Precision air handling cabinets

EXPAIR

Reducted footprint

Dual-wall construction

Built-in variable frequency drive

PLC control

Variable speed condenser fan

ENVIRONMENTALLY FRIENDLY
HFC R410A
PROTECTION DE L'ENVIRONNEMENT

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 rooms for special use (electronics, metrology, sensitive storage, medical, controlled atmosphere rooms).

Dual-wall construction. Fan controlled by a variable frequency drive to ensure flow/pressure balance on site.

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

Expair CW

Cabinet supplied with chilled water.

Expair DXA

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

ASSEMBLY

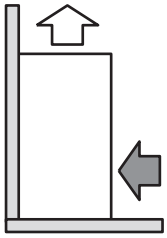
UNDER configuration: inverted discharge

Assembly 1

Discharge into raised floor

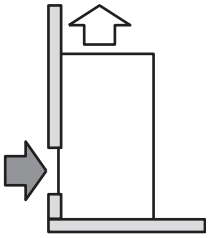
OVER configuration: discharge from top

Assembly 3



Intake from front

Assembly 4



Intake from rear

RANGE

Unit	CW	5	8	12	16		27		39		59	
	DXA	5	8	10	12	15	19	24	31	36	38	48
Rated air flow rate (1)		1300	2000	2500	3000	4000	5000	6000	7000	8000	10000	12000
Associated CL condensing unit (2)		20V	28V	35V	35V	50V	65V	75V	2x50V	2x65V	2x65V	2x75V

(1) Air flow rate adjustable by built-in variable frequency drive.
(2) Two condensing units per air handling cabinet for 39 and 59 models.

QUICK SELECTION

Expair CW

Unit	CW 5	CW 8	CW 12	CW 16		CW 27		CW 39		CW 59	
Air flow (m³/h)	1300	2000	2500	3000	4000	5000	6000	7000	8000	10000	12000
Cooling capacity (kW)	5	8	10.5	14.7	18.5	23.5	27	34	38	48	55
Water flow (m³/h)	0.86	1.4	1.8	2.5	3.2	4	4.6	5.8	6.5	8.2	9.4
Pressure drop (mCE)	4.3	4.9	5.1	4.7	7	4.1	5.2	7.3	8.9	5.5	6.9

Characteristics: total cooling capacity, pure water at 7°C/12°C, air at 24°C, 45% 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 / 45 %	0.84	0.79
24 °C / 45 %	1	0.9

Expair DXA

Unit	DXA 5	DXA 8	DXA 10	DXA 12	DXA 15	DXA 19	DXA 24	DXA 31	DXA 36	DXA 38	DXA 48
External units, quantity and type	1xCL 20V	1xCL 28V	1xCL 35V	1xCL 35V	1xCL 50V	1xCL 65V	1xCL 75V	2xCL 50V	2xCL 65V	2xCL 65V	2xCL 75V
Air flow (m³/h)	1300	2000	2500	3000	4000	5000	6000	7000	8000	10000	12000
Cooling capacity (kW)	5	8	10.6	11	15	19	23.2	30.1	35	38	47

Characteristics: total cooling capacity, air at 24°C, 45% 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.

Precision air handling cabinets

QUICK SELECTION

Hot water coil*

Unit	CW	5	8	12	16		27		39		59	
	DXA	5	8	10	12/15		19/24		31/36		38/48	
Air flow (m³/h)		1300	2000	2500	3000	4000	5000	6000	7000	8000	10000	12000
Heating capacity (kW)		4.5	6.2	7.5	11.9	13.7	17.8	19.5	25.8	27.6	37.5	40.9
Water flow (m³/h)		0.21	0.27	0.33	0.5	0.6	0.8	0.9	1.1	1.2	1.65	1.8
Pressure drop (mCE)		1.3	2.6	4.3	2.1	2.8	1	1.2	1.7	1.9	2.8	3.3

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.

