DATA CENTERS

AIR HANDLING CABINETS

CIATRONIC SYSTEM

SOLUTIONS FOR DATA CENTERS

CIAT

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CIATRONIC System

DATA CENTERS

PRODUCTION

AIR HANDLING

OPTIMISATION & EXPERTISE

› OPTIMISING YOUR PUE: the keys to an energy-efficient system

- Water: the best vector for optimising your system.
- Room design: optimum server layout and hot aisle/cold aisle partitioning keep air temperatures under control.
- Higher air temperature ranges enable higher water temperature ranges, thus increasing the number of hours when free cooling becomes possible.

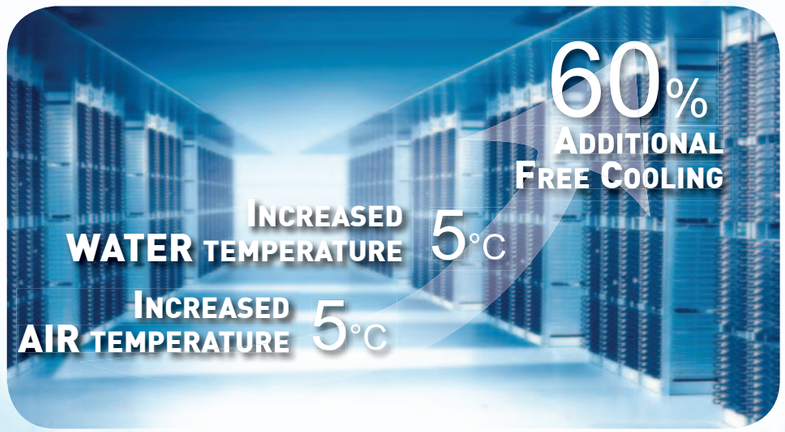
AQUACIAT *POWER*

➔ Our multiple compressor technology, ideally suited to partial load situations, plays a significant role in achieving excellent PUE (Power Usage Effectiveness).

OPERA

➔ Excellent balance between footprint and discharged power.

➔ EC motor for reduced energy consumption (PUE)



CRISTOPIA STORAGE

➔ Cristopia nodules secure your production and offer 12 hours of cooling autonomy.

ITEX

➔ A wide range of plate heat exchangers for decoupling between energy production and the secondary network (air handling).

➔ One of the free chilling solution components.

MAGISTER

⇨ Excellent compromise between power supplied and footprint.

⇨ Larger transfer area for increased free cooling.

⇨ No need for a dedicated mechanical room.

CLIMACIAT AIRTECH

➔ Direct free cooling solution with fresh air/ return air mixing box.

➔ Overpressurisation of rooms.

CIATRONIC System
The high performance range

DATA CENTERS

Magister

Capacity: 10 to 130 kW

- Temperature and humidity monitoring
- Chilled water or direct expansion air cooling
- A host of custom features, a wide choice of options and air flow systems
- High energy efficiency
- Low sound level
- High-efficiency filtration
- Maximum security for your facilities

Climrack

Capacity: from 5 to 18 kW

- Water-cooled rack
- Cooling at source
- Compact
- 47U or 52U rack
- Condensation-free solution

Expair

Capacity: 5 to 50 kW

- Temperature and humidity monitoring
- Chilled water or direct expansion air cooling
- Many options
- Competitiveness
- Availability

Magister
Exacting performance

DATA CENTERS

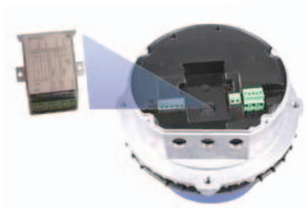
1 ENERGY SAVINGS

- Plug fan for enhanced air handling efficiency combined with an EC motor for optimum energy efficiency
- Self-regulating control: the automatic controller varies the air handling fan speed depending on the room's load or the pressure drop in the raised floor
- Enthalpic free cooling module (option): the data center is cooled by fresh air taken from outside, depending on the temperature and humidity conditions.

PLUG FAN (EC motor)

- Modbus module* as standard for communication between the fan and the controller to gather data on fan faults, power and input currents.

