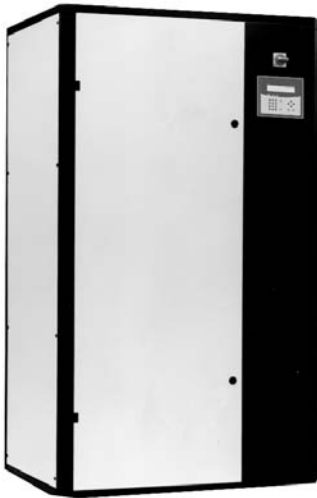




Precision air handling cabinets Ciatronic

MICRO/EXPAIR



Reduced footprint
Double-wall construction
Built-in voltage **variator**
PLC control
Variable speed condenser fan



Cooling capacity: 5 to 50 kW
Air flow: 1 000 to 12 000 m³/h

USE

Precision air handling cabinet particularly suited to air treatment requirements (filtration, temperature and hygrometry control) in computer and telecommunications facilities and special usage rooms (electronics, metrology, sensitive storage, medical, controlled atmosphere rooms).

Double-wall construction and fan with voltage variator for flow-rate adjustment.

The unit is quickly and easily installed, and particularly easy to use.

Micro/Expair EG

Cabinet supplied with chilled water.

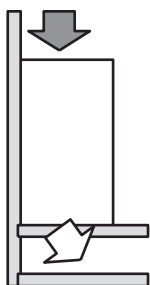
Micro/Expair DDA

Stand-alone cabinet with separate air condensation unit. (R410A).

MOUNTING

SI mounting: inverted discharge

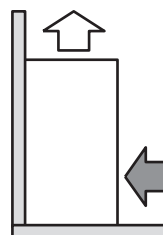
Mounting 1 SI



Discharge into false floor

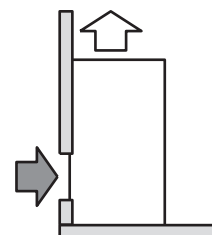
SD mounting: discharge from top

Mounting 3 SD



Intake from front

Mounting 4 SD
(Expair only)



Intake from rear



RANGE

Unit	MICRO 2000		EXPAIR 4000		EXPAIR 6000		EXPAIR 8000		EXPAIR 12000	
Air flow (1)	1000 to 2000 m ³ /h		2000 to 4000 m ³ /h		4000 to 6000 m ³ /h		6000 to 8000 m ³ /h		8000 to 12000 m ³ /h	
DDA	Models with associated CL condensation units (2):									
	20V	28V	35V	50V	65V	75V	2 x 50V	2 x 65V	2 x 65V	2 x 75V
EG	Models with chilled water coil									

(1) Air flow rate adjustable using built-in voltage variator.

(2) Two condensation units per air handling cabinet for 8000 and 12000 models.

Note: For the direct expansion version (DDA), the air flow rate must not drop below this range in order to avoid any risk of frost on the cold coil.

QUICK SELECTION

Micro/Expair EG

Unit	MICRO 2000		EXPAIR 4000		EXPAIR 6000		EXPAIR 8000		EXPAIR 12000	
Air flow (m ³ /h)	1 400	2 200	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Cooling capacity (kW)	6	8.4	13.5	18.1	22.8	26	32	36.2	46	54
Water flow (m ³ /h)	1	1.4	2.3	3.1	3.9	4.5	5.5	6.2	7.9	9.3
Pressure drop (mCE)	4	7.2	7.4	8.9	7.5	9.6	7.5	9.3	7.0	9.3

Characteristics: total cooling capacity, pure water at 7°C/12°C, air at 24°C, 50% RH. Pressure drop with control valve.

Cooling capacity for maximum DT on air of 12°C.

Correction factors	7/12 °C					8/13 °C				
22 °C/50 %	0,93					0,78				
24 °C/50 %	1					0,98				

Micro/Expair DDA

Unit	MICRO 2000		EXPAIR 4000		EXPAIR 6000		EXPAIR 8000		EXPAIR 12000	
External units, quantity and type	1 x 20V	1 x 28V	1 x 35V	1 x 50V	1 x 65V	1 x 75V	2 x 50V	2 x 65V	2 x 65V	2 x 75V
Air flow (m ³ /h)	1400	2200	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Cooling capacity (kW)	6.8	8.7	11.4	15.6	19.3	23.9	30.8	36.3	38.8	48.1

Characteristics: total cooling capacity, air at 24°C, 50% RH, 32°C external temperature.