Electric heater

Unit	CW	5	8	12	16	27	39	59
	DXA	5	8	10	12/15	19/24	31/36	38/48
Heating capacity (kW)		3	3	6	9	12	18	24

Ventilation

Unit	CW	5	8	12	16	27	39	59
	DXA	5	8	10	12/15	19/24	31/36	38/48
Air flow (m³/h)		1300	2000	2500	4000	6000	8000	12000
Max. available pressure (Pa) with G4 filter		240	100	124	128	165	70	65
Max. available pressure (Pa) with F7 filter*		220	80	110	100	140	50	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-wall 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.
- Optional dual filtration (G4 + F7)*
- Filter cells held in compression on a counter-frame with a seal to prevent all leaks.
- Blockage level monitored by an analogue pressure sensor

Cold coil section

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

* not available on DXA 5/8/10 and CW 5/8/12 models

Ventilation section

- Direct drive centrifugal fan.
- Electric motor (3-ph, 400 V, 4 poles, class F).
- Variable frequency drive fitted for air flow control.
- Air flow detected by an analogue pressure sensor.

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 2 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 supply air low limit.
- Remote control and fault summary contact
- Optional condensate pump

Accessories

- Support base for discharge into raised floor
  - low version (225-320 mm)
  - high version (320 to 525 mm)
- Supply 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 (DXA 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

OPTIONS

Electric heater

- Operation linked to fan
- Two-stage control (3 kW electric heater excepted).
- Two-stage or Triac control on “Expair”.
- Two high limit safety thermostats, automatic and manual reset.

Hot water coil

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

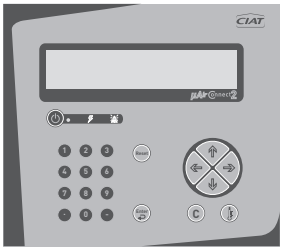
Humidifier

- Immersed electrode humidifier:
  - Stainless steel electrodes with large surface area.
  - 3 kg steam per hour Rated flow rate < 3000 m3h
  - 8 kg steam per hour Rated flow rate < 3000 m3h
  - Steam cylinder contained in one easily-removable item.
  - Filling solenoid valves
  - Drain pump
  - Electronic circuit board controlling operation.
  - Diffusion jet
  - Water supply connection kit
- Only operates on mains water (conductivity 350 to 1250 µS/cm, hardness 13 to 30°F), non demineralised or softened water.

CONTROL

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

Ciat µAir 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

- Can manage rotations, backups and auxiliaries between units.

Carel pCO_3

- Series PLC, capable of handling all specific control requirements.

- Can manage rotations, backups and auxiliaries between units.

- BMS: output using MODBUS or LON protocol (option)

ELECTRICAL CHARACTERISTICS

Internal unit (CW and DXA models)

Unit	Chilled water	CW 5	CW 8	CW 12	CW 16		CW 27		CW 39		CW 59	
	Direct expansion	DXA5	DXA8	DXA10	DXA12	DXA15	DXA19	DXA24	DXA31	DXA36	DXA38	DXA48
Electrical power supply		3ph 400 V / 50 Hz + T										
Max. total current (A) (Cabinet without options)		2.6			3.3		5		6.6		9.9	

HUMIDIFIER (OPTION)

Adjustable steam flow rate (kg/h)	1 to 3	5 to 8
Absorbed power (kW)	2.25	6
Absorbed current (A)	9.8	8.7

ELECTRIC HEATER (OPTION)

Power (kW)	3	6	9	12	18	24
Absorbed current (A)	4.3	8.7	13	17.3	26	34.6

(*) Maximum total current for internal unit excluding options (electric heater and humidifier).