* Only for Magister CW



› **Chilled water (CW) models**

› **Direct expansion (DXA) models**

2 EASY HANDLING AND MAINTENANCE

- Sturdy, resistant housing, with front access
- Fan/motor direct coupling
- Filters mounted on supports for easy handling
- Networked control devices enables information to be fed back to the monitoring system

3 ENHANCED SECURITY FOR YOUR SYSTEMS

- Rotation/Backup/Auxiliary functions between cabinets (up to 10 units)
- MODBUS/JBUS/LON protocol communication for real-time information
- 25 mm compressed double-skin insulation: M0 fire resistance
- Options: - LON Gateway
  - Raised floor pressure control
  - Change-over sensor

PLC

4 ADAPTATION

- Chilled water or direct expansion system cabinet
- Temperature and humidity monitoring
- Sound level reduced thanks to:
  - Double-skin insulation
  - Air flow rate adapted to cooling demand
  - Optimised airflow: reduced system effect, air velocity below 2.5 m/s
- Compact and unobtrusive design for perfect integration into premises
- Continuous air filtration
- Setpoint stability guaranteed by automated control system technology (PI or PID) and pressure control valve (gradual)
- Associated CD condensation units
- SCROLL R410A compressor

Condenciat CD

5 SYSTEM INTEGRATION

Magister : La solution DATA CENTERS

- Combining chilled water production, free cooling and air diffusion, Magister integrates perfectly into CIAT's comprehensive solution for DATA CENTERS.
- The variable speed control of the EC motors, associated with the flexibility offered by water - a natural coolant, provides a solution to:
  - Variations in data center loads over time
  - The demands of Tier IV classification
  - Developments in data centers and their modular needs.

Expair
Performance and efficiency

EASY INTEGRATION ON SITE

- Direct-drive centrifugal fan controlled by frequency variation to adjust the flow rate and pressure to the air duct network
- Optimised, compact footprint
- Networked control of cabinets and feedback to a BMS possible (MODBUS/JBUS/LON)

AVAILABLE QUICKLY

Main components in stock:
- panels
- coils
- condensation units
- humidifiers
- filters
- electric heaters

EASY INSTALLATION AND MAINTENANCE

- Flexible couplings kit for hydraulic connections
- Front panel access
- Pre-charged outdoor units (direct expansion model)
- Accessible connections
- Handling: lightweight, aluminium chassis (compressors are in the outdoor unit)
- Easy removal of filters
- Optional condensate drain pump.

› Chilled water (CW) models
› Direct expansion air (DXA)

COMPETITIVENESS AND PERFORMANCE

- Temperature and humidity monitoring
- Double-skin panels for improved sound dampening (M0 fire resistance)
- Wide range of options
- Chilled water or direct expansion, air-cooled condensation
- Free cooling module (option) takes in fresh air from outside.

HFC R410A

SIMPLICITY AND EFFICIENCY

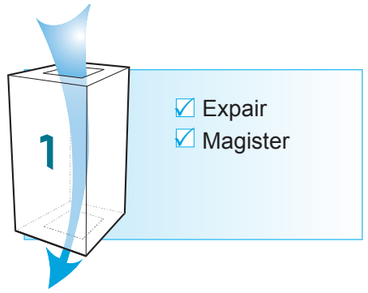
- Associated CONDENCIAT CL condensation units
- Sleek design and finish
- High energy efficiency
- SCROLL compressor and R410A refrigerant
- Speed control board to match the fan speed to the condenser's exchange requirements
- Installation: the outdoor unit may be placed up to 50 metres away from the indoor unit