Correction factors	30 °C		32 °C		35 °C		40 °C	
24 °C/50 %	1,02		1		0,98		0,93	
26 °C/50 %	1,06		1,04		1,02		0,98	

Correction factors to be applied to the cooling capacity depending on the external temperatures and the inlet air conditions.



QUICK SELECTION

Hot water coil*

Unit	MICRO 2000	EXPAIR 4000		EXPAIR 6000		EXPAIR 8000		EXPAIR 12000	
Air flow (m ³ /h)	UNAVAILABLE	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Heating capacity (kW)		24.9	29	38.1	41.9	55.8	59.9	79	87
Water flow (m ³ /h)		1.1	1.2	1.6	1.8	2.4	2.6	3.4	3.7
Pressure drop (mCE)		3.7	4.0	3.9	4.6	5.8	6.1	7.1	7.4

Characteristics: heating capacity, air at 20°C, pure water at 80°C/60°C, pressure drop with control valve.
Correction factors to be applied to the heating capacity for water temperatures of 90°C/70°C: 1.23 and 45°C/35°C: 0.37.

Electrical heater

Unit	MICRO 2000	EXPAIR 4000	EXPAIR 6000	EXPAIR 8000	EXPAIR 12000
Heating capacity (kW)	3	9	12	18	24

Ventilation

Unit	MICRO 2000		EXPAIR 4000		EXPAIR 6000		EXPAIR 8000		EXPAIR 12000	
Air flow (m ³ /h)	1 400	2 200	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Max. available pressure (Pa) with G4 filter	200	70	250	130	260	170	180	80	200	70
Max. available pressure (Pa) with F7 filter*	UNAVAILABLE		190	100	230	140	150	50	170	40

Maximum available pressure depending on air flow rate. Subtract approx. 20 Pa if hot water coil present on Expair.
The operating point may be adjusted directly using the build-in voltage generator.
All combinations of air flow rate and available pressure are therefore possible up to the maximum values shown in the table above.

DESCRIPTION

Casing

- Double-walled construction
- Pre-lacquered removable grey RAL 7035 panel :
 - external pre-lacquered sheet, thickness 1.0 mm
 - class M0 glass wool, thickness 25 mm
 - internal galvanised sheet, thickness 0.8 mm

Filtration

- F2SI filter cells, 90% efficiency according to ASHRAE gravimetric test (G4).
- Optional F7 opacimetric filter*.
- Filter cells held in compression on a counter-frame with a seal to prevent all leaks.
- Clogging monitored by sensor or pressostat.

Cold coil section

- Coil copper pipes, and aluminium fins.
- Condensates drain pan.
- Model EG with three-way control valve fitted and connected. Optional lagged connection hoses.
- Model DDA with thermostatic expansion valve.

Ventilation section

- Direct-coupled centrifugal fan.
- Electric motor 230 V, single phase, 4 poles, class F.
- Voltage variator fitted to adjust air flow.
- Air flow rate controlled by sensor or pressostat.

Internal unit electrical cabinet

- Power, control and regulation cabinet including:
 - Supply: 400 V/three phase/50 Hz + N + E
 - Main cut-off (emergency stop type) on front panel.
 - 400 V three phase/24 V transformer with protection.
 - Protection and control for fan motor, and depending on options for humidifier and electric heater.
 - CIAT µAir Connect or CARLEL pCo³ controller
 - Dry temperature of return air tested.
 - Hygrometry tested for return air, fresh air and dehumidification (optional).
 - Optional features include water leak detection, fire thermostat and blower low limit.
 - Fault summary and remote automaticity control

Accessories

- Support base for blowing in false floor
- Blower plenum
- Acoustic plenum with noise trap
- Motorised intake damper
- Water leak detection
- Fire thermostat
- Hydraulic connection kit (chilled water and hot water coils)

Description of external unit (DDA model)

- CL type air condensing unit
- Supply: 400 V/three phase/50 Hz + N + E
- SCROLL hermetic compressor
- HP and LP safety pressostats
- Isolating and adjustment valves
- 1 cooling circuit
- Refrigerant: R410A
- Condensation pressure adjusted by electronic circuit board and pressure sensor. Speed variation on condenser fan
- Faults signalled to internal unit

OPTION

Electric heater

- Operation linked to fan
- One stage control on "Micro"
- Two-stage or Triac control on "Expair".
- Two high limit safety thermostats, automatic and manual reset.