External unit (modèle DXA)

Unit	5	8	10	12	15	19	24	31	36	38	48
No. and type of external units	1x20V	1x28V	1x35V	1x35V	1x50V	1x65V	1x75V	2x50V	2x65V	2x65V	2x75V
Nb/type of electrical power supply	1/3ph 400V / 50Hz + N +E							2/3ph 400V / 50Hz + N +E			
Max. total current (A)	5	7.5	8.5	8.3	11.3	12.6	15.7	2x11.3	2x12.6	2x12.6	2x15.7

SOUND LEVEL

Internal unit (CW and DXA models)

Unit	CW	5	8	12	16		27		39		59	
	DXA	5	8	10	12/15		19/24		31/36		38/48	
Air flow (m^3/h)		1300	2000	2500	3000	4000	5000	6000	7000	8000	10000	12000
Sound level (dBA)		49	53	58	57	61	59	63	60	63	60	64

Sound level of internal unit (CW and DXA) at 2 m, free field, with blower connected, ± 3 dB

External unit (DXA model)

Unit DXA	5	8	10	12	15	19	24	31	36	38	48
Models	20V	28V	35V	35V	50V	65V	75V	2x50V	2x65V	2x65V	2X75V
Sound level (dBA)	43	43	49	49	47	51	51	50	54	54	54

Sound level of external unit at 5 m, 1.5m four ground level, directivity 2 and ± 3 dB

CONNECTIONS/MASS

Internal unit

Unit								
	Chilled water	CW 5	CW 8	CW 12	CW 16	CW 27	CW 39	CW 59
	Direct expansion	DXA 5	DXA 8	DXA 10	DXA12/15	DXA19/24	DXA 31/36	DXA 38/48
Mass of internal unit (kg)		115	120	125	280	310	375	480

Chilled water coil (CW)

Inlet/outlet connections	G ½" M	G ¾" M	G ¾" M	G¾" M	G 1" M	G 1" M	G 1" ¼ M
Condensate drain*	∅ 32mm						

Direct expansion coil (DXA)

Suction pipes	G 5/8" M	G 5/8" M	G 3/4" M	G 7/8" M	G 7/8" M	G1"1/8 M	G1"1/8 M	G 2X7/8" M	G 2X7/8" M	G 2X1"1/8 M	G 2X1"1/8 M
Liquid pipes	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	2x1/2"	2x1/2"	2x1/2"	2x1/2"
Condensate drain*	∅ 32mm										

Hot water coil

Inlet/outlet connections	G ½" M	G ½" M	G ½" M	G ½" M	G ½" M	G ¾" M	G ¾" M	G ¾" M

Chilled water coil connections: inlet on threaded coupling and outlet on threaded control valve.
Condensate drain connection on smooth coupling.
* Drain connections if optional pump fitted: dia. 6 mm

External unit

Direct expansion units	DXA 5	DXA 8	DXA 10	DXA 12	DXA 15	DXA 19	DXA 24	DXA 31	DXA 36	DXA 38	DXA 48
Outdoor units (qty/type)	1x20V	1x28V	1x35V	1x35V	1x50V	1x65V	1x75V	2x50V	2x65V	2x65V	2x75V
Weight of outdoor unit (kg)	64	69	69	69	101	112	118	101	112	112	118

Refrigerant connections

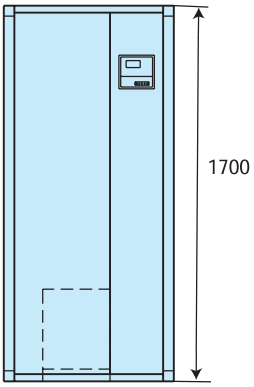
Suction pipes	1/2"	5/8"	3/4"	3/4"	3/4"	7/8"	7/8"	2x3/4"	2x7/8"	2x7/8"	2x7/8"
Liquid pipes	1/4"	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"	2x3/8"	2x3/8"	2x3/8"	2x1/2"
Condensate drain	∅ 32mm										

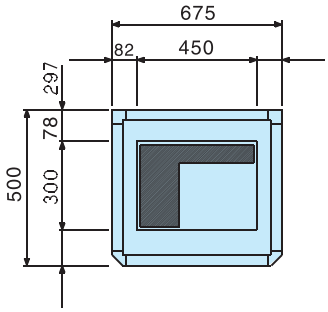
DIMENSIONS

Internal unit (CW and DXA models)

