa	630	490	310	270	370	350	250
	in WG	2,5	2,0	1,2	1,1	1,5	1,4	1,0
Filters	type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz	230/1/50		400/3/50				
SOUND PRESSURE								
WOPT - Top Air Discharge version (4)	dB(A)	52	56	59	60	61	61	64
WOPB - Bottom Air Discharge version (4)	dB(A)	46	51	54	55	56	56	59

ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	3	3	3	3	3	3	3
Electrical power	kW	4,5	4,5	4,5	4,5	7,5	7,5	13,5
Hot water coil								
Heating capacity (5)	kW	3,4	3,9	4,3	4,4	6,0	6,0	25,8
	TON	1,0	1,1	1,2	1,3	1,7	1,7	7,3
Water flow (5)	l/s	0,16	0,19	0,21	0,21	0,29	0,29	1,23
	gpm	2,5	3,0	3,3	3,3	4,6	4,6	19,5
Total pressure drops (5)	kPa	19	25	30	31	29	29	39
	ft WG	6,3	8,3	10,0	10,3	9,7	9,7	13,0
Electrodes steam humidifier								
Nominal steam production	kg/h	4	4	4	4	4	4	8
Nominal power	kW	3,0	3,0	3,0	3,0	3,0	3,0	6,0

		0009	0013	0018	0022	0027	0031	0036
DIMENSIONS								
L	mm	675	675	675	675	875	875	1350
W	mm	675	675	675	675	675	675	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight WOPT - Top Air Discharge	kg	198	203	207	214	252	257	388
Transport weight WOPB - Bottom Air Discharge	kg	216	220	225	231	270	275	405
Operating weight WOPT - Top Air Discharge	kg	188	192	197	204	241	246	368
Operating weight WOPB - Bottom Air Discharge	kg	206	209	215	221	259	264	385

Notes

1. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 13°C / 18°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.

		0048	0057	0063	0069	0079	0089	0097
PERFORMANCES								
Total cooling capacity (1)	kW	47,7	56,6	63,4	69,3	79,1	88,9	96,8
	TON	13,6	16,1	18,0	19,7	22,5	25,3	27,5
Sensible cooling capacity (1)	kW	44,3	48,0	51,2	53,9	67,2	71,2	74,8
	TON	12,6	13,6	14,6	15,3	19,1	20,2	21,3
SHR (1)	%	93%	85%	81%	78%	85%	80%	77%
Water flow (1)	l/s	2,28	2,70	3,03	3,31	3,78	4,25	4,62
	gpm	36,1	42,8	48,0	52,5	59,9	67,4	73,2
Total pressure drops (1)	kPa	42	51	44	48	41	46	50
	ft WG	14,0	17,0	14,7	16,0	13,7	15,3	16,7
UNIT PERFORMANCES WITH HT ACCESSORY								
Total cooling capacity (2)	kW	36,1	41,5	46,4	50,0	58,3	64,9	70,1
	TON	10,3	11,8	13,2	14,2	16,6	18,5	19,9
Sensible cooling capacity (2)	kW	36,1	41,5	43,8	45,7	58,3	60,8	63,7
	TON	10,3	11,8	12,5	13,0	16,6	17,3	18,1
SHR (2)	%	100%	100%	94%	91%	100%	94%	91%
Water flow (2)	l/s	1,72	1,98	2,22	2,39	2,79	3,10	3,35
	gpm	27,3	31,4	35,2	37,9	44,2	49,1	53,1
Total pressure drops (2)	kPa	41	35	33	35	43	47	51
	ft WG	13,7	11,7	11,0	11,7	14,3	15,7	17,0
FAN SECTION								
Fans	n°	1	1	1	1	2	2	2
Air flow (3)	m³/h	11500	11500	11500	11500	16000	16000	16000
	cfm	6770	6770	6770	6770	9420	9420	9420
Max. available static pressure - STD fans	Pa	120	100	70	50	340	310	280
	in WG	0,5	0,4	0,3	0,2	1,4	1,2	1,1
Max. available static pressure - High ESP fans	Pa	230	200	180	140	520	490	490
	in WG	0,9	0,8	0,7	0,6	2,1	2,0	2,0
Filters	type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz				400/3/50			
SOUND PRESSURE								
WOPT - Top Air Discharge version (4)	dB(A)	64	64	65	65	60	60	61
WOPB - Bottom Air Discharge version (4)	dB(A)	59	59	60	60	55	55	56

		0048	0057	0063	0069	0079	0089	0097
ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	3	3	3	3	3	3	3
Electrical power	kW	13,5	13,5	13,5	13,5	16,5	16,5	16,5
Hot water coil								
Heating capacity (5)	kW	25,8	25,8	25,8	25,8	35,6	35,6	35,6
	TON	7,3	7,3	7,3	7,3	10,1	10,1	10,1
Water flow (5)	l/s	1,23	1,23	1,23	1,23	1,70	1,70	1,70
	gpm	19,5	19,5	19,5	19,5	26,9	26,9	26,9
Total pressure drops (5)	kPa	39	39	39	39	44	44	44
	ft WG	13,0	13,0	13,0	13,0	14,7	14,7	14,7
Electrodes steam humidifier								
Nominal steam production	kg/h	8	8	8	8	8	8	8
Nominal power	kW	6,0	6,0	6,0	6,0	6,0	6,0	6,0

		0048	0057	0063	0069	0079	0089	0097
DIMENSIONS								
L	mm	1350	1350	1350	1350	1750	1750	1750
W	mm	890	890	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight WOPT - Top Air Discharge	kg	398	408	419	433	501	514	536
Transport weight WOPB - Bottom Air Discharge	kg	416	426	437	451	530	544	565
Operating weight WOPT - Top Air Discharge	kg	379	389	399	411	479	492	508
Operating weight WOPB - Bottom Air Discharge	kg	397	407	417	429	508	522	537

Notes

1. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 13°C / 18°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.

WOPT … TOP AIR DISCHARGE
WOPB … BOTTOM AIR DISCHARGE

		0104	0117	0128	0142	0155
PERFORMANCES						
Total cooling capacity (1)	kW	104	117	128	142	155
	TON	29,6	33,3	36,4	40,4	44,1
Sensible cooling capacity (1)	kW	88,4	94,0	98,6	114	119
	TON	25,1	26,7	28,0	32,4	33,8
SHR (1)	%	85%	80%	77%	80%	77%
Water flow (1)	l/s	4,97	5,59	6,12	6,78	7,41
	gpm	78,8	88,6	97,0	108	118
Total pressure drops (1)	kPa	51	44	50	41	45
	ft WG	17,0	14,7	16,7	13,7	15,0
UNIT PERFORMANCES WITH HT ACCESSORY						
Total cooling capacity (2)	kW	76,5	85,3	92,4	104	112
	TON	21,8	24,3	26,3	29,6	31,8
Sensible cooling capacity (2)	kW	76,5	80,6	83,8	97,9	100
	TON	21,8	22,9	23,8	27,8	28,4
SHR (2)	%	100%	94%	91%	94%	89%
Water flow (2)	l/s	3,66	4,08	4,41	4,97	5,35
	gpm	58	64,7	69,9	78,8	84,8
Total pressure drops (2)	kPa	37	41	46	44	48
	ft WG	12,3	13,7	15,3	14,7	16,0
FAN SECTION						
Fans	n°	2	2	2	3	3
Air flow (3)	m³/h	21000	21000	21000	25500	25500
	cfm	12360	12360	12360	15010	15010
Max. available static pressure - STD fans	Pa	170	140	100	290	260
	in WG	0,7	0,6	0,4	1,2	1,0
Max. available static pressure - High ESP fans	Pa	300	270	240	430	400
	in WG	1,2	1,1	1,0	1,7	1,6
Filters	type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz			400/3/50		
SOUND PRESSURE						
WOPT - Top Air Discharge version (4)	dB(A)	66	66	66	64	65
WOPB - Bottom Air Discharge version (4)	dB(A)	61	61	61	59	60

		0104	0117	0128	0142	0155
ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	3	3	3	3	3
Electrical power	kW	22,5	22,5	22,5	27,0	27,0
Hot water coil						
Heating capacity (5)	kW	51,2	51,2	51,2	63,0	63,0
	TON	14,6	14,6	14,6	17,9	17,9
Water flow (5)	l/s	2,45	2,45	2,45	3,01	3,01
	gpm	38,8	38,8	38,8	47,7	47,7
Total pressure drops (5)	kPa	47	47	47	48	48
	ft WG	15,7	15,7	15,7	16,0	16,0
Electrodes steam humidifier						
Nominal steam production	kg/h	15	15	15	15	15
Nominal power	kW	11,3	11,3	11,3	11,3	11,3

		0104	0117	0128	0142	0155
DIMENSIONS						
L	mm	2225	2225	2225	2625	2625
W	mm	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight WOPT - Top Air Discharge	kg	592	641	659	731	753
Transport weight WOPB - Bottom Air Discharge	kg	621	670	688	767	788
Operating weight WOPT - Top Air Discharge	kg	565	608	626	698	720
Operating weight WOPB - Bottom Air Discharge	kg	594	637	655	734	755

Notes

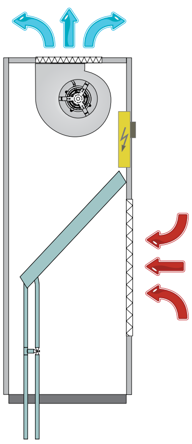
1. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 13°C / 18°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.

montair CLOSE CONTROL SYSTEMS

WOC

CHILLED WATER UNITS WITH RADIAL FANS

Cooling capacity from 9 to 155 kW (from 2 to 44 TON)



Chilled water units. The liquid Chiller can be watercooled or aircooled, with Free-Cooling technology too.
The liquid flow through the unit water coil is managed by a 3-way internal valve.
The WOC range features radial fans; high ESP fans are also available as accessory.
The WOC range is available in two air discharge versions: WOCT with top air discharge and WOCB with bottom air discharge.
WOC can operate at high water temperature (13/18°C) with dedicated HT accessory: coils are optimized for that setpoint to reach an higher energy efficiency.