Hot water coil* (Expair)

- Coil with one row of copper tubes and aluminium fins.
- Three-way control valve fitted and connected.
- Optional connection hoses.

Humidifier

- Immersed electrode humidifier:
 - Stainless steel electrodes with large surface area.
 - 3 kg steam per hour (MICRO 2000, EXPAIR 4000)
 - 8 kg steam per hour (EXPAIR 6000 and 8000).
 - 15 kg steam per hour (EXPAIR 12000).
 - Steam cylinder contained in one easily-removable item.
 - Filling and draining solenoid valves.
 - Electronic circuit board controlling operation.
 - Aluminium diffusion manifold.
 - Water supply connection kit
- Only operates on mains water (conductivity 125 to 1250 $\mu\text{S/cm}$, hardness 13 to 30°F), non demineralised or softened water.

CONTROL

Two PLCs may be used to control and monitor the units.

Ciat $\mu\text{Air Connect}2$



- 160-character display containing instruction manual, operating reports, faults and corrective actions. Configurable PLC
- Two fault levels
- Operating time counter
- RS 485 output using JBus or MODBUS protocol

Carel pCo^{3*}



- Series PLC, capable of handling all specific control requirements.
- Possible control of rotation, backup and complements between units.
- BMS: output using MODBUS or LON protocol (option)



ELECTRICAL CHARACTERISTICS

Internal unit (EG and DDA models)

Unit	MICRO 2000		EXPAIR 4000		EXPAIR 6000		EXPAIR 8000		EXPAIR 12000	
Electrical power supply	Three-phase 400 V/50 Hz + N + T									
Max. total current (A) (*)	5		8		14		14.5		21	
AIR TREATMENT FANS										
No. of motors	1		1		2		2		3	
Absorbed power (kW)	0.37		0.6		1.2		1.2		1.8	
Absorbed current (A)	4		6.6		12.8		13.2		19.8	
HUMIDIFIER (OPTION)										
Adjustable steam flow rate (kg/h)	1 to 3		1 to 3		5 to 8		5 to 8		10 to 15	
Power (kW)	2.25		2.25		6		6		11.25	
Absorbed current (A)	9.8		9.8		8.7		8.7		16.2	
ELECTRIC HEATER (OPTION)										
Power (kW)	3		9		12		18		24	
Absorbed current (A)	4.5		13		17.3		26		34.6	

External unit (modèle DDA)

Unit	MICRO 2000		EXPAIR 4000		EXPAIR 6000		EXPAIR 8000		EXPAIR 12000	
No. and type of external units	1 x 20V	1 x 28V	1 x 35V	1 x 50V	1 x 65V	1 x 75V	2 x 50V	2 x 65V	2 x 65V	2 x 75V
Nb/type of electrical power supply	1/Three-phase 400 V/50 Hz + N + E						2/Three-phase 400 V/50 Hz + N + E			
Max. total current (A)	5	7.5	8.3	11.3	12.6	15.7	2 x 11.3	2 x 12.6	2 x 12.6	2 x 15.7

SOUND LEVEL

Internal unit (EG and DDA models)

Unit	MICRO 2000		EXPAIR 4000		EXPAIR 6000		EXPAIR 8000		EXPAIR 12000	
Air flow (m³/h)	1400	2200	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Sound level (dBA)	49	58	57	61	59	63	60	63	60	64

External unit (DDA model)

Unit	MICRO 2000		EXPAIR 4000		EXPAIR 6000		EXPAIR 8000		EXPAIR 12000	
Models	20V	28V	35V	50V	65V	75V	2 x 50V	2 x 65V	2 x 65V	2 x 75V
Sound level (dBA)	43	43	49	47	51	51	50	54	54	54