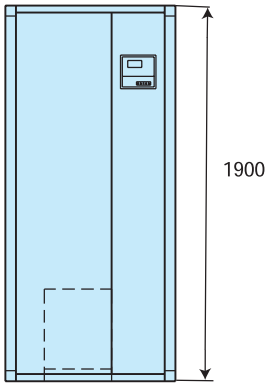
Configuration 1 UNDER

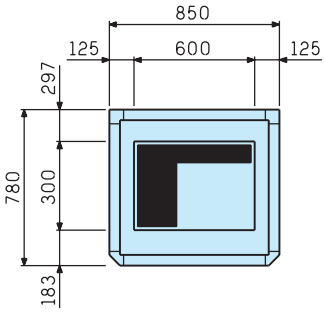
CW 5/8/12
DXA 5/8/10



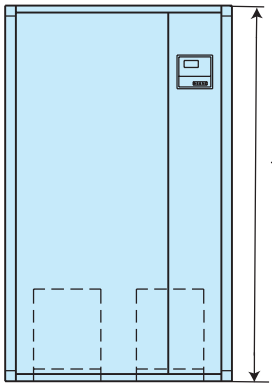


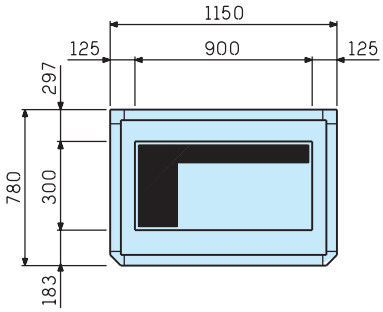
CW 16
DXA 12/15



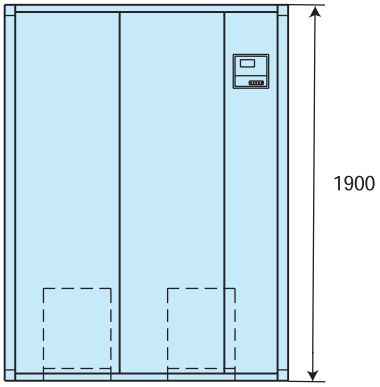


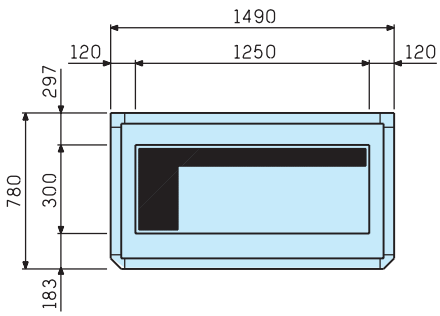
CW27
DXA 19/24



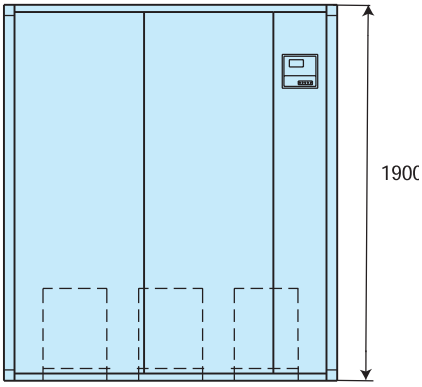


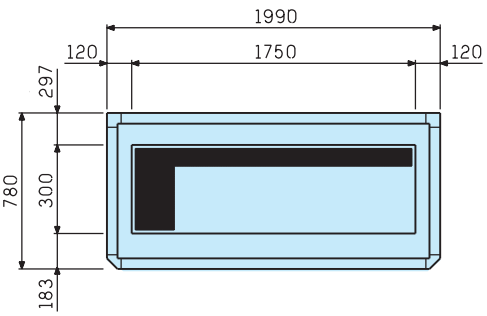
CW 39
DXA 31/36





CW 59
DXA 38/48



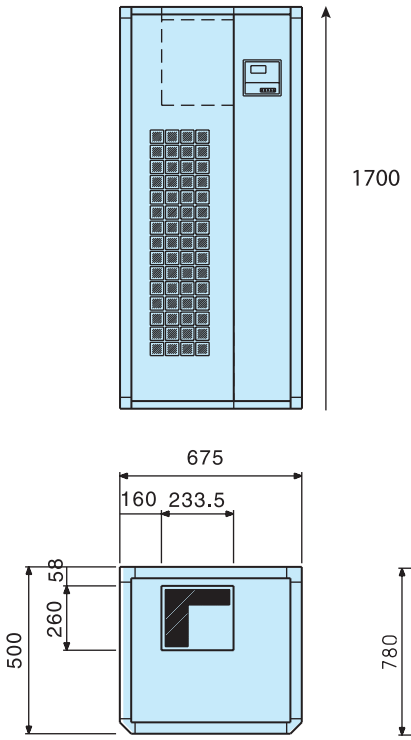


DIMENSIONS

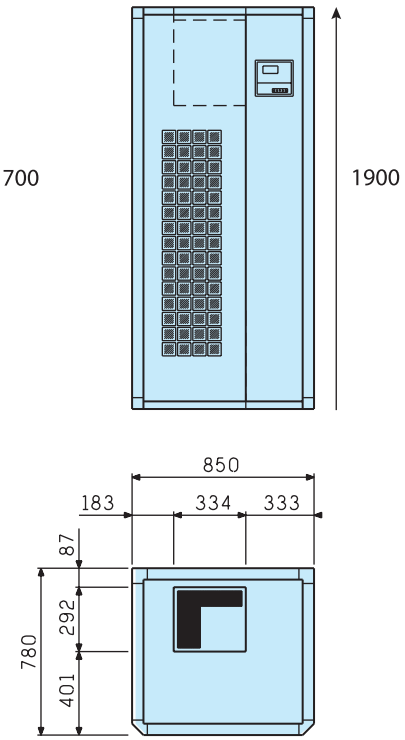
Internal unit (CW and DXA models)