AIR DISCHARGE

WOCT...	Top air discharge and frontal intake
WOCB...	Bottom air discharge and upper intake

VERSIONS

WOC.../C	Cooling only
WOC.../E	Cooling and heating
WOC.../U	Cooling and humidification
WOC.../D	Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
HT	High water temperature operation 13/18 °C
CM	Scheduler
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote control display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

WOCT … TOP AIR DISCHARGE
WOCB … BOTTOM AIR DISCHARGE

		0009	0013	0018	0022	0027	0031	0036
PERFORMANCES								
Total cooling capacity (1)	kW	8,6	13,1	17,6	21,7	27,5	31,4	35,9
	TON	2,4	3,7	5,0	6,2	7,8	8,9	10,2
Sensible cooling capacity (1)	kW	7,7	11,7	15,2	17,6	23,1	25,3	35,6
	TON	2,2	3,3	4,3	5,0	6,6	7,2	10,1
SHR (1)	%	90%	89%	86%	81%	84%	81%	99%
Water flow (1)	l/s	0,41	0,63	0,84	1,04	1,31	1,50	1,72
	gpm	6,5	10,0	13,3	16,5	20,8	23,8	27,3
Total pressure drops (1)	kPa	37	37	39	41	45	47	40
	ft WG	12,3	12,3	13,0	13,7	15,0	15,7	13,3
UNIT PERFORMANCES WITH HT ACCESSORY								
Total cooling capacity (2)	kW	6,3	9,7	12,8	15,6	19,7	22,5	28,4
	TON	1,8	2,8	3,6	4,4	5,6	6,4	8,1
Sensible cooling capacity (2)	kW	6,3	9,7	12,8	14,8	19,2	21,4	28,4
	TON	1,8	2,8	3,6	4,2	5,5	6,1	8,1
SHR (2)	%	100%	100%	100%	95%	97%	95%	100%
Water flow (2)	l/s	0,30	0,46	0,61	0,75	0,94	1,08	1,36
	gpm	4,8	7,3	9,7	11,9	14,9	17,1	21,6
Total pressure drops (2)	kPa	27	39	41	43	37	43	36
	ft WG	9,0	13,0	13,7	14,3	12,3	14,3	12,0
FAN SECTION								
Fans - STD fans	n°	1	1	1	1	1	1	2
Fans - High ESP fans	n°	-	-	-	1	1	2	2
Air flow (3)	m³/h	2500	3300	3900	3900	5600	5600	11500
	cfm	1470	1940	2300	2300	3300	3300	6770
Max. available static pressure - STD fans	Pa	220	70	60	40	130	110	170
	in WG	0,9	0,3	0,2	0,2	0,5	0,4	0,7
Max. available static pressure - High ESP fans	Pa	-	-	-	-	300	280	340
	in WG	-	-	-	-	1,2	1,1	1,4
Filters	type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz	230/1/50		400/3+N/50				
SOUND PRESSURE								
WOCT - Top Air Discharge version (4)	dB(A)	64	61	65	65	71	71	74
WOCB - Bottom Air Discharge version (4)	dB(A)	59	56	60	60	66	66	69

ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	2	2	2	2	2	2	2
Electrical power	kW	4,5	4,5	4,5	4,5	7,5	7,5	12
Hot water coil								
Heating capacity (5)	kW	3,4	3,9	4,3	4,4	6,0	6,0	25,8
	TON	1,0	1,1	1,2	1,3	1,7	1,7	7,3
Water flow (5)	l/s	0,16	0,19	0,21	0,21	0,29	0,29	1,23
	gpm	2,5	3,0	3,3	3,3	4,6	4,6	19,5
Total pressure drops (5)	kPa	19	25	30	31	29	29	39
	ft WG	6,3	8,3	10,0	10,3	9,7	9,7	13,0
Electrodes steam humidifier								
Nominal steam production	kg/h	4	4	4	4	4	4	8
Nominal power	kW	3,0	3,0	3,0	3,0	3,0	3,0	6,0

		0009	0013	0018	0022	0027	0031	0036
DIMENSIONS								
L	mm	675	675	675	675	875	875	1350
W	mm	675	675	675	675	675	675	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight WOCT - Top Air Discharge	kg	201	210	214	221	266	271	417
Transport weight WOCB - Bottom Air Discharge	kg	219	227	232	238	284	289	434
Operating weight WOCT - Top Air Discharge	kg	191	199	204	211	255	260	397
Operating weight WOCB - Bottom Air Discharge	kg	209	217	222	228	273	278	415

Notes

1. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 13°C / 18°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.

montair CLOSE CONTROL SYSTEMS

WOC

WOCT ... TOP AIR DISCHARGE
WOCB ... BOTTOM AIR DISCHARGE

		0048	0057	0063	0069	0079	0089	0097
PERFORMANCES								
Total cooling capacity (1)	kW	47,7	56,6	63,4	69,3	79,1	88,9	96,8
	TON	13,6	16,1	18,0	19,7	22,5	25,3	27,5
Sensible cooling capacity (1)	kW	44,3	48,0	51,2	53,9	67,2	71,2	74,8
	TON	12,6	13,6	14,6	15,3	19,1	20,2	21,3
SHR (1)	%	93%	85%	81%	78%	85%	80%	77%
Water flow (1)	l/s	2,28	2,70	3,03	3,31	3,78	4,25	4,62
	gpm	36,1	42,8	48,0	52,5	59,9	67,4	73,2
Total pressure drops (1)	kPa	42	51	44	48	41	46	50
	ft WG	14,0	17,0	14,7	16,0	13,7	15,3	16,7
UNIT PERFORMANCES WITH HT ACCESSORY								
Total cooling capacity (2)	kW	36,1	41,5	46,4	50,0	58,3	64,9	70,1
	TON	10,3	11,8	13,2	14,2	16,6	18,5	19,9
Sensible cooling capacity (2)	kW	36,1	41,5	43,8	45,7	58,3	60,8	63,7
	TON	10,3	11,8	12,5	13,0	16,6	17,3	18,1
SHR (2)	%	100%	100%	94%	91%	100%	94%	91%
Water flow (2)	l/s	1,72	1,98	2,22	2,39	2,79	3,10	3,35
	gpm	27,3	31,4	35,2	37,9	44,2	49,1	53,1
Total pressure drops (2)	kPa	41	35	33	35	43	47	51
	ft WG	13,7	11,7	11,0	11,7	14,3	15,7	17,0
FAN SECTION								
Fans - STD fans	n°	2	2	2	2	2	2	2
Fans - High ESP fans	n°	2	2	2	2	2	2	2
Air flow (3)	m³/h	11500	11500	11500	11500	16000	16000	16000
	cfm	6770	6770	6770	6770	9420	9420	9420
Max. available static pressure - STD fans	Pa	140	120	80	60	90	70	20
	in WG	0,6	0,5	0,3	0,2	0,4	0,3	0,1
Max. available static pressure - High ESP fans	Pa	320	280	250	220	310	280	260
	in WG	1,3	1,1	1,0	0,9	1,2	1,1	1,0
Filters	type	M5	M5	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS								
Power supply	V/Ph/Hz				400/3+N/50			
SOUND PRESSURE								
WOCT - Top Air Discharge version (4)	dB(A)	74	74	74	74	74	74	74
WOCB - Bottom Air Discharge version (4)	dB(A)	69	69	69	69	69	69	69

ACCESSORIES & ADDITIONAL SECTIONS								
Electrical heating								
Steps	n°	2	2	2	2	2	2	2
Electrical power	kW	12	12	12	12	15	15	15
Hot water coil								
Heating capacity (5)	kW	25,8	25,8	25,8	25,8	35,6	35,6	35,6
	TON	7,3	7,3	7,3	7,3	10,1	10,1	10,1
Water flow (5)	l/s	1,23	1,23	1,23	1,23	1,70	1,70	1,70
	gpm	19,5	19,5	19,5	19,5	26,9	26,9	26,9
Total pressure drops (5)	kPa	39	39	39	39	44	44	44
	ft WG	13,0	13,0	13,0	13,0	14,7	14,7	14,7
Electrodes steam humidifier								
Nominal steam production	kg/h	8	8	8	8	8	8	8
Nominal power	kW	6,0	6,0	6,0	6,0	6,0	6,0	6,0

		0048	0057	0063	0069	0079	0089	0097
DIMENSIONS								
L	mm	1350	1350	1350	1350	1750	1750	1750
W	mm	890	890	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980	1980	1980
WEIGHTS								
Transport weight WOCT - Top Air Discharge	kg	427	437	448	462	513	526	548
Transport weight WOCB - Bottom Air Discharge	kg	445	455	466	480	542	556	577
Operating weight WOCT - Top Air Discharge	kg	408	418	428	440	491	504	520
Operating weight WOCB - Bottom Air Discharge	kg	425	435	446	458	520	534	550

Notes

1. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 13°C / 18°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.

WOCT … TOP AIR DISCHARGE
WOCB … BOTTOM AIR DISCHARGE

		0104	0117	0128	0142	0155
PERFORMANCES						
Total cooling capacity (1)	kW	104	117	128	142	155
	TON	29,6	33,3	36,4	40,4	44,1
Sensible cooling capacity (1)	kW	88,4	94,0	98,6	114	119
	TON	25,1	26,7	28	32,4	33,8
SHR (1)	%	85%	80%	77%	80%	77%
Water flow (1)	l/s	4,97	5,59	6,12	6,78	7,41
	gpm	78,8	88,6	97,0	108	118
Total pressure drops (1)	kPa	51	44	50	41	45
	ft WG	17,0	14,7	16,7	13,7	15,0
UNIT PERFORMANCES WITH HT ACCESSORY						
Total cooling capacity (2)	kW	76,5	85,3	92,4	104	112
	TON	21,8	24,3	26,3	29,6	31,8
Sensible cooling capacity (2)	kW	76,5	80,6	83,8	97,9	100
	TON	21,8	22,9	23,8	27,8	28,4
SHR (2)	%	100%	94%	91%	94%	89%
Water flow (2)	l/s	3,66	4,08	4,41	4,97	5,35
	gpm	58	64,7	69,9	78,8	84,8
Total pressure drops (2)	kPa	37	41	46	44	48
	ft WG	12,3	13,7	15,3	14,7	16,0
FAN SECTION						
Fans - STD fans	n°	2	3	3	3	3
Fans - High ESP fans	n°	2	3	3	3	3
Air flow (3)	m³/h	21000	21000	21000	25500	25500
	cfm	12360	12360	12360	15010	15010
Max. available static pressure - STD fans	Pa	80	50	40	60	40
	in WG	0,3	0,2	0,2	0,2	0,2
Max. available static pressure - High ESP fans	Pa	200	170	140	200	170
	in WG	0,8	0,7	0,6	0,8	0,7
Filters	type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz	400/3+N/50				
SOUND PRESSURE						
WOCT - Top Air Discharge version (4)	dB(A)	77	77	77	72	72
WOCB - Bottom Air Discharge version (4)	dB(A)	72	72	72	67	67

		0104	0117	0128	0142	0155
ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	2	2	2	2	2
Electrical power	kW	21	21	21	24	24
Hot water coil						
Heating capacity (5)	kW	51,2	51,2	51,2	63,0	63,0
	TON	14,6	14,6	14,6	17,9	17,9
Water flow (5)	l/s	2,45	2,45	2,45	3,01	3,01
	gpm	38,8	38,8	38,8	47,7	47,7
Total pressure drops (5)	kPa	47	47	47	48	48
	ft WG	15,7	15,7	15,7	16,0	16,0
Electrodes steam humidifier						
Nominal steam production	kg/h	15	15	15	15	15
Nominal power	kW	11,3	11,3	11,3	11,3	11,3

		0104	0117	0128	0142	0155
DIMENSIONS						
L	mm	2225	2225	2225	2625	2625
W	mm	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight WOCT - Top Air Discharge	kg	633	659	677	778	800
Transport weight WOCB - Bottom Air Discharge	kg	662	688	706	814	835
Operating weight WOCT - Top Air Discharge	kg	606	626	644	745	767
Operating weight WOCB - Bottom Air Discharge	kg	635	655	673	781	802

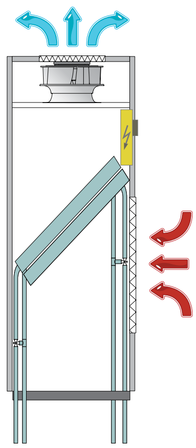
Notes

1. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
2. Ambient air temperature 24°C - R.H. 50%, water temperature 13°C / 18°C.
3. Air flow calculated with Available Static Pressure of 20 Pa.
4. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
5. Ambient air temperature 20°C, water temperature 45°C / 40°C.

DOP

CHILLED WATER DUAL COIL UNITS WITH EC INVERTER PLUG-FAN

Cooling capacity from 29 to 93 kW (from 8 to 26 TON)



EC INVERTER PLUG FAN

Dual Coil units with two independent cooling circuits, both with chilled water. The circuits are connected with two watercooled or aircooled liquid Chillers, with Free-Cooling technology too. The two circuits are separated with non-simultaneous start-up, for back-up operation.
The DOP range features EC Inverter Plug-Fans; high ESP fans are also available as accessory.
The EC Inverter Plug-Fans allow consumptions reduction at partial loads up to 61% comparing to traditional units with centrifugal fans, with the modulation of absorbed power depending on the real thermal load.
The DOP range is available in two air discharge versions: DOPT with top air discharge and DOPB with bottom air discharge.