CONNECTIONS/MASS

Internal unit

Unit	MICRO 2000	EXPAIR 4000	EXPAIR 6000	EXPAIR 8000	EXPAIR 12000
Mass of internal unit (kg)	100	280	310	375	480
CHILLED WATER COIL					
Inlet/outlet connections	G 3/4"	G 3/4"	G 1"	G 1"	G 1" 1/4
Condensates drain	D 32 mm				
HOT WATER COIL					
Inlet/outlet connections	-	G 1/2"	G 3/4"	G 3/4"	G 3/4"
HUMIDIFIER					
Water supply	G 3/4"				
Drain outlet	D 30 mm				

Chilled water connections: inlet on threaded fitting and outlet on threaded control valve.
Condensate drain connection on smooth fitting.

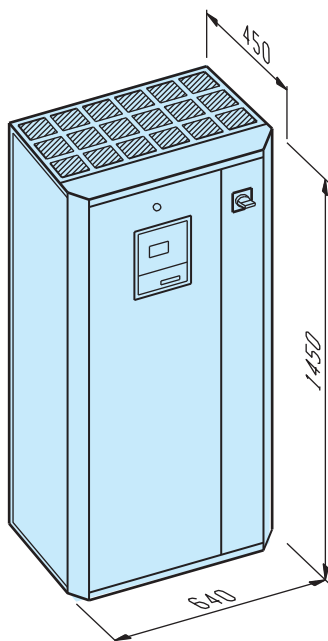
External unit

Unit	MICRO 2000		EXPAIR 4000		EXPAIR 6000		EXPAIR 8000		EXPAIR 12000	
No. and type of external units	1 x 20V	1 x 28V	1 x 35V	1 x 50V	1 x 65V	1 x 75V	2 x 50V	2 x 65V	2 x 65V	2 x 75V
Mass of external units (kg)	64	69	69	101	112	118	101	112	112	118
COOLING CONNECTIONS										
Inlet pipe	1/2"	5/8"	3/4"	3/4"	7/8"	7/8"	2 x 3/4"	2 x 7/8"	2 x 7/8"	2 x 7/8"
Liquid pipe	1/4"	3/8"	3/8"	3/8"	3/8"	1/2"	2 x 3/8"	2 x 3/8"	2 x 3/8"	2 x 1/2"
Condensates drain	D 32 mm									

DIMENSIONS

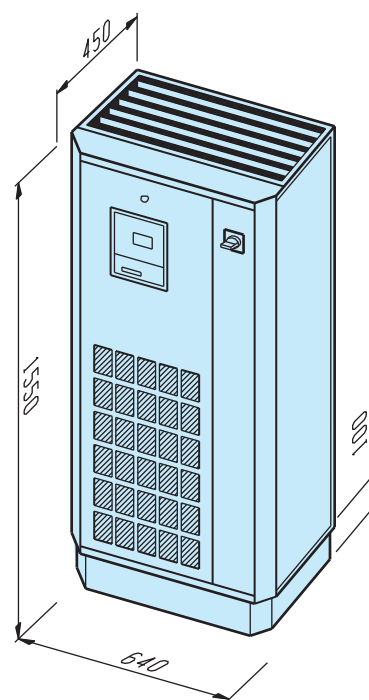
Internal unit (EG and DDA models)