Configuration 3 OVER

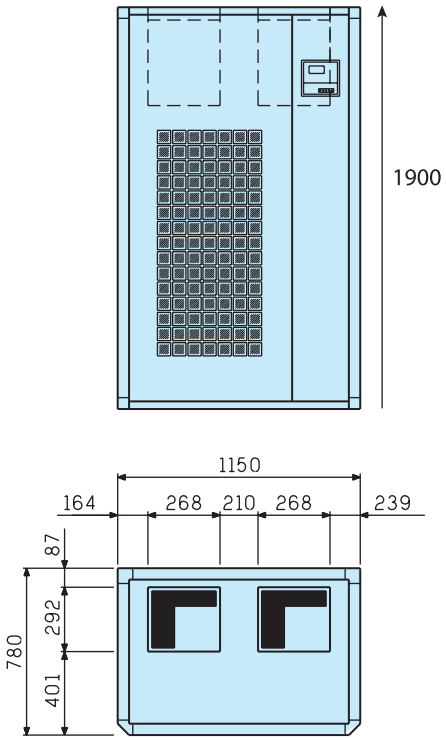
CW 5/8/12
DXA 5/8/10



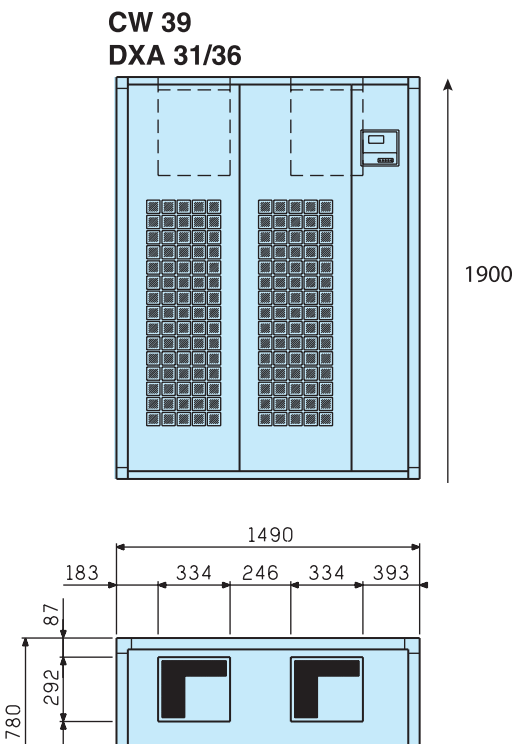
CW 16
DXA 12/15



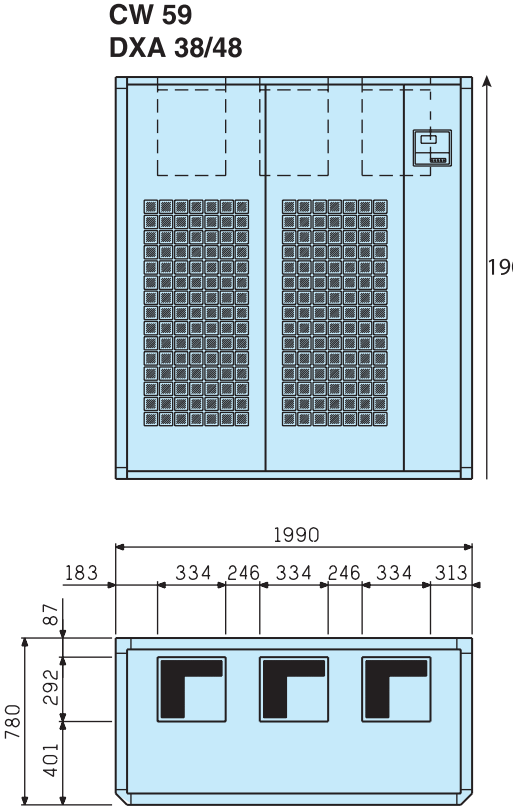