AIR DISCHARGE

DOPT...	Top air discharge and frontal intake
DOPB...	Bottom air discharge and upper intake

VERSIONS

DOP.../C	Cooling only
DOP.../E	Cooling and heating
DOP.../U	Cooling and humidification
DOP.../D	Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
CM	Scheduler
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
AT	Constant air flow regulation control
AT/P	Constant available static pressure regulation control
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote control display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

DOPT … TOP AIR DISCHARGE
DOPB … BOTTOM AIR DISCHARGE

		0028	0038	0056	0077	0093
PRIMARY COOLING CIRCUIT PERFORMANCES						
Total cooling capacity (1)	kW	28,5	38,1	55,8	76,6	93,0
	TON	8,1	10,8	15,9	21,8	26,4
Sensible cooling capacity (1)	kW	28,5	35,8	51,7	70,8	86,0
	TON	8,1	10,2	14,7	20,1	24,5
SHR (1)	%	100%	94%	93%	92%	92%
Water flow (1)	l/s	1,36	1,82	2,67	3,66	4,44
	gpm	21,6	28,8	42,3	58,0	70,4
Total pressure drops (1)	kPa	24	24	33	33	38
	ft WG	8,0	8,0	11,0	11,0	12,7
SECONDARY COOLING CIRCUIT PERFORMANCES						
Total cooling capacity (1)	kW	28,5	38,1	55,8	76,6	93,0
	TON	8,1	10,8	15,9	21,8	26,4
Sensible cooling capacity (1)	kW	28,5	35,8	51,7	70,8	86,0
	TON	8,1	10,2	14,7	20,1	24,5
SHR (1)	%	100%	94%	93%	92%	92%
Water flow (1)	l/s	1,36	1,82	2,67	3,66	4,44
	gpm	21,6	28,8	42,3	58,0	70,4
Total pressure drops (1)	kPa	24	24	33	33	38
	ft WG	8,0	8,0	11,0	11,0	12,7
FAN SECTION						
Fans	n°	1	1	2	2	3
Air flow (2)	m³/h	9700	9700	13800	18800	22800
	cfm	5710	5710	8120	11070	13420
Max. available static pressure - STD fans	Pa	290	200	400	230	340
	in WG	1,2	0,8	1,6	0,9	1,4
Max. available static pressure - High ESP fans	Pa	480	400	550	400	510
	in WG	1,9	1,6	2,2	1,6	2,0
Filters	type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz			400/3/50		
SOUND PRESSURE						
DOPT - Top Air Discharge version (3)	dB(A)	60	61	58	64	61
DOPB - Bottom Air Discharge version (3)	dB(A)	55	56	53	59	56

ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	3	3	3	3	3
Electrical power	kW	13,5	13,5	16,5	22,5	27,0
Hot water coil						
Heating capacity (4)	kW	26,0	26,0	35,8	51,4	62,9
	TON	7,4	7,4	10,2	14,6	17,9
Water flow (4)	l/s	1,24	1,24	1,71	2,46	3,01
	gpm	19,7	19,7	27,1	39,0	47,7
Total pressure drops (4)	kPa	40	40	44	48	48
	ft WG	13,3	13,3	14,7	16,0	16,0
Electrodes steam humidifier						
Nominal steam production	kg/h	8	8	8	15	15
Nominal power	kW	6,0	6,0	6,0	11,3	11,3

		0028	0038	0056	0077	0093
DIMENSIONS						
L	mm	1350	1350	1750	2225	2625
W	mm	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight DOPT - Top Air Discharge	kg	473	499	562	752	891
Transport weight DOPB - Bottom Air Discharge	kg	491	517	592	782	927
Operating weight DOPT - Top Air Discharge	kg	453	477	540	719	858
Operating weight DOPB - Bottom Air Discharge	kg	471	495	570	749	894

Notes

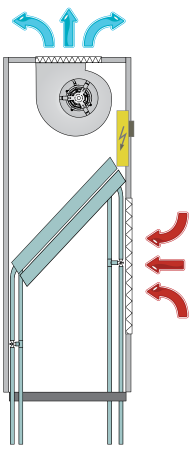
1. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
2. Air flow calculated with Available Static Pressure of 20 Pa.
3. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
4. Ambient air temperature 20°C, water temperature 45°C / 40°C.

CLOSE CONTROL SYSTEMS

DOC

CHILLED WATER DUAL COIL UNITS WITH RADIAL FANS

Cooling capacity from 29 to 93 kW (from 8 to 26 TON)



Dual Coil units with two independent cooling circuits, both with chilled water. The circuits are connected with two watercooled or aircooled liquid Chillers, with Free-Cooling technology too. The two circuits are separated with non-simultaneous start-up, for back-up operation.
The DOC range features radial fans; high ESP fans are also available as accessory.
The DOC range is available in two air discharge versions: DOCT with top air discharge and DOCT with bottom air discharge.

AIR DISCHARGE

DOCT... Top air discharge and frontal intake

DOCB... Bottom air discharge and upper intake

VERSIONS

DOC.../C Cooling only

DOC.../E Cooling and heating

DOC.../U Cooling and humidification

DOC.../D Cooling, heating, humidification and dehumidification

ACCESSORIES

Factory Fitted Accessories

AP	High ESP fans
CM	Scheduler
AR	Air renewal inlet wih filter
AF	Filter F7 efficiency
PF	Differential pressure switch filters control
EH	Electrical heating with step regulation
WS	Hot water heating coil with 3-way valve
UMI	Electrodes steam humidifier
SA	Water sensor
IS	Modbus RTU protocol, RS485 serial interface
IS/B	BACnet MSTP protocol, RS485 serial interface
IS/BT	BACnet TCP/IP protocol, Ethernet port
IS/L	LonWorks protocol, FFT-10 serial interface
WM	Web Monitoring

Loose Accessories

MP	Condensing drain pump
MP/U	Condensing and humidifier drain pump
FF	Fire sensor
FM	Smoke sensor
CR	Remote control display
ZP	Adjustable baseframe with shock absorbers
ZA	Adjustable baseframe with shock absorbers and deflector (mod. B only)
BM	Top discharge plenum with grid (mod. T only)
DM	Bottom discharge plenum with grid (mod. B only)
BV	Bottom discharge plenum with fan dampers

DOCT … TOP AIR DISCHARGE
DOCB … BOTTOM AIR DISCHARGE

		0028	0038	0056	0077	0093
PRIMARY COOLING CIRCUIT PERFORMANCES						
Total cooling capacity (1)	kW	28,5	38,1	55,8	76,6	93,0
	TON	8,1	10,8	15,9	21,8	26,4
Sensible cooling capacity (1)	kW	28,5	35,8	51,7	70,8	86,0
	TON	8,1	10,2	14,7	20,1	24,5
SHR (1)	%	100%	94%	93%	92%	92%
Water flow (1)	l/s	1,36	1,82	2,67	3,66	4,44
	gpm	21,6	28,8	42,3	58,0	70,4
Total pressure drops (1)	kPa	24	24	33	33	38
	ft WG	8,0	8,0	11,0	11,0	12,7
SECONDARY COOLING CIRCUIT PERFORMANCES						
Total cooling capacity (1)	kW	28,5	38,1	55,8	76,6	93,0
	TON	8,1	10,8	15,9	21,8	26,4
Sensible cooling capacity (1)	kW	28,5	35,8	51,7	70,8	86,0
	TON	8,1	10,2	14,7	20,1	24,5
SHR (1)	%	100%	94%	93%	92%	92%
Water flow (1)	l/s	1,36	1,82	2,67	3,66	4,44
	gpm	21,6	28,8	42,3	58,0	70,4
Total pressure drops (1)	kPa	24	24	33	33	38
	ft WG	8,0	8,0	11,0	11,0	12,7
FAN SECTION						
Fans - STD fans	n°	2	2	2	3	4
Fans - High ESP fans	n°	2	2	3	3	4
Air flow (2)	m³/h	9700	9700	13800	18800	22800
	cfm	5710	5710	8120	11070	13420
Max. available static pressure - STD fans	Pa	250	170	190	160	120
	in WG	1,0	0,7	0,8	0,6	0,5
Max. available static pressure - High ESP fans	Pa	440	350	360	270	300
	in WG	1,8	1,4	1,4	1,1	1,2
Filters	type	M5	M5	M5	M5	M5
ELECTRICAL CHARACTERISTICS						
Power supply	V/Ph/Hz	400/3/50				
SOUND PRESSURE						
DOCT - Top Air Discharge version (3)	dB(A)	72	72	70	75	71
DOCB - Bottom Air Discharge version (3)	dB(A)	67	67	65	70	66

		0028	0038	0056	0077	0093
ACCESSORIES & ADDITIONAL SECTIONS						
Electrical heating						
Steps	n°	2	2	2	2	2
Electrical power	kW	12	12	15	21	24
Hot water coil						
Heating capacity (4)	kW	26,0	26,0	35,8	51,4	62,9
	TON	7,4	7,4	10,2	14,6	17,9
Water flow (4)	l/s	1,24	1,24	1,71	2,46	3,01
	gpm	19,7	19,7	27,1	39,0	47,7
Total pressure drops (4)	kPa	40	40	44	48	48
	ft WG	13,3	13,3	14,7	16,0	16,0
Electrodes steam humidifier						
Nominal steam production	kg/h	8	8	8	15	15
Nominal power	kW	6,0	6,0	6,0	11,3	11,3

		0028	0038	0056	0077	0093
DIMENSIONS						
L	mm	1350	1350	1750	2225	2625
W	mm	890	890	890	890	890
H	mm	1980	1980	1980	1980	1980
WEIGHTS						
Transport weight DOCT - Top Air Discharge	kg	502	528	574	793	938
Transport weight DOCB - Bottom Air Discharge	kg	520	546	604	823	974
Operating weight DOCT - Top Air Discharge	kg	482	506	552	760	905
Operating weight DOCB - Bottom Air Discharge	kg	500	524	582	790	941

Notes

1. Ambient air temperature 24°C - R.H. 50%, water temperature 7°C / 12°C.
2. Air flow calculated with Available Static Pressure of 20 Pa.
3. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.
4. Ambient air temperature 20°C, water temperature 45°C / 40°C.

CLOSE
CONTROL
SYSTEMS

CHAPTER 3

CLOSE
CONTROL
SYSTEMS

UCM

REMOTE CONDENSER

Remote aircooled Condensers with axial fans to be combined with Close Control units of XIP - TIP - XOP - XOC - TOP - TOC series.
The units are available in three different configurations depending on the noise level required: Standard, Silenced (SL) and Super silenced (SSL). The units are equipped with the latest generation axial fans, with motor fan shrouds having a large radius of curvature to eliminate all the air flow turbulence and with larger plenum to uniform the air distribution on the cooling coil.
The Remote Condensers are provided with all necessary wiring and electrical protection already on board; the Condensing Control / Fan Speed Control is available as accessory.
The units can be installed with either horizontal or vertical air delivery, with dedicated supports (SVV), available as accessory.