SI



MICRO 2000

SD



MICRO 2000

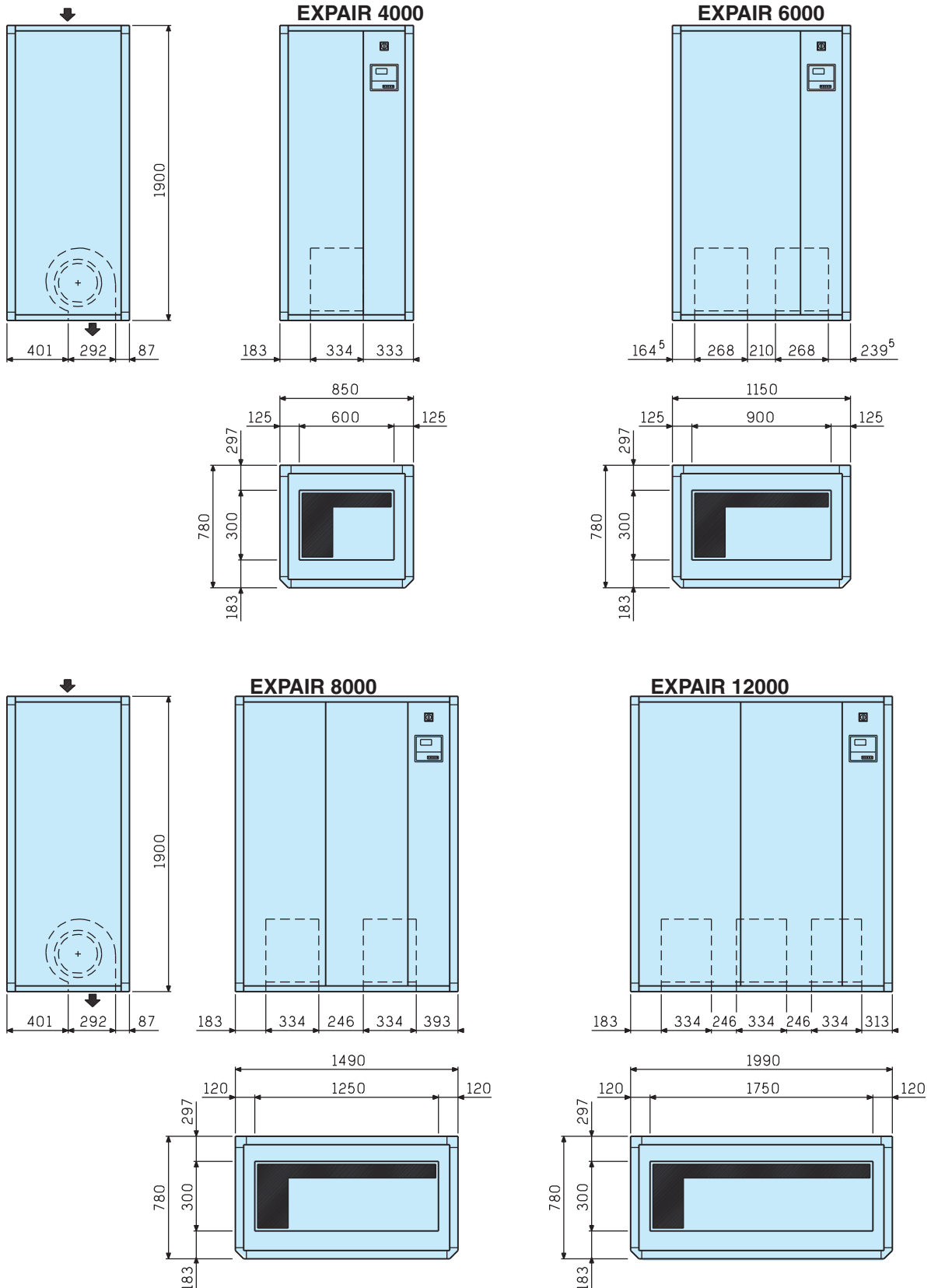


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DIMENSIONS

Internal unit (EG and DDA models)

■ Mounting 1 SI

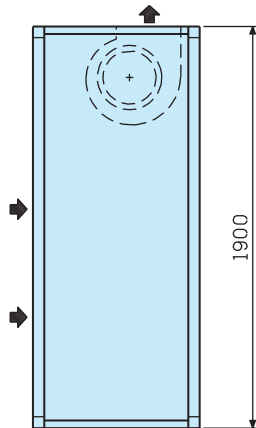




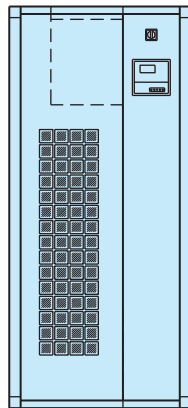
DIMENSIONS

Internal unit (EG and DDA models)