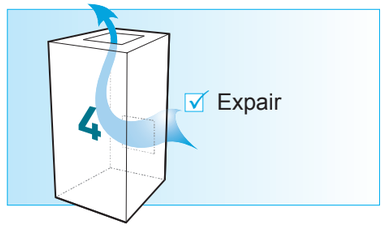
Condenciat CL

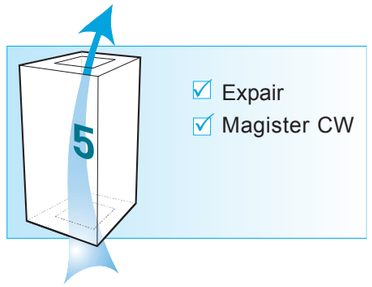
	APPLICATION		EXPAIR	MAGISTER
PERFORMANCE	Capacity range (kW)	CW	5 to 55	10 to 130
		DXA	5 to 47	50 to 86
	Number of models available			
	* chilled water	CW	7	5
	* direct expansion	DXA	11	4
FILTRATION	Filtration efficiency		G4 / F7 / **G4 + F7**	G4 / F7
COOLING COIL	Coil frame		Galvanised steel	Galvanised or stainless steel
	Condensate pan		Aluminium	Aluminium/**Stainless steel**
FAN	Fan with variable flow rate/pressure		Direct drive centrifugal fan motor assembly with variable frequency drive	**Plug Fan** fan motor assembly (EC motor) with 0-10 V signal for speed variation
HUMIDITY MONITORING (option)	Humidifier		Electrode	
	Humidification control		**Progressive**	
	Dehumidification monitoring		Option	
HEATING COIL (option)	Hot water coil		Option	
	Electric heater		Shielded stainless steel element	
	Electric heater control		2-stage or **TRIAC**	
CONFIGURATION	Available configurations		1 / 3 / 4 or 5	1 / 3 or 5*
	Chilled water model (CW)		Water coil controlled by 2-way or 3-way progressive valve	
	Direct expansion air (DXA)		Cabinet associated with 1 or 2 CIAT CL condensation units (compressor outdoors)	Cabinet associated with 2 CIAT CD condensation units (compressor outdoors)
CONTROL SYSTEM	Controls		CIAT µair connect 2	
	Protocol		MODBUS / JBUS / LON	
	Rotation/backup/auxiliary		YES	
	Display		**text**	
	Filter fouling indicator		standard	
	Air flow monitoring		standard	
	Water leak sensor		standard	
	Low limit control on discharge		option	
	Management of pressure in raised floor**		option	
	Changeover sensor		option	
	Room temperature sensor		option	
	Room temperature and humidity sensor		option	
CONSTRUCTION	Frame		Aluminium frame	Aluminium frame
	Panels		Double-skin construction with compressed glass wool (M0 fire rating)	Double-skin construction with compressed glass wool (M0 fire rating)
REFRIGERANT CIRCUIT (DXA)	Compressor fluid		**R410A**	**R410A**
	Compressor technology		SCROLL	SCROLL
OPTIONS	Adjustable support frame		YES	YES
	Supply plenum		YES	YES
	Motor-driven air intake damper		YES	YES
	Free cooling plenum		thermo	enthalpic

* CW115: Configuration 1 only
** Only for Magister CW

› ASSEMBLIES







› CABINET PERFORMANCE

Chilled water range	EXPAIR CW										
Chilled water model (CW)	CW5	CW8	CW12	CW16		CW27		CW39		CW59	
Air flow (m³/h)	1300	2000	2500	3000	4000	5000	6000	7000	8000	10000	12000
Cooling capacity (kW))	5	8	10,5	14,7	18	23	27	34	38	48	55

Chilled water range	MAGISTER CW									
Chilled water model (CW)	CW40		CW53		CW78		CW100		CW115	
Air flow (m³/h)	Nominal*	Maximum**	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
	10000	13300	13300	13300	18800	20500	24500	26600	27000	27500
Sensible cooling capacity (kW)	40	45	55	53	78	78	100	100	127	130