ACCESSORIES

Loose Accessories

SVV	Supports for vertical air flow versions
FR	Fan speed control

		1512	1513	1514	1522	1523	1524	1623M	1622T	1623T	1632	1633
UCM												
Air flow	m³/h	6800	6200	5800	13600	12400	11600	16500	28200	26500	42300	39750
	cfm	4000	3650	3410	8000	7300	6830	9710	16600	15600	24900	23400
Liquid line	Ø	12	16	16	18	18	18	18	18	22	22	22
Gas line	Ø	16	18	18	28	28	28	28	28	35	35	35
Cooling circuits	n°	1	1	1	1	1	1	1	1	1	1	1
Power supply	V/Ph/Hz				230/1/50					400/3/50		
Absorbed power	kW	0,68	0,68	0,68	1,36	1,36	1,36	5,24	3,94	3,94	5,91	5,91
Fans	n°	1	1	1	2	2	2	2	2	2	3	3
Sound pressure (1)	db(A)	46	46	46	49	49	49	44	54	54	56	56

		1634	2622	2623	2624	2633	2634	2643	2644	2834	2843	2844
UCM												
Air flow	m³/h	36300	28200	26500	24300	39750	36300	53000	48400	48000	68800	64000
	cfm	21370	16600	15600	14300	23400	21370	31190	28490	28250	40490	37670
Liquid line	Ø	22	2x16	2x18	2x18	2x18	2x18	2x18	2x22	2x22	2x22	2x22
Gas line	Ø	35	2x22	2x28	2x28	2x28	2x28	2x28	2x35	2x35	2x35	2x35
Cooling circuits	n°	1	2	2	2	2	2	2	2	2	2	2
Power supply	V/Ph/Hz						400/3/50					
Absorbed power	kW	5,91	3,94	3,94	3,94	5,91	5,91	7,88	7,88	5,82	7,76	7,76
Fans	n°	3	2	2	2	3	3	4	4	3	4	4
Sound pressure (1)	db(A)	57	54	54	55	56	57	57	58	52	53	53

		1512	1513	1514	1522	1523	1524	1623M	1622T	1623T	1632	1633
DIMENSIONS												
L	mm	1200	1200	1200	1900	1900	1900	2300	2300	2300	3200	3200
W	mm	960	960	960	960	960	960	960	960	960	960	960
H	mm	800	800	800	800	800	800	1050	1050	1050	1050	1050
WEIGHTS												
Transport weight	kg	94	97	101	146	152	159	215	224	235	319	336
Operating weight	kg	76	79	83	117	124	130	172	181	193	260	277

		1634	2622	2623	2624	2633	2634	2643	2644	2834	2843	2844
DIMENSIONS												
L	mm	3200	2290	2290	2290	3200	3200	4100	4100	3900	5000	5000
W	mm	960	960	960	960	960	960	960	960	1290	1290	1290
H	mm	1050	1050	1050	050	1050	1050	1050	1050	1380	1380	1380
WEIGHTS												
Transport weight	kg	353	224	235	246	336	353	437	460	464	573	608
Operating weight	kg	294	181	193	204	277	294	362	384	394	484	518

Notes

1. Sound pressure level measured in free field conditions at 10 m from the unit. According to ISO 3744.

N.B. Combinations with Close Controls models are specified on the dedicated Close Control pages.

UCM/SL

SILENCED REMOTE CONDENSER

Remote aircooled Condensers with axial fans to be combined with Close Control units of XIP - TIP - XOP - XOC - TOP - TOC series.
The units are available in three different configurations depending on the noise level required: Standard, Silenced (SL) and Super silenced (SSL). The units are equipped with the latest generation axial fans, with motor fan shrouds having a large radius of curvature to eliminate all the air flow turbulence and with larger plenum to uniform the air distribution on the cooling coil.
The Remote Condensers are provided with all necessary wiring and electrical protection already on board; the Condensing Control / Fan Speed Control is available as accessory.
The units can be installed with either horizontal or vertical air delivery, with dedicated supports (SVV), available as accessory.

ACCESSORIES

Loose Accessories

SVV	Supports for vertical air flow versions
FR	Fan speed control

		1512	1513	1522	1523	1622M	1623M	1622T	1623T	1624
UCM/SL										
Air flow	m^3/h	4500	4000	9000	8000	17800	16500	18200	16800	15500
	cfm	2650	2350	5300	4710	10480	9710	10710	9890	9120
Liquid line	Ø	12	16	18	18	18	22	18	22	22
Gas line	Ø	16	18	28	28	28	35	28	35	35
Cooling circuits	n°	1	1	1	1	1	1	1	1	1
Power supply	V/Ph/Hz	230/1/50						400/3/50		
Absorbed power	kW	0,22	0,22	0,44	0,44	5,24	5,24	1,20	1,20	1,20
Fans	n°	1	1	2	2	2	2	2	2	2
Sound pressure (1)	db(A)	36	36	39	39	44	44	44	44	44

		1632	1633	1634	1643	1644	2622	2623	2624	2632
UCM/SL										
Air flow	m^3/h	27300	25200	23250	33600	31000	18200	17000	15700	27300
	cfm	16070	14830	13680	19780	18250	10710	10010	9240	16070
Liquid line	Ø	22	22	22	22	22	2x16	2x18	2x18	2x18
Gas line	Ø	35	35	35	35	35	2x22	2x28	2x28	2x28
Cooling circuits	n°	1	1	1	1	1	2	2	2	2
Power supply	V/Ph/Hz	400/3/50								
Absorbed power	kW	1,80	1,80	1,80	2,40	2,40	1,20	1,20	1,20	1,80
Fans	n°	3	3	3	4	4	2	2	2	3
Sound pressure (1)	db(A)	46	46	46	47	47	44	44	44	46

		2633	2634	2643	2644	2834	2843	2844	2853	2854
UCM/SL										
Air flow	m^3/h	25500	23000	34000	30650	35000	50000	44000	62500	55000
	cfm	15010	13540	20010	18040	20600	29430	25900	36790	32370
Liquid line	Ø	2x18	2x18	2x18	2x22	2x22	2x22	2x22	2x22	2x22
Gas line	Ø	2x28	2x28	2x28	2x35	2x35	2x35	2x35	2x35	2x35
Cooling circuits	n°	2	2	2	2	2	2	2	2	2
Power supply	V/Ph/Hz	400/3/50								
Absorbed power	kW	1,80	1,80	2,40	2,40	2,67	3,56	3,56	4,45	4,45
Fans	n°	3	3	4	4	3	4	4	5	5
Sound pressure (1)	db(A)	46	46	47	47	45	47	47	48	48

		1512	1513	1522	1523	1622M	1623M	1622T	1623T	1624
DIMENSIONS										
L	mm	1200	1200	1900	1900	2300	2300	2300	2300	2300
W	mm	960	960	960	960	960	960	960	960	960
H	mm	800	800	800	800	1050	1050	1050	1050	1050
WEIGHTS										
Transport weight	kg	91	94	140	146	203	215	203	214	226
Operating weight	kg	73	76	111	118	161	172	161	172	183

		1632	1633	1634	1643	1644	2622	2623	2624	2632
DIMENSIONS										
L	mm	3200	3200	3200	4100	4100	2300	2300	2300	3200
W	mm	960	960	960	960	960	960	960	960	960
H	mm	1050	1050	1050	1050	1050	1050	1050	1050	1050
WEIGHTS										
Transport weight	kg	291	305	322	396	418	203	214	226	288
Operating weight	kg	232	246	263	320	343	161	172	183	229

		2633	2634	2643	2644	2834	2843	2844	2853	2854
DIMENSIONS										
L	mm	3200	3200	4100	4100	3900	5000	5000	6100	6100
W	mm	960	960	960	960	1290	1290	1290	1290	1290
H	mm	1050	1050	1050	1050	1380	1380	1380	1380	1380
WEIGHTS										
Transport weight	kg	305	322	396	418	464	573	608	714	757
Operating weight	kg	246	263	320	343	394	484	518	604	648

Notes

1. Sound pressure level measured in free field conditions at 10 m from the unit. According to ISO 3744.

N.B. Combinations with Close Controls models are specified on the dedicated Close Control pages.

UCM/SSL

SUPER SILENCED REMOTE CONDENSER

SSL R410A

Remote aircooled Condensers with axial fans to be combined with Close Control units of XIP - TIP - XOP - XOC - TOP - TOC series.
The units are available in three different configurations depending on the noise level required: Standard, Silenced (SL) and Super silenced (SSL). The units are equipped with the latest generation axial fans, with motor fan shrouds having a large radius of curvature to eliminate all the air flow turbulence and with larger plenum to uniform the air distribution on the cooling coil.
The Remote Condensers are provided with all necessary wiring and electrical protection already on board; the Condensing Control / Fan Speed Control is available as accessory.
The units can be installed with either horizontal or vertical air delivery, with dedicated supports (SVV), available as accessory.

ACCESSORIES

Loose Accessories

SVV	Supports for vertical air flow versions
FR	Fan speed control

UCM/SSL		1513	1522	1523	1622	1623	1624	1633	1634
Air flow	m³/h	2950	6700	5900	13300	12200	9800	15900	14700
	cfm	1740	3940	3470	7830	7180	5770	9360	8650
Liquid line	Ø	16	18	18	18	22	22	22	22
Gas line	Ø	18	28	28	28	35	35	35	35
Cooling circuits	n°	1	1	1	1	1	1	1	1
Power supply	V/Ph/Hz			230/1/50				400/3/50	
Absorbed power	kW	0,13	0,26	0,26	0,73	0,73	0,47	0,71	0,71
Fans	n°	1	2	2	2	2	2	3	3
Sound pressure (1)	db(A)	30,0	33,0	33,0	39,0	39,0	36,0	38,0	38,0

UCM/SSL		1643	1644	1833	1834	2624	2633	2634	2643
Air flow	m³/h	2100	19800	30000	27000	9900	16000	14850	21333
	cfm	12360	11650	17660	15890	5830	9420	8740	12560
Liquid line	Ø	22	22	22	22	2x18	2x18	2x18	2x18
Gas line	Ø	35	35	35	35	2x28	2x28	2x28	2x28
Cooling circuits	n°	1	1	1	1	2	2	2	2
Power supply	V/Ph/Hz				400/3/50				
Absorbed power	kW	0,94	0,94	1,77	1,77	0,47	0,71	0,71	0,94
Fans	n°	4	4	3	3	2	3	3	4
Sound pressure (1)	db(A)	39,0	39,0	40,0	40,0	36,0	38,0	38,0	39,0

UCM/SSL		2644	2833	2842	2843	2844	2853	2854
Air flow	m³/h	19800	29700	45000	39600	35750	49500	44650
	cfm	11650	17480	26490	23310	21040	29130	26280
Liquid line	Ø	2x22	2x22	2x22	2x22	2x22	2x22	2x22
Gas line	Ø	2x35	2x35	2x35	2x35	2x35	2x35	2x35
Cooling circuits	n°	2	2	2	2	2	2	2
Power supply	V/Ph/Hz				400/3/50			
Absorbed power	kW	0,94	1,77	2,36	2,36	2,36	2,95	2,95
Fans	n°	4	3	4	4	4	5	5
Sound pressure (1)	db(A)	39,0	40,0	41,0	41,0	41,0	42,0	42,0

		1513	1522	1523	1622	1623	1624	1633	1634
DIMENSIONS									
L	mm	1200	1900	1900	2300	2300	2300	3200	3200
W	mm	960	960	960	960	960	960	960	960
H	mm	800	800	800	1050	1050	1050	1050	1050
WEIGHTS									
Transport weight	kg	119	142	148	205	217	226	306	323
Operating weight	kg	101	113	120	163	174	184	247	264

		1643	1644	1833	1834	2624	2633	2634	2643
DIMENSIONS									
L	mm	4100	4100	3900	3900	2300	3200	3200	4100
W	mm	960	960	960	960	960	960	960	960
H	mm	1050	1050	1385	1385	1050	1050	1050	1050
WEIGHTS									
Transport weight	kg	397	419	438	464	226	306	323	397
Operating weight	kg	321	344	368	394	184	247	264	321

		2644	2833	2842	2843	2844	2853	2854
DIMENSIONS								
L	mm	4100	3900	5000	5000	5000	6100	6100
W	mm	960	1290	1290	1290	1290	1290	1290
H	mm	1050	1380	1380	1380	1380	1380	1380
WEIGHTS								
Transport weight	kg	419	438	539	573	608	714	757
Operating weight	kg	344	368	449	484	518	604	648

Notes

1. Sound pressure level measured in free field conditions at 10 m from the unit. According to ISO 3744.

N.B. Combinations with Close Controls models are specified on the dedicated Close Control pages.