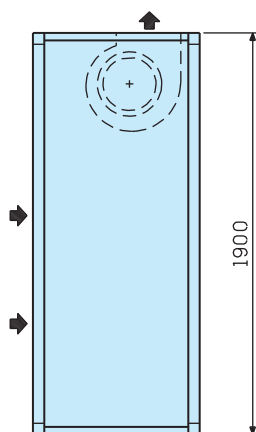
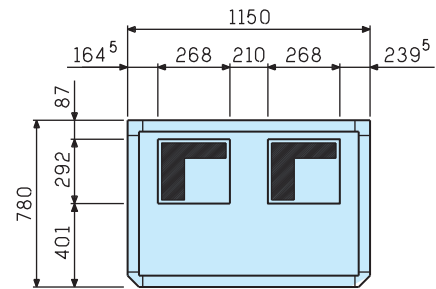
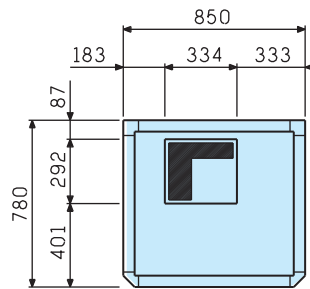
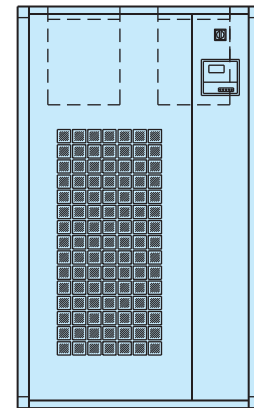
■ Mounting 3 SD



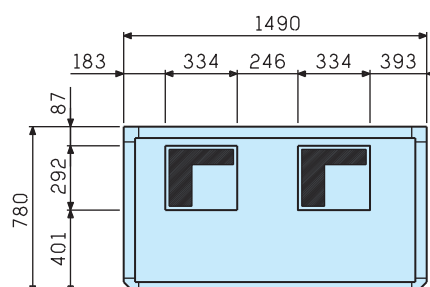
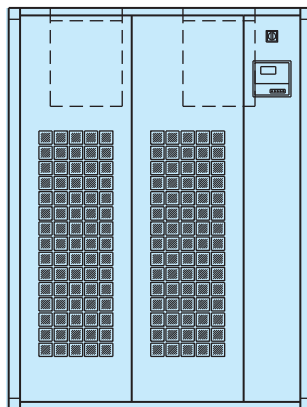
EXPAIR 4000



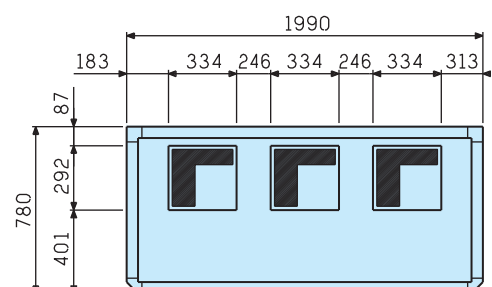
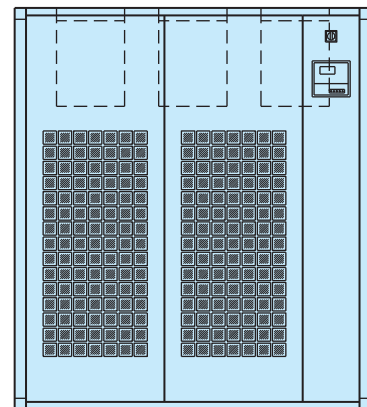
EXPAIR 6000



EXPAIR 8000



EXPAIR 12000



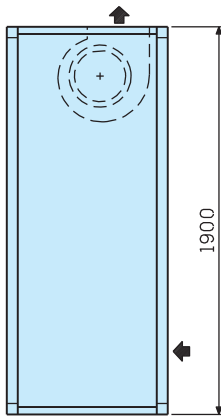


Precision air handling cabinets Ciatronic

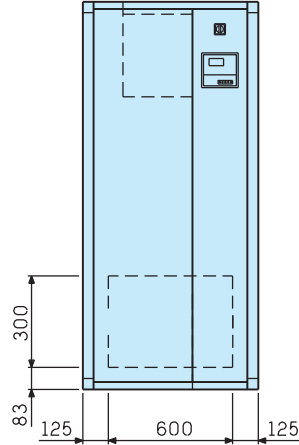
DIMENSIONS

Internal unit (EG and DDA models)