CW 27
DXA 19/24



CW 39
DXA 31/36



CW 59
DXA 38/48

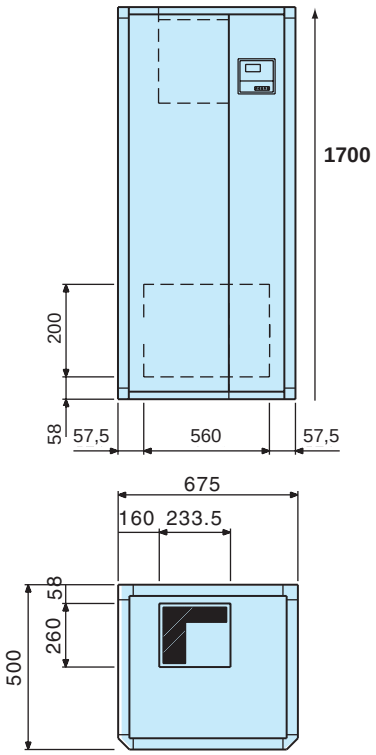


DIMENSIONS

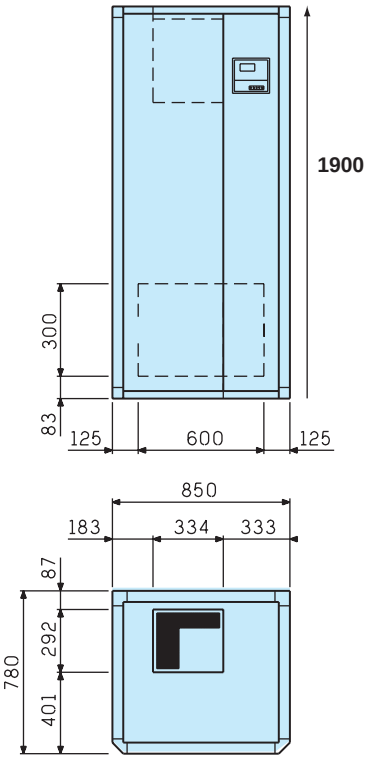
Internal unit (CW and DXA models)