CHAPTER 4

LOGICA SYSTEM

HIGH DENSITY SYSTEM

Cooling capacity from 25 to 45 kW (from 7 to 13 TON)

LOGICA is the latest generation System for high density Data Centres, where the thermal load produced by the servers is particularly high.

LOGICA SYSTEM consist of four main elements:

- **High Efficiency liquid Chiller**. Chilled water is supplied by the liquid Chiller, which can also feature Free-Cooling technology or magnetic levitation compressors (Turboline models) for maximum efficiency.

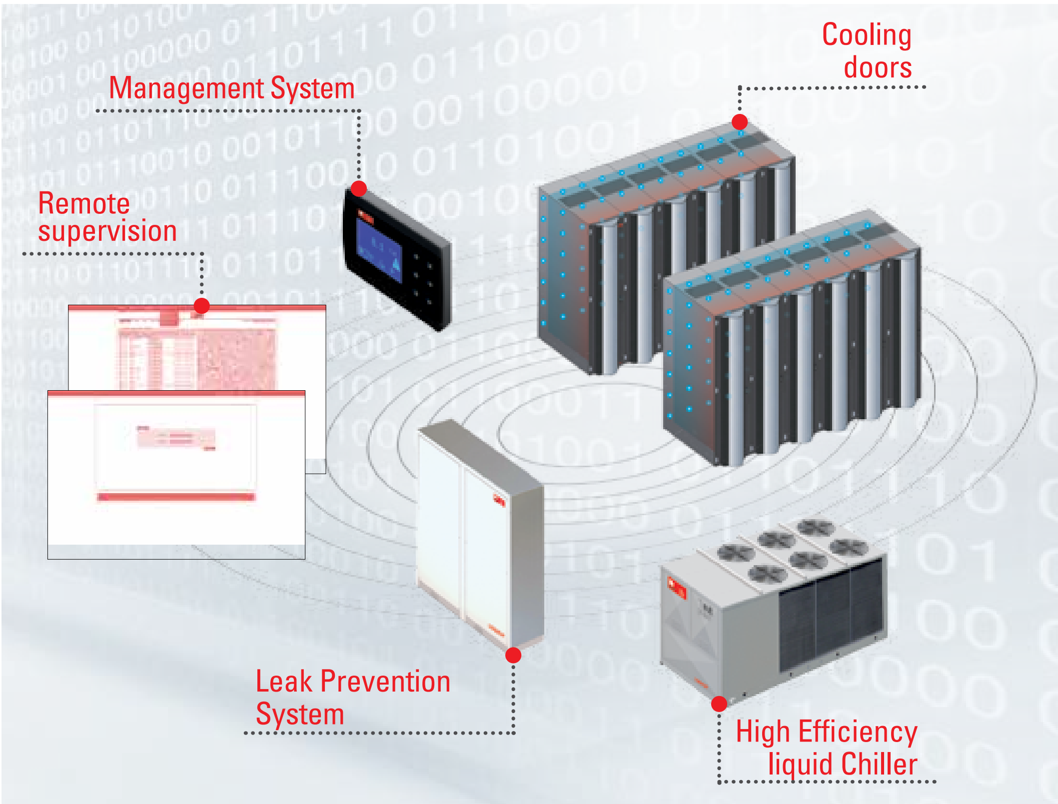
- **Rear Cooling Door**. Through dedicated pipes the chilled water reaches the Cooling Door. The heat generated by servers is pushed towards the heat exchanger located in the cooling door, where the air is cooled and released back into the room at ambient temperature. Therefore the indoor temperature of the server room is not raised by the servers.

- **Leak Prevention System.** The chilled water that flows between the liquid Chiller and the Cooling Doors is sucked by the Leak Prevention System, a patented system that generates negative pressure inside the structure, so that the servers are protected against any water leakage from the cooling door.

- **Management System.** The temperature of the server room is controlled locally by the LOGICA ELECTRONIC MANAGEMENT SYSTEM which acts simultaneously on the cabinet and server room, automatically adjusting fan speed, flow rate and temperature of circulating water.

LOGICA is also suitable to operate at high outdoor air temperatures, up to 52°C, connecting to dedicated liquid Chillers (XT models).

THE SYSTEM



LRD - LOGICA REAR COOLING DOOR

- Cabinet integrated rear door
- Operating with water temperature 18/23°C
- 3 sizes
- Cooling capacity of 25 kW – 35 kW – 45 kW (7 TON – 10 TON – 13 TON)
- EC Inverter Plug-Fans
- Fits 42U – 48U racks
- Possible to install on existing systems

		LRD 25	LRD 35	LRD 45
PERFORMANCES				
Sensible cooling capacity	kW	20,0	30,0	40,0
	TON	5,7	8,5	11,4
Sensible cooling capacity - Max.	kW	25,0	35,0	45,0
	TON	7,1	10,0	12,8
DIMENSIONS AND WEIGHTS				
L	mm	600-800	600-800	600-800
H	mm	42U & 48U	42U & 48U	42U & 48U
Transport weight	Kg	63,4	63,4	63,4
Operating weight	Kg	76,0	76,0	76,0

LPS - LOGICA LEAK PREVENTION SYSTEM

The **LPS** includes a set of two pumps (primary and secondary), a plate exchanger, a VENTURI injector, an opened-vase water tank and a dedicated control system with microprocessor.

- 6 sizes
- Cooling capacity from 50 to 500 kW (from 14 to 142 TON)
- Water flow from 9 to 86 m³/h (from 5 to 51 cfm)

		LRD 25	LRD 35	LRD 45	LRD 25	LRD 35	LRD 45
PERFORMANCES							
Cooling capacity	kW	50	100	150	250	300	500
	TON	14,2	28,4	42,7	71,1	85,3	142
Water flow secondary pump	m³/h	8,6	17,0	26,0	43,0	52,0	86,0
	cfm	5,0	10,0	15,0	25,0	31,0	51,0
Pumps power (each)	kW	4,0	15,0	15,0	18,0	18,0	37,0
Chiller side pressure drop	kPa	8,0	9,0	9,0	10,0	10,0	10,0
	ft WG	2,67	3,00	3,00	3,33	3,33	3,33
Depression	kPa	-80	-80	-80	-80	-80	-80
	ft WG	-26,67	-26,67	-26,67	-26,67	-26,67	-26,67
Water tank	l	40	100	100	150	150	250
	gal	10,6	26,4	26,4	39,6	39,6	66,0
DIMENSIONS AND WEIGHTS							
L	mm	1300	1300	1300	1300	1300	1300
W	mm	800	800	800	800	800	800
H	mm	2000	2000	2000	2000	2000	2000
Transport weight	Kg	365	890	920	995	1085	1995
Operating weight	Kg	415	1015	1045	1183	1273	2308

CLOSE CONTROL SYSTEMS

LOGICA* SYSTEM

LRE - LOGICA AIRCOOLED LIQUID CHILLERS WITH SCROLL COMPRESSORS AND EC INVERTER FANS

- 5 sizes
- Cooling capacity from 59 to 195 kW (from 17 to 56 TON)
- EC Inverter axial fans
- Scroll compressors (Inverter Scroll also available on request)
- Plate exchanger
- Double circulating pump

AVAILABLE WITH INVERTER SCROLL COMPRESSORS

R410A

VERSIONS

LRE Cooling only

LRE/SSL Super silenced cooling only

		2060	2080	2100	3150	4200
PERFORMANCES						
Cooling capacity (1)	kW	58,6	74,3	92,0	142	195
	TON	16,7	21,1	26,2	40,4	55,5
Absorbed power (1)	kW	17,9	21,7	29,9	46,4	59,7
EER (1)		3,27	3,42	3,08	3,06	3,27
ESEER		4,12	4,21	4,03	4,01	4,13
COMPRESSORS						
Quantity	n°	2	2	2	3	4
Circuits	n°	1	1	1	1	2
Capacity steps	n°	2	2	2	3	4
WATER CIRCUIT						
Water flow	l/s	2,80	3,55	4,40	6,80	9,31
	gpm	44,4	56,3	69,7	108	148
SOUND PRESSURE						
STD version (2)	dB(A)	56	60	60	61	61
With SL accessory (2)	dB(A)	54	58	58	59	59
SSL version (2)	dB(A)	52	56	56	55	-

LRE - LOGICA AIRCOOLED LIQUID CHILLERS WITH SCROLL COMPRESSORS AND EC INVERTER FANS

- 5 sizes
- Cooling capacity from 248 to 763 kW (from 71 to 217 TON)
- EC Inverter axial fans
- Scroll compressors (Inverter Scroll also available on request)
- Plate exchanger
- Double circulating pump

AVAILABLE WITH INVERTER SCROLL COMPRESSORS

R410A

VERSIONS

LRE Cooling only

LRE/SSL Super silenced cooling only

		6250	6300	8400	10500	12750
PERFORMANCES						
Cooling capacity (1)	kW	248	299	394	491	763
	TON	70,5	85,0	112	140	217
Absorbed power (1)	kW	82,7	92,5	118	154	254
EER (1)		3,00	3,23	3,33	3,19	3,01
ESEER		4,56	4,63	4,65	4,41	4,54
COMPRESSORS						
Quantity	n°	6	6	8	10	12
Circuits	n°	2	2	2	2	2
Capacity steps	n°	6	6	8	10	10
WATER CIRCUIT						
Water flow	l/s	11,9	14,3	18,8	23,5	36,5
	gpm	188	227	298	372	578
SOUND PRESSURE						
STD version (2)	dB(A)	66	69	70	69	73
With SL accessory (2)	dB(A)	63	66	66	66	70
SSL version (2)	dB(A)	59	61	60	61	65

Notes

1. Chilled water from 20 to 15°C, ambient air temperature 35°C.
2. Sound pressure level measured in free field conditions at 1 m from the unit. According to ISO 3744.

LRE/TTY - LOGICA AIRCOOLED LIQUID CHILLERS WITH TURBOCOR COMPRESSORS AND EC INVERTER FANS

- 7 sizes
- Cooling capacity from 245 to 722 kW (from 70 to 205 TON)
- EC Inverter axial fans
- Turbocor compressors
- Microchannel condensing coil
- Flooded shell and tube exchanger
- Double circulating pump

VERSIONS

LRE/TTY Cooling only

LRE/TTY/MC Cooling only with Microchannel condensing coil

		1250-1	1300-1	1400-1	1500-1	2720-1	2500-2	2720-2
PERFORMANCES								
Cooling capacity (1)	kW	245	327	391	492	722	492	722
	TON	69,7	93,0	111	140	205	140	205
Absorbed power (1)	kW	54,3	72,2	87,9	111	173	110	173
EER (1)		4,51	4,54	4,45	4,42	4,17	4,46	4,17
ESEER		4,69	4,82	4,89	4,86	4,99	4,86	4,99
PERFORMANCES MC VERSION								
Cooling capacity (1)	kW	245	327	391	492	722	492	722
	TON	69,7	93,0	111	140	205	140	205
Absorbed power (1)	kW	51,7	68,1	83,2	105	163	105	163
EER (1)		4,74	4,80	4,70	4,68	4,43	4,70	4,43
ESEER		5,21	5,44	5,45	5,48	5,58	5,48	5,58
COMPRESSORS								
Quantity	n°	1	1	1	1	2	2	2
Circuits	n°	1	1	1	1	1	2	2
Capacity steps	n°				stepless			
WATER CIRCUIT								
Water flow	l/s	11,7	15,6	18,7	23,5	34,5	23,5	34,5
	gpm	186	248	296	373	547	373	547
SOUND PRESSURE								
STD version (2)	dB(A)	62	62	62	62	63	63	61
MC version (2)	dB(A)	61	61	61	61	62	62	-

Notes

1. Chilled water from 20 to 15°C, ambient air temperature 35°C.
2. Sound pressure level measured in free field conditions at 1 m from the unit. According to ISO 3744.