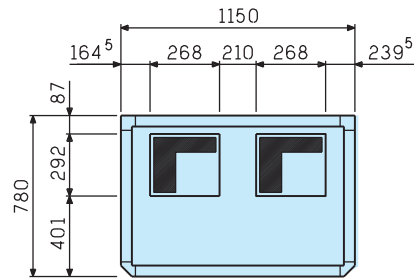
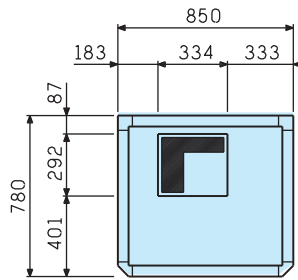
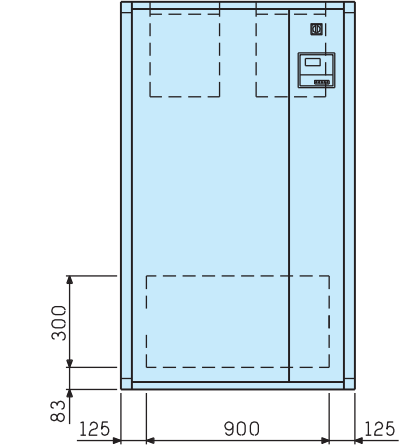
■ Mounting 4 SD



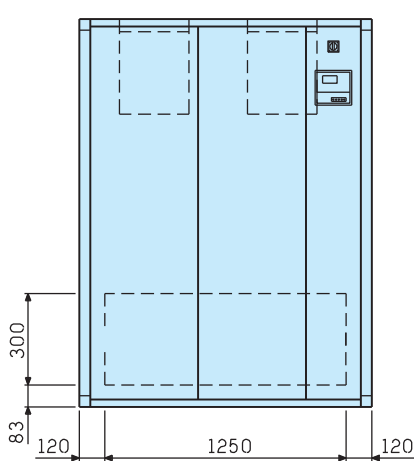
EXPAIR 4000



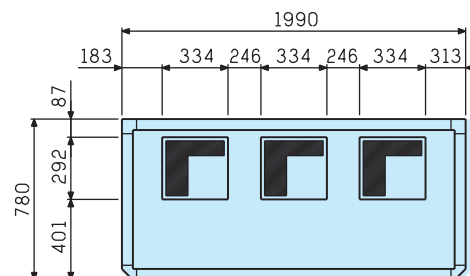
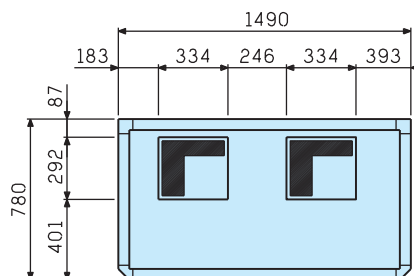
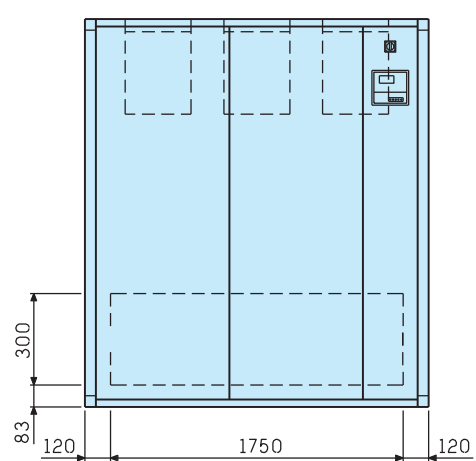
EXPAIR 6000