*7/12°C 24°C/45% **10/15 26°C/40%

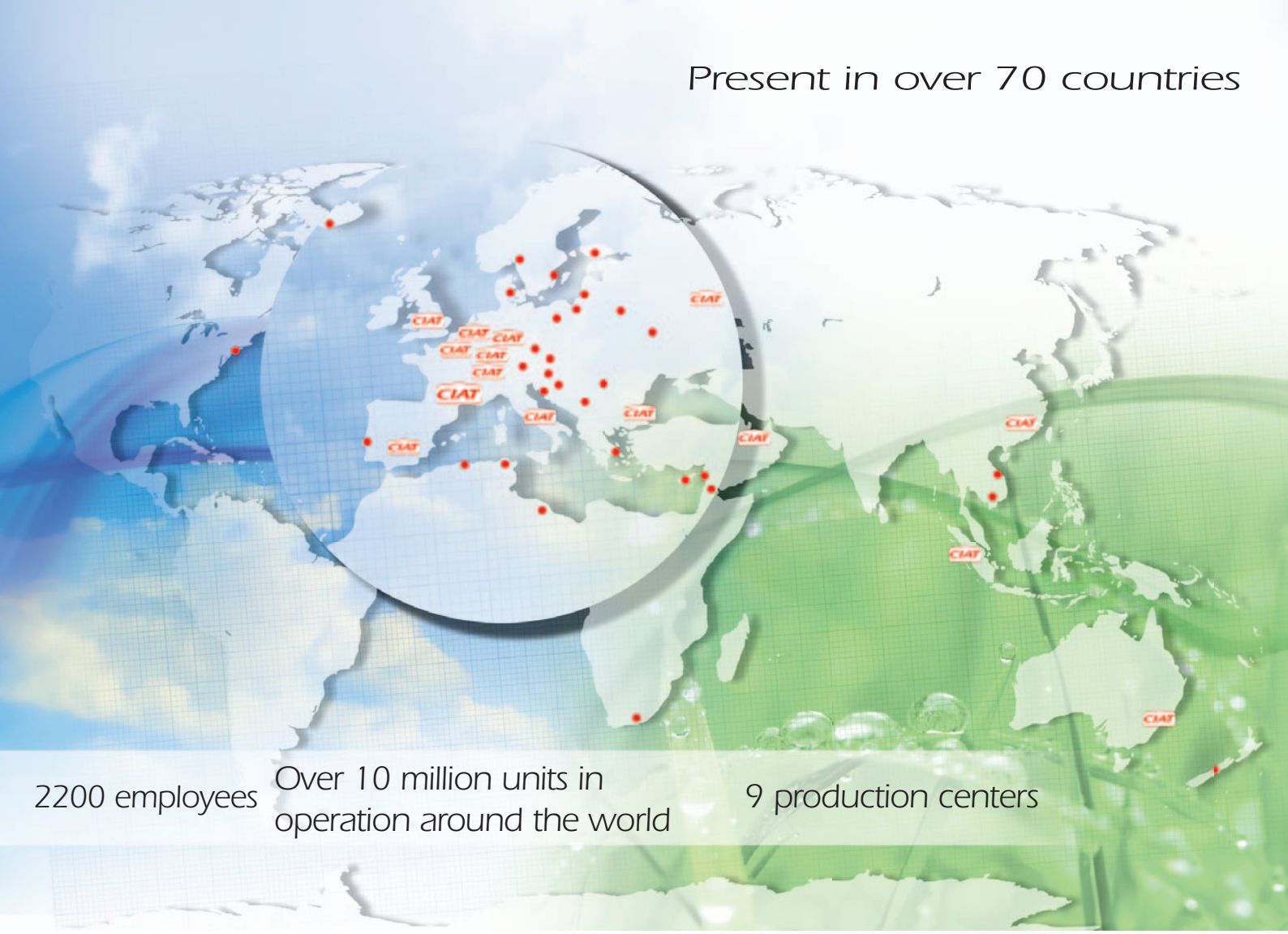
Direct expansion range	EXPAIR DXA										
DXA model	DXA 5	DXA 8	DXA 10	DXA 12	DXA 15	DXA 19	DXA 24	DXA 31	DXA 36	DXA 38	DXA 48
Air flow (m³/h)	1300	2000	2500	3000	4000	5000	6000	7000	8000	10000	12000
Total power (kW)	5	8	10,6	11	15	19	23,2	30,1	35	38	47
Number of circuits	1	1	1	1	1	1	1	2	2	2	2

Direct expansion range	MAGISTER DXA			
DXA model	DXA 59	DXA 65	DXA 70	DXA 85
Air flow (m³/h)	15000	15700	18500	21000
Total power (kW)	60	67	72	86
Number of circuits	2	2	2	2

› CLIMRACK PERFORMANCE

CLIMRACK					
Return air temperature / humidity	Water temperature range (°C)	Power (kW)	Water flow rate (m³/h)	Humidity T° for supply air	Pressure drop (mWC)
33°C/10 g/kg dry air	13/18	14	2,4	22.5°C/10 g/kg dry air	2.13
33°C/10 g/kg dry air	14/19	13	2.24	23.2°C/10 g/kg dry air	1.87
37°C/10 g/kg dry air	13/18	18	3,09	23.5°C/10 g/kg dry air	3.39
37°C/10 g/kg dry air	14/19	17	2,93	24.2°C/10 g/kg dry air	3.06

Present in over 70 countries



2200 employees

Over 10 million units in operation around the world

9 production centers

CIAT, EUROPE'S LEADING NAME IN AIR HANDLING

CIAT possesses unrivalled expertise, building on over 75 years of experience, of which have been in providing solutions for data centers.

With 9 production plants around the world and offices in over 70 countries, **CIAT** is the key partner for your projects.

Drawing on tour skills, experience and our R & I potential, we offer a range of solutions that meet the specific needs of DATA CENTERS.

Our references

Telecommunications

MTN	South Africa/Cameroon
SFR	France
France Telecom	France
Belgacom	Belgium
Postes et Télécommunications	Luxembourg
Mobilcom	Germany
T-System	Switzerland
Algérie Télécom	Algeria
Free	France

Data centers

NATO	Belgium
CERN	Switzerland
Météo France	France
Michelin	France
Société Générale	Romania
Total	France
EADS	France
Cairo Metro	Egypt

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ISO9001 • ISO14001
OHSAS 18001

Compagnie Industrielle d'Applications Thermiques - S.A. with a registered capital of 26,728,480 € - R.C.S. Bourg-en-Bresse B 545 620 114