CLOSE CONTROL SYSTEMS

LOGICA SYSTEM

LRE/FC - LOGICA AIRCOOLED LIQUID CHILLERS FREE-COOLING WITH SCROLL COMPRESSORS AND EC INVERTER FANS

- 5 sizes
- Cooling capacity from 58 to 188 kW (from 17 to 54 TON)
- EC Inverter axial fans
- Scroll compressors
- Plate exchanger
- Double circulating pump
- Free-Cooling

VERSIONS

LRE/FC Cooling only

		2060	2080	2100	3150	4200
PERFORMANCES						
Cooling capacity (1)	kW	58,2	71,6	99,5	148	188
	TON	16,6	20,4	28,3	42,1	53,5
Absorbed power (1)	kW	18,2	24,0	30,9	46,7	65,8
EER (1)		3,27	3,42	3,08	3,06	3,27
FREE COOLING 100%						
Air temperature (2)	°C	8,1	6,3	4,9	6,6	5,3
Absorbed power (2)	kW	2,0	2,0	4,0	6,0	8,0
COMPRESSORS						
Quantity	n°	2	2	2	3	4
Circuits	n°	1	1	1	1	2
Capacity steps	n°	2	2	2	3	4
WATER CIRCUIT						
Water flow	l/s	3,03	3,73	5,18	7,69	9,79
	gpm	48,0	59,1	82,1	122	155
SOUND PRESSURE						
STD version (3)	dB(A)	59	59	59	60	61
With SL accessory (3)	dB(A)	57	57	57	58	59

LRE/FC - LOGICA AIRCOOLED LIQUID CHILLERS FREE-COOLING WITH SCROLL COMPRESSORS AND EC INVERTER FANS

- 5 sizes
- Cooling capacity from 279 to 821 kW (from 79 to 233 TON)
- EC Inverter axial fans
- Scroll compressors
- Plate exchanger
- Double circulating pump
- Free-Cooling

VERSIONS

LRE/FC Cooling only

		6250	6300	8400	10500	12750
PERFORMANCES						
Cooling capacity (1)	kW	279	330	428	530	821
	TON	79,3	93,8	122	151	233
Absorbed power (1)	kW	78,8	88,5	118	152	252
EER (1)		3,54	3,73	3,61	3,50	3,25
FREE COOLING 100%						
Air temperature (2)	°C	7,7	7,3	6,9	6,5	6,9
Absorbed power (2)	kW	16	16	20	24	36
COMPRESSORS						
Quantity	n°	6	8	10	12	4
Circuits	n°	2	2	2	2	2
Capacity steps	n°	6	8	8	8	4
WATER CIRCUIT						
Water flow	l/s	14,5	17,2	22,3	27,6	42,7
	gpm	230	272	353	437	677
SOUND PRESSURE						
STD version (3)	dB(A)	67	69	70	71	75
With SL accessory (3)	dB(A)	64	66	67	67	71

Notes

1. Chilled water (with ethylene glycol at 30%) from 15 to 10°C, ambient air temperature 35°C.
2. Air temperature at which the cooling capacity indicated in point (1) is reached.
3. Sound pressure level measured in free field conditions at 1 m from the unit. According to ISO 3744.

LRE/TTY/FC - LOGICA AIRCOOLED LIQUID CHILLERS FREE-COOLING WITH TURBOCOR COMPRESSORS AND EC INVERTER FANS

- 7 sizes
- Cooling capacity from 243 to 657 kW (from 69 to 187 TON)
- EC Inverter axial fans
- Turbocor compressors
- Microchannel condensing coil
- Flooded shell and tube exchanger
- Double circulating pump
- Free-Cooling

ECT FL FC R134a

VERSIONS

LRE/TTY/FC Cooling only

		1250-1	1300-1	1400-1	1500-1	2720-1	2500-2	2720-2
PERFORMANCES								
Cooling capacity (1)	kW	243	277	331	504	657	504	657
	TON	69,1	78,8	94,1	143	187	143	187
Absorbed power (1)	kW	58,1	65,5	79,5	120	174	118	174
EER (1)		4,18	4,23	4,16	4,21	3,78	4,26	3,78
FREE COOLING 100%								
Air temperature (2)	°C	9,5	12,0	9,0	9,0	11,0	99,0	11,0
Absorbed power (2)	kW	10,8	10,8	10,8	18,0	21,6	18,0	21,6
COMPRESSORS								
Quantity	n°	1	1	1	1	2	2	2
Circuits	n°	1	1	1	1	1	2	2
Capacity steps	n°				stepless			
WATER CIRCUIT								
Water flow	l/s	10,8	12,3	14,6	22,3	29,1	22,3	29,1
	gpm	170	194	232	353	461	353	461
SOUND PRESSURE								
STD version (3)	dB(A)	61	61	61	62	62	63	62

Notes

1. Chilled water (with ethylene glycol at 30%) from 15 to 10°C, ambient air temperature 35°C.
2. Air temperature at which the cooling capacity indicated in point (1) is reached.
3. Sound pressure level measured in free field conditions at 1 m from the unit. According to ISO 3744.

montair CLOSE CONTROL SYSTEMS

LOGICA* SYSTEM

LREXT - LOGICA AIRCOOLED LIQUID CHILLERS WITH SCROLL COMPRESSORS AND EC INVERTER FANS FOR HIGH EXTERNAL AMBIENT TEMPERATURE (UP TO 52°C)

XT UP TO 52°C

- 5 sizes
- Cooling capacity from 64 to 207 kW (from 18 to 57 TON)
- EC Inverter axial fans
- Scroll compressors (Inverter Scroll also available on request)
- Plate exchanger
- Double circulating pump

AVAILABLE WITH INVERTER SCROLL COMPRESSORS

R410A

VERSIONS

LREXT Cooling only

		2060	2080	2100	3150	4200
PERFORMANCES						
Cooling capacity (1)	kW	53,7	65,3	86,3	134	179
	TON	15,3	18,6	24,5	38,1	50,9
Absorbed power (1)	kW	20,5	25,8	33,7	51,2	67,8
Cooling capacity (2)	kW	64,3	75,6	100	155	207
	TON	18,3	21,5	28,4	44,1	58,9
Absorbed power (2)	kW	16,6	21,3	27,2	41,6	55,2
EER (1)		3,87	3,55	3,68	3,73	3,75
ESEER		4,38	4,37	4,33	4,26	4,78
COMPRESSORS						
Quantity	n°	2	2	2	3	4
Circuits	n°	1	1	1	1	2
Capacity steps	n°	2	2	2	3	4
WATER CIRCUIT						
Water flow	l/s	2,57	3,12	4,12	6,38	8,53
	gpm	40,7	49,5	65,3	101	135
SOUND PRESSURE						
STD version (3)	dB(A)	60	60	61	61	63
With SL accessory (3)	dB(A)	58	58	59	59	61

LREXT - LOGICA AIRCOOLED LIQUID CHILLERS WITH SCROLL COMPRESSORS AND EC INVERTER FANS FOR HIGH EXTERNAL AMBIENT TEMPERATURE (UP TO 52°C)

XT UP TO 52°C

- 5 sizes
- Cooling capacity from 276 to 863 kW (from 79 to 245 TON)
- EC Inverter axial fans
- Scroll compressors (Inverter Scroll also available on request)
- Plate exchanger
- Double circulating pump

AVAILABLE WITH INVERTER SCROLL COMPRESSORS

R410A

VERSIONS

LREXT Cooling only

		6250	6300	8400	10500	12750
PERFORMANCES						
Cooling capacity (1)	kW	239	285	370	472	746
	TON	68,0	81,0	105	134	212
Absorbed power (1)	kW	88,7	104	138	174	286
Cooling capacity (2)	kW	276	330	428	546	863
	TON	78,5	93,8	122	155	245
Absorbed power (2)	kW	72,2	85	113	141	232
EER (1)		3,82	3,91	3,82	3,87	3,72
ESEER		4,85	4,57	4,41	4,51	4,42
COMPRESSORS						
Quantity	n°	6	6	8	10	12
Circuits	n°	2	2	2	2	2
Capacity steps	n°	6	6	8	10	10
WATER CIRCUIT						
Water flow	l/s	11,4	13,6	17,7	22,6	35,6
	gpm	181	216	280	357	565
SOUND PRESSURE						
STD version (3)	dB(A)	67	68	70	71	72
With SL accessory (3)	dB(A)	64	65	67	68	69

Notes

1. Chilled water from 20 to 15°C, ambient air temperature 46°C.
2. Chilled water from 20 to 15°C, ambient air temperature 35°C.
3. Sound pressure level measured in free field conditions at 1 m from the unit. According to ISO 3744.

LREXT/Y - LOGICA AIRCOOLED LIQUID CHILLERS WITH SCREW COMPRESSORS AND EC INVERTER FANS FOR HIGH EXTERNAL AMBIENT TEMPERATURE (UP TO 52°C)

XT UP TO 52°C

- 5 sizes
- Cooling capacity from 276 to 840 kW (from 79 to 239 TON)
- EC Inverter axial fans
- Screw compressors (Inverter Screw also available on request)
- Microchannel condensing coil
- Shell and tube exchanger
- Double circulating pump