EXPAIR 8000



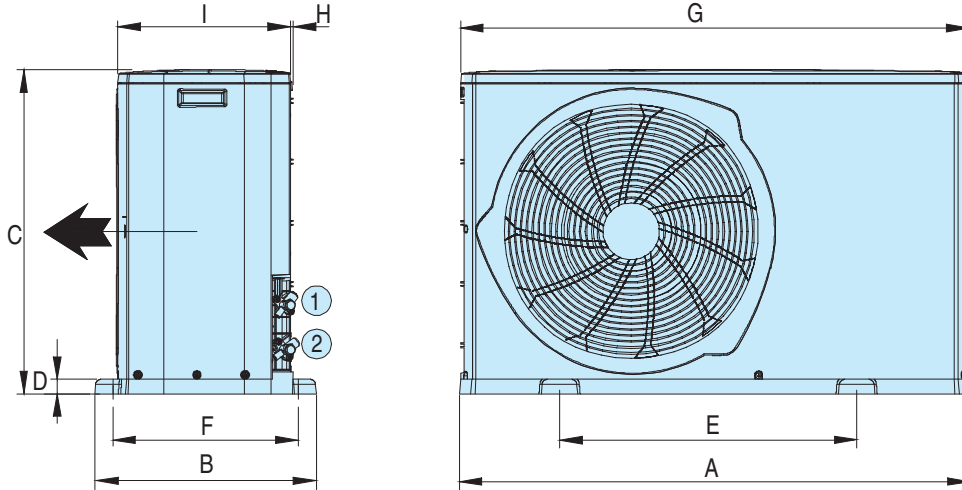
EXPAIR 12000



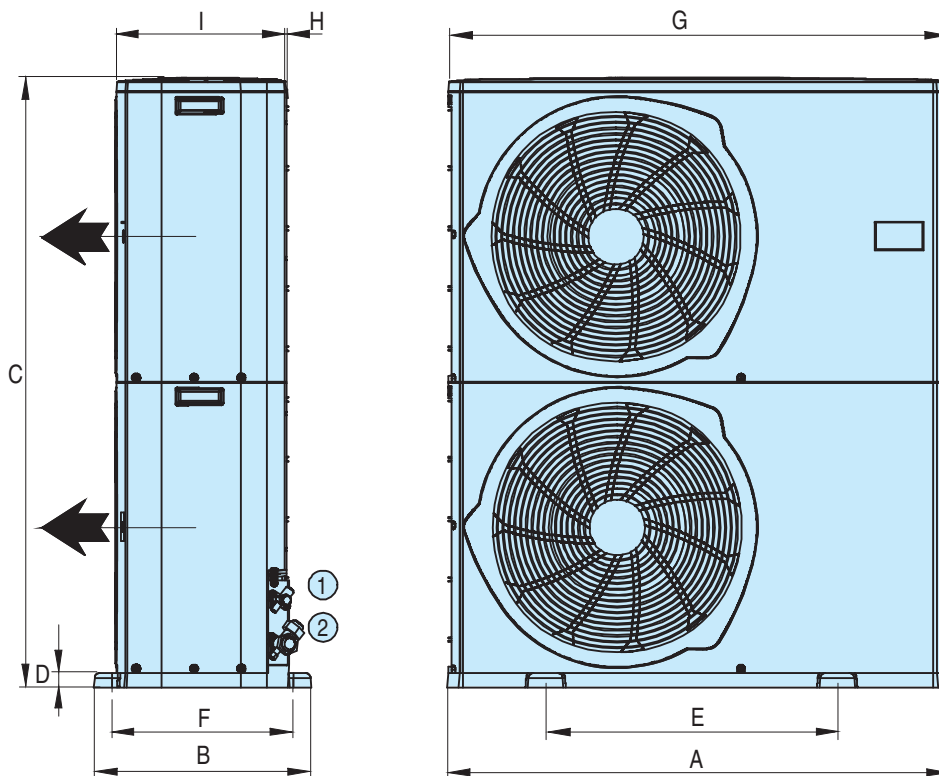
DIMENSION

External unit

■ 20, 28 and 35 models



■ 50, 65 and 75 models



CL	A	B	C	D	E	F	G	H	I
20, 28 and 35	1.035	449	658	30	602	375	1.030	5	350
50, 65 and 75	1.035	449	1.258	30	602	375	1.030	5	350