AVAILABLE WITH INVERTER SCREW COMPRESSORS

R134a

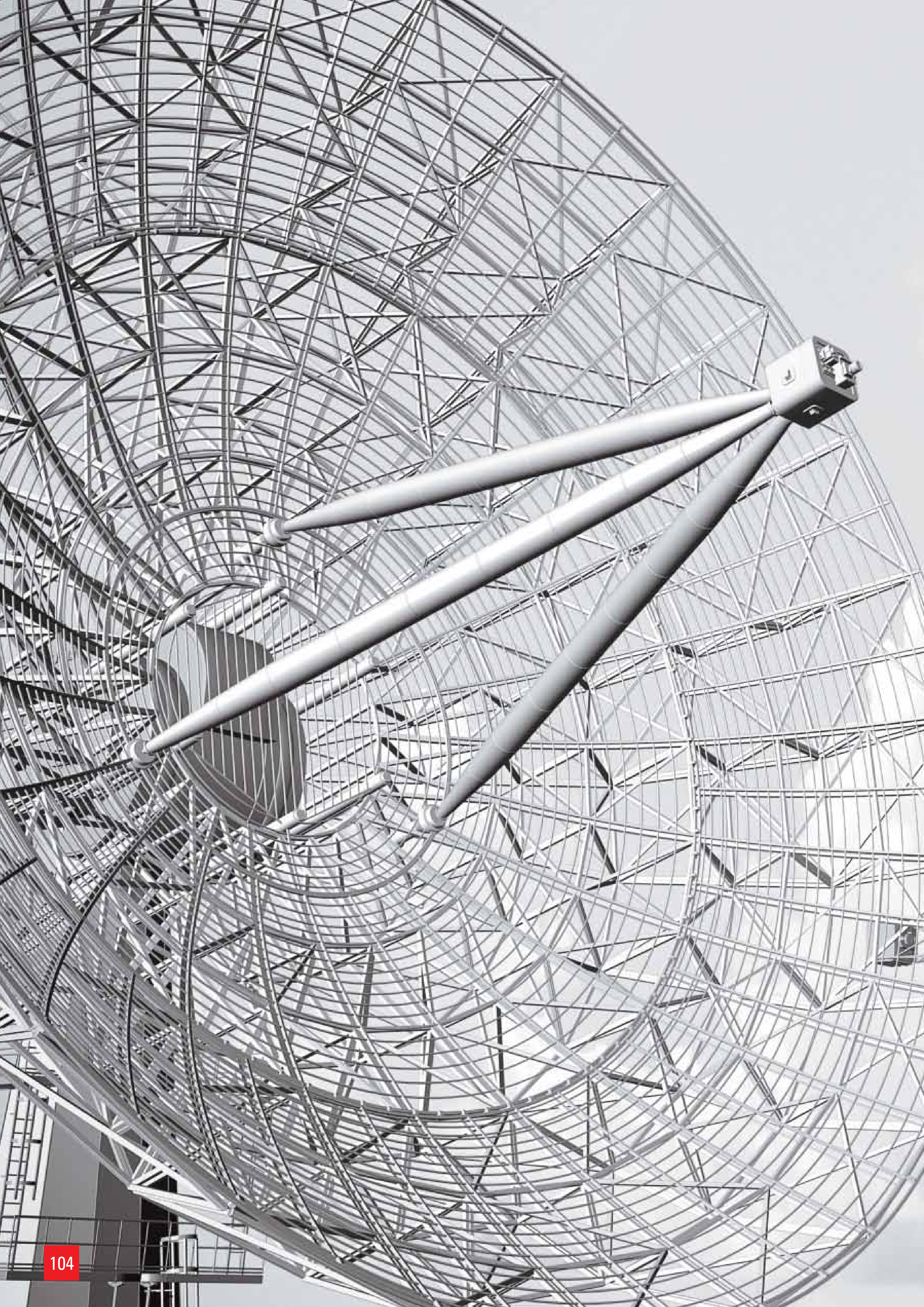
VERSIONS

LREXT/Y Cooling only

		2250	2300	2400	2500	2750
PERFORMANCES						
Cooling capacity (1)	kW	241	307	430	534	740
	TON	68,5	87,3	122	152	210
Absorbed power (1)	kW	80,1	100	142	175	241
Cooling capacity (2)	kW	276	350	492	610	840
	TON	78,6	99,5	140	173	239
Absorbed power (2)	kW	69,9	88,1	124	153	212
EER (1)		3,95	3,97	3,96	3,99	3,96
ESEER		4,43	4,41	4,62	4,44	4,37
COMPRESSORS						
Quantity	n°	2	2	2	2	2
Circuits	n°	2	2	2	2	2
Capacity steps	n°			Stepless		
WATER CIRCUIT						
Water flow	l/s	11,4	13,6	17,7	22,6	35,6
	gpm	181	216	280	357	565
SOUND PRESSURE						
STD version (3)	dB(A)	68	68	70	71	72

Notes

1. Chilled water from 20 to 15°C, ambient air temperature 46°C.
2. Chilled water from 20 to 15°C, ambient air temperature 35°C.
3. Sound pressure level measured in free field conditions at 1 m from the unit. According to ISO 3744.



CLOSE
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SYSTEMS

CHAPTER 5

TELECOM APPLICATION UNITS

PAGE

montair CLOSE CONTROL SYSTEMS

CZ

EC INVERTER PLUG FAN

OUTDOOR PACKAGED WALL-MOUNTED UNITS WITH ROTARY/SCROLL COMPRESSORS AND (EC INVERTER) PLUG-FANS

Cooling capacity from 4 to 29 kW (from 1 to 8 TON)

DX R410A

Direct Expansion Outdoor wall-mounted Packaged units for air conditioning of Telephone Exchangers and Telecommunication Shelters.
The CZ range features Plug-Fans; EC Inverter Plug-Fans are available as accessory.
The CZ range is available in top air discharge version. A dedicated version with Free-Cooling technology is also available.

AIR DISCHARGE

CZT... Top air discharge and frontal intake

VERSIONS

CZT... Standard

CZT... /FC With Free-Cooling technology

ACCESSORIES

Factory Fitted Accessories

EC	EC Inverter Plug-Fans
CC	Condensing control
PF	Differential pressure switch filters control
IS	Modbus RTU protocol, RS485 serial interface
EH	Electrical heating with step regulation
TXC	Condensing coil epoxy treatment
TXE	Evaporating coil epoxy treatment
TS24	Twin electric power supply 24V DC
TS48	Twin electric power supply 48V DC
TE	Electronic expansion valve

Loose Accessories

CR	Remote control display

CZT ... TOP AIR DISCHARGE

		1004K	1006K	1007K	1010K	1011K	1013K	1014K	2008K	2011K	2015K	2023K	2029K
PERFORMANCES													
Total cooling capacity (1)	kW	4,2	5,9	7,2	10,0	10,8	12,7	14,3	8,0	11,2	14,7	23,0	28,8
	TON	1,2	1,7	2,1	2,8	3,1	3,6	4,1	2,3	3,2	4,2	6,5	8,2
Sensible cooling capacity (1)	kW	4,2	5,2	6,6	9,2	10,7	11,6	13,2	8,0	9,5	12,9	23,0	27,1
	TON	1,2	1,5	1,9	2,6	3,0	3,3	3,7	2,3	2,7	3,7	6,5	7,7
SHR (1)	%	100%	88%	92%	92%	99%	91%	92%	100%	85%	88%	100%	94%
Total absorbed power (1)	kW	1,3	1,9	2,4	3,1	3,9	5,2	5,1	2,9	4,2	4,9	7,6	10,2
COOLING CIRCUIT													
Cooling circuits	n°	1	1	1	1	1	1	1	2	2	2	2	2
Compressors	Type	Rotary	Scroll						Rotary	Scroll			
	n°	1	1	1	1	1	1	1	2	2	2	2	2
FAN SECTION - DISCHARGE													
Fans	Type	Plug-Fan											
	n°	1	1	2	2	2	2	2	2	2	2	2	2
Air flow	m³/h	0,40	0,40	0,60	0,84	0,84	0,84	0,84	0,78	0,78	0,78	1,81	1,81
	cfm	850	850	1270	1780	1780	1780	1780	1650	1650	1650	3840	3840
Available static pressure	Pa	40	40	40	40	40	40	40	40	40	40	40	40
	in WG	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
Free-Cooling air flow	m³/h	0,35	0,35	0,44	0,73	0,71	0,71	0,71	0,64	0,64	0,64	1,66	1,66
	cfm	740	740	930	1550	1500	1500	1500	1360	1360	1360	3520	3520
FAN SECTION - INTAKE													
Fans	Type	Axial											
	n°	1	1	1	1	1	1	1	2	2	2	2	2
Air flow	m³/h	0,96	0,93	0,93	1,42	1,42	1,23	1,23	1,42	1,42	1,23	2,22	2,22
	cfm	2030	1970	1970	3010	3010	2610	2610	3010	3010	2610	4700	4700
Filter	Type	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2
ELECTRICAL CHARACTERISTICS													
Power supply	V/Ph/Hz	230/1/50			400/3/50				230/1/50	400/3/50			
ELECTRICAL HEATING													
Steps	n°	1	1	1	1	1	1	1	1	1	1	1	1
Electrical power per stage	kW	1,5	1,5	1,5	2,0	2,0	2,0	2,0	2,0	2,0	2,0	4,0	4,0
SOUND PRESSURE													
Sound pressure (2)	dB(A)	55	56	56	57	57	57	60	58	58	60	68	68

		1004K	1006K	1007K	1010K	1011K	1013K	1014K	2008K	2011K	2015K	2023K	2029K
DIMENSIONS													
L	mm	800	800	800	1000	1000	1000	1000	1000	1000	1000	1600	1600
W	mm	500	500	500	600	600	600	600	600	600	600	815	815
H	mm	1580	1580	1580	1630	1630	1790	1790	1790	1790	1790	2050	2050
WEIGHTS													
Transport weight	kg	104	112	123	163	167	189	191	201	215	222	440	450
Operating weight	kg	94	102	113	143	147	169	171	181	195	202	420	430

Notes

1. Return air 27 °C - 40% R.H., external air temperature 35 °C.
2. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.

CLOSE CONTROL SYSTEMS

CY

EC INVERTER PLUG FAN

INDOOR PACKAGED VERTICAL UNITS WITH ROTARY/SCROLL COMPRESSORS AND (EC INVERTER) PLUG-FANS

Cooling capacity from 5 to 26 kW (from 1 to 7 TON)

DX · R410A

Direct Expansion Indoor Packaged vertical units for air conditioning of Telephone Exchangers and Telecommunication Shelters.
The CY range features Plug-Fans; EC Inverter Plug-Fans are available as accessory.
The CY range is available in two air discharge versions:
- CYT with top air discharge
- CYB with bottom air discharge.

AIR DISCHARGE

CYT... Top air discharge and frontal intake

CYB... Bottom air discharge and upper intake

VERSIONS

CY... Standard

CY... /FC With Free-Cooling technology

ACCESSORIES

Factory Fitted Accessories

EC	EC Inverter Plug-Fans
CC	Condensing control
PF	Differential pressure switch filters control
IS	Modbus RTU protocol, RS485 serial interface
EH	Electrical heating with step regulation
TXC	Condensing coil epoxy treatment
TXE	Evaporating coil epoxy treatment
TS24	Twin electric power supply 24V DC
TS48	Twin electric power supply 48V DC
TE	Electronic expansion valve

Loose Accessories

CR	Remote control display

CYT … TOP AIR DISCHARGE
CYB … BOTTOM AIR DISCHARGE

		1004K	1006K	1007K	1009K	1011K	1012K	1015K	1017K	1018K	1021K	1023K	1026K
PERFORMANCES													
Total cooling capacity (1)	kW	4,5	5,6	7,1	9,0	10,9	11,9	15,0	17,2	17,1	20,8	23,4	25,6
	TON	1,3	1,6	2,0	2,6	3,1	3,4	4,3	4,9	4,9	5,9	6,7	7,3
Sensible cooling capacity (1)	kW	4,5	5,0	6,7	8,9	10,9	10,8	14,9	16,3	17,1	20,8	23,4	24,1
	TON	1,3	1,4	1,9	2,5	3,1	3,1	4,2	4,7	4,9	5,9	6,7	6,8
SHR (1)	%	100%	90%	95%	99%	100%	91%	99%	95%	100%	100%	100%	94%
Total absorbed power (1)	kW	1,9	2,4	3,0	4,0	4,4	5,0	6,0	7,0	6,9	9,0	11,6	13,1
COOLING CIRCUIT													
Cooling circuits	n°	1	1	1	1	1	1	1	1	1	1	1	1
Compressors	Type	Rotary	Scroll										
	n°	1	1	1	1	1	1	1	1	1	1	1	1
FAN SECTION - DISCHARGE													
Fans	Type	Plug-Fan											
	n°	1	1	1	1	1	1	1	1	1	1	1	1
Air flow	m³/h	0,40	0,40	0,58	0,84	0,84	0,84	1,06	1,06	1,39	1,53	1,81	1,81
	cfm	850	850	1230	1780	1780	1780	2250	2250	2950	3240	3840	3840
Available static pressure	Pa	40	40	40	40	40	40	40	40	40	40	40	40
	in WG	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
Free-Cooling air flow	m³/h	0,37	0,37	0,55	0,79	0,78	0,78	0,99	0,99	1,26	1,42	1,69	1,69
	cfm	780	780	1160	1670	1650	1650	2100	2100	2670	3010	3580	3580
FAN SECTION - INTAKE													
Fans	Type	Radial											
Fans - T version	n°	1	1	1	1	1	1	2	2	1	1	2	2
Fans - B version	n°	1	1	1	2	2	2	2	2	1	1	2	2
Air flow	m³/h	0,63	0,63	0,63	1,04	1,04	1,04	1,31	1,31	1,53	1,53	2,44	2,44
	cfm	1330	1330	1330	2200	2200	2200	2780	2780	3240	3240	5170	5170
Filter	Type	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2
ELECTRICAL CHARACTERISTICS													
Power supply	V/Ph/Hz	230/1/50			400/3/50					400/3+N/50			
ELECTRICAL HEATING													
Steps	n°	1	1	1	1	1	1	1	1	1	1	1	1
Electrical power per stage	kW	1,5	1,5	1,5	3,0	3,0	3,0	3,0	3,0	4,0	4,0	4,0	4,0
SOUND PRESSURE													
Sound pressure (2)	dB(A)	58	58	58	61	61	61	61	61	63	63	63	63

		1004K	1006K	1007K	1009K	1011K	1012K	1015K	1017K	1018K	1021K	1023K	1026K
DIMENSIONS													
L	mm	800	800	800	1010	1010	1010	1160	1160	2050	2050	2050	2050
W	mm	550	550	550	550	550	550	550	550	800	800	800	800
H	mm	1850	1850	1850	1850	1850	1850	1850	1850	1500	1500	1500	1500
WEIGHTS													
Transport weight CYT ... - Top Air Discharge	kg	130	138	145	215	220	230	265	270	395	425	432	440
Transport weight CYB ... - Bottom Air Discharge	kg	130	138	145	215	220	230	265	270	395	425	432	440
Operating weight CYT ... - Top Air Discharge	kg	120	128	135	195	200	210	245	250	375	405	412	420
Operating weight CYB ... - Bottom Air Discharge	kg	120	128	135	195	200	210	245	250	375	405	412	420

Notes

1. Return air 27 °C - 40% R.H., external air temperature 35 °C.
2. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.

CLOSE
CONTROL
SYSTEMS

CZ...XT

EC INVERTER PLUG FAN

OUTDOOR PACKAGED WALL-MOUNTED UNITS WITH ROTARY/SCROLL COMPRESSORS AND (EC INVERTER) PLUG-FANS FOR HIGH EXTERNAL AMBIENT TEMPERATURE (UP TO 52°C)

XT UP TO 52°C

Cooling capacity from 4 to 29 kW (from 1 to 8 TON)

DX EC R134a

Direct Expansion Outdoor wall-mounted Packaged units for air conditioning of Telephone Exchangers and Telecommunication Shelters.
The CZ...XT range is specifically designed for geographical areas with high external ambient temperature, up to 52°C.
The CZ...XT range features Plug-Fans; EC Inverter Plug-Fans are available as accessory.
The CZ...XT range is available in top air discharge version.

AIR DISCHARGE

CZTXT... Top air discharge and frontal intake

VERSIONS

CZ...XT Standard

ACCESSORIES

Factory Fitted Accessories

EC	EC Inverter Plug-Fans
CC	Condensing control
PF	Differential pressure switch filters control
IS	Modbus RTU protocol, RS485 serial interface
EH	Electrical heating with step regulation
TXC	Condensing coil epoxy treatment
TXE	Evaporating coil epoxy treatment
TS24	Twin electric power supply 24V DC
TS48	Twin electric power supply 48V DC
TE	Electronic expansion valve

Loose Accessories

CR	Remote control display

CZTXT … TOP AIR DISCHARGE

		1005	1006	1007	1009	1010	1012	1015	2008	2011	2015	2023	2029
PERFORMANCES													
Total cooling capacity (1)	kW	4,2	5,9	7,2	10,0	10,8	12,7	14,3	8,0	11,2	14,7	23,0	28,8
	TON	1,2	1,7	2,1	2,8	3,1	3,6	4,1	2,3	3,2	4,2	6,5	8,2
Sensible cooling capacity (1)	kW	4,2	5,9	7,2	10,0	10,8	12,6	14,0	8,0	10,6	12,9	23,0	28,2
	TON	1,2	1,7	2,1	2,8	3,1	3,6	4,0	2,3	3,0	3,7	6,5	8,0
SHR (1)	%	100%	100%	100%	100%	100%	99%	98%	100%	95%	88%	100%	98%
Total absorbed power (1)	kW	1,5	1,8	2,4	2,7	3,3	4,1	14,7	3,2	3,9	5	6,6	10,2
COOLING CIRCUIT													
Cooling circuits	n°	1	1	1	1	1	1	1	2	2	2	2	2
Compressors	Type	Rotary	Scroll						Rotary	Scroll			
	n°	1	1	1	1	1	1	1	2	2	2	2	2
FAN SECTION - DISCHARGE													
Fans	Type	Plug-Fan											
	n°	1	1	2	2	2	2	2	2	2	2	2	2
Air flow	m³/h	0,40	0,40	0,60	0,84	0,84	0,84	0,84	0,78	0,78	0,78	1,81	1,81
	cfm	850	850	1270	1780	1780	1780	1780	1650	1650	1650	3840	3840
Available static pressure	Pa	40	40	40	40	40	40	40	40	40	40	40	40
	in WG	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
FAN SECTION - INTAKE													
Fans	Type	Axial											
	n°	1	1	1	1	1	1	1	2	2	2	2	2
Air flow	m³/h	0,96	0,93	0,93	1,42	1,42	1,23	1,23	1,42	1,42	1,23	2,22	2,22
	cfm	2030	1970	1970	3010	3010	2610	2610	3010	3010	2610	4700	4700
Filter	Type	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2
ELECTRICAL CHARACTERISTICS													
Power supply	V/Ph/Hz	230/1/50			400/3/50				230/1/50	400/3/50			
ELECTRICAL HEATING													
Steps	n°	1	1	1	1	1	1	1	1	1	1	1	1
Electrical power per stage	kW	1,5	1,5	1,5	2,0	2,0	2,0	2,0	2,0	2,0	2,0	4,0	4,0
SOUND PRESSURE													
Sound pressure (2)	dB(A)	55	56	56	57	57	57	60	58	58	60	68	68

		1005	1006	1007	1009	1010	1012	1015	2008	2011	2015	2023	2029
DIMENSIONS													
L	mm	800	800	800	1000	1000	1000	1000	1000	1000	1000	1600	1600
W	mm	500	500	500	600	600	600	600	600	600	600	815	815
H	mm	1580	1580	1580	1630	1630	1790	1790	1790	1790	1790	2050	2050
WEIGHTS													
Transport weight	kg	104	112	123	163	167	189	191	201	215	222	440	450
Operating weight	kg	94	102	113	143	147	169	171	181	195	202	420	430

Notes

1. Return air 27 °C - 50% R.H., external air temperature 46 °C.
2. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.

montair CLOSE CONTROL SYSTEMS

CY...XT

INDOOR PACKAGED VERTICAL UNITS WITH SCROLL COMPRESSORS AND (EC INVERTER) PLUG-FANS FOR HIGH EXTERNAL AMBIENT TEMPERATURE (UP TO 52°C)

XT UP TO 52°C

Cooling capacity from 5 to 26 kW (from 1 to 7 TON)

EC INVERTER PLUG FAN

Direct Expansion Outdoor wall-mounted Packaged units for air conditioning of Telephone Exchangers and Telecommunication Shelters.
The CY...XT range is specifically designed for geographical areas with high external ambient temperature, up to 52°C.
The CY ...XT range features Plug-Fans; EC Inverter Plug-Fans are available as accessory.
The CY...XT range is available in two air discharge versions:
- CYTXT with top air discharge
- CYBXT with bottom air discharge.

AIR DISCHARGE

CYTXT... Top air discharge and frontal intake

CYBXT... Bottom air discharge and upper intake

VERSIONS

CY...XT... Standard

ACCESSORIES

Factory Fitted Accessories

EC	EC Inverter Plug-Fans
CC	Condensing control
PF	Differential pressure switch filters control
IS	Modbus RTU protocol, RS485 serial interface
EH	Electrical heating with step regulation
TXC	Condensing coil epoxy treatment
TXE	Evaporating coil epoxy treatment
TS24	Twin electric power supply 24V DC
TS48	Twin electric power supply 48V DC
TE	Electronic expansion valve

Loose Accessories

CR	Remote control display

CYTXT … TOP AIR DISCHARGE
CYBXT … BOTTOM AIR DISCHARGE

		1005	1006	1007	1009	1010	1012	1015	1018	1020	1023	1025
PERFORMANCES												
Total cooling capacity (1)	kW	4,5	5,6	7,1	9,0	10,8	11,8	15,0	17,1	20,8	23,4	25,6
	TON	1,3	1,6	2,0	2,6	3,1	3,4	4,3	4,9	5,9	6,7	7,3
Sensible cooling capacity (1)	kW	4,5	5,6	7,1	9,0	10,8	11,4	14,9	17,1	20,8	23,4	25,6
	TON	1,3	1,6	2,0	2,6	3,1	3,3	4,2	4,9	5,9	6,7	7,3
SHR (1)	%	100%	100%	100%	100%	100%	97%	99%	100%	100%	100%	100%
Total absorbed power (1)	kW	1,8	2,1	3,0	4,1	4,6	4,7	5,6	6,8	8,3	11,3	13,4
COOLING CIRCUIT												
Cooling circuits	n°	1	1	1	1	1	1	1	1	1	1	1
Compressors	Type	Scroll										
	n°	1	1	1	1	1	1	1	1	1	1	1
FAN SECTION - DISCHARGE												
Fans	Type	Plug-Fan										
	n°	1	1	1	1	1	1	1	1	1	1	1
Air flow	m³/h	0,4	0,4	0,6	0,84	0,84	0,84	1,06	1,39	1,53	1,81	1,81
	cfm	850	850	1270	1780	1780	1780	2250	2950	3240	3840	3840
Available static pressure	Pa	40	40	40	40	40	40	40	40	40	40	40
	in WG	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
FAN SECTION - INTAKE												
Fans	Type	Radial										
Fans - T version	n°	1	1	1	1	1	1	2	1	1	2	2
Fans - B version	n°	1	1	1	2	2	2	2	1	1	2	2
Air flow	m³/h	0,63	0,63	0,63	1,04	1,04	1,04	1,31	1,53	1,53	2,44	2,44
	cfm	1330	1330	1330	2200	2200	2200	2780	3240	3240	5170	5170
Filter	Type	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2	EU2
ELECTRICAL CHARACTERISTICS												
Power supply	V/Ph/Hz	230/1/50			400/3/50				400/3+N/50			
ELECTRICAL HEATING												
Steps	n°	1	1	1	1	1	1	1	1	1	1	1
Electrical power per stage	kW	1,5	1,5	1,5	3,0	3,0	3,0	3,0	4,0	4,0	4,0	4,0
SOUND PRESSURE												
Sound pressure (2)	dB(A)	58	58	58	61	61	61	61	63	63	63	63

		1005	1006	1007	1009	1010	1012	1015	1018	1020	1023	1025
DIMENSIONS												
L	mm	800	800	800	1010	1010	1010	1160	2050	2050	2050	2050
W	mm	550	550	550	550	550	550	550	800	800	800	800
H	mm	1850	1850	1850	1850	1850	1850	1850	1500	1500	1500	1500
WEIGHTS												
Transport weight CYTXT ... - Top Air Discharge	kg	130	138	145	215	220	230	265	395	425	432	440
Transport weight CYBXT ... - Bottom Air Discharge	kg	130	138	145	215	220	230	265	395	425	432	440
Operating weight CYTXT ... - Top Air Discharge	kg	120	128	135	195	200	210	245	375	405	412	420
Operating weight CYBXT ... - Bottom Air Discharge	kg	120	128	135	195	200	210	245	375	405	412	420

Notes

1. Return air 27 °C - 50% R.H., external air temperature 46 °C.
2. Sound pressure level calculated in free field conditions at 1,5 m height and 2 m distance. According to ISO 3744.

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