■ **Configuration 4 OVER**

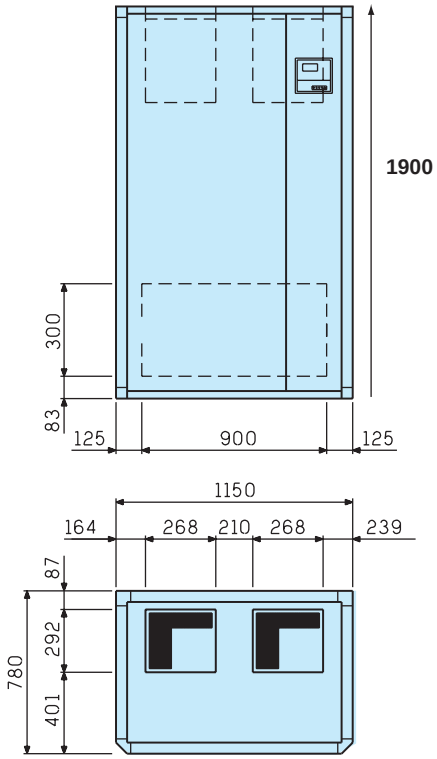
CW 5/8/12
DXA 5/8/10



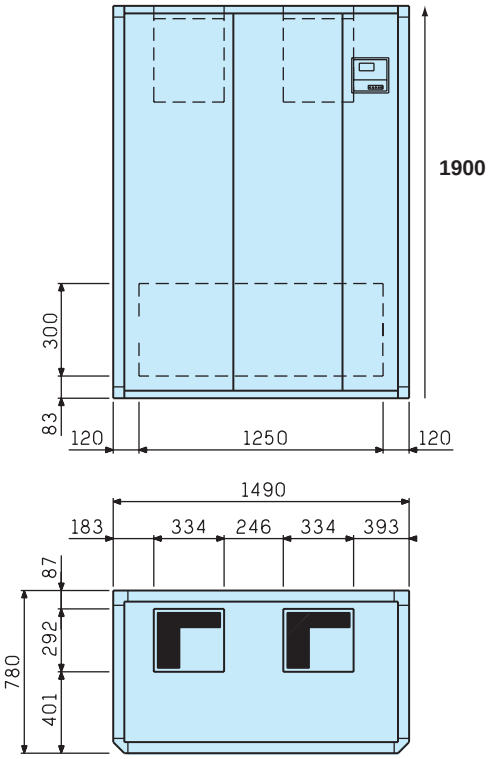
CW 16
DXA 12/15



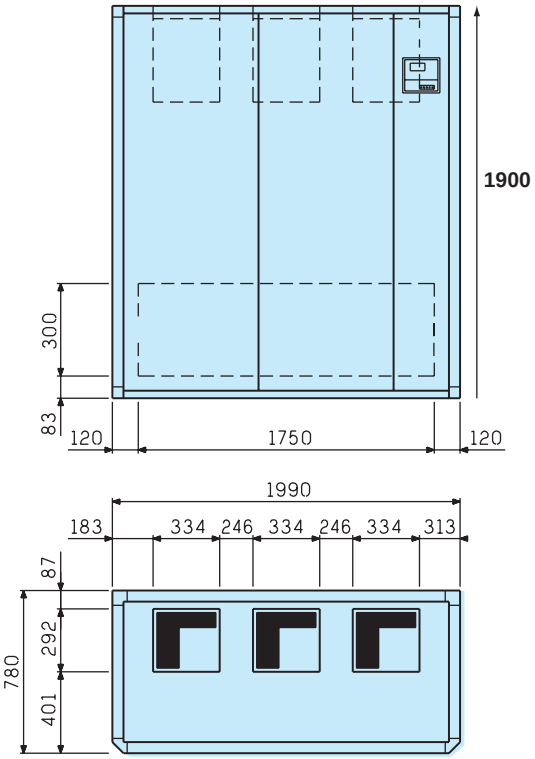
CW 27
DXA 19/24



CW 39
DXA 31/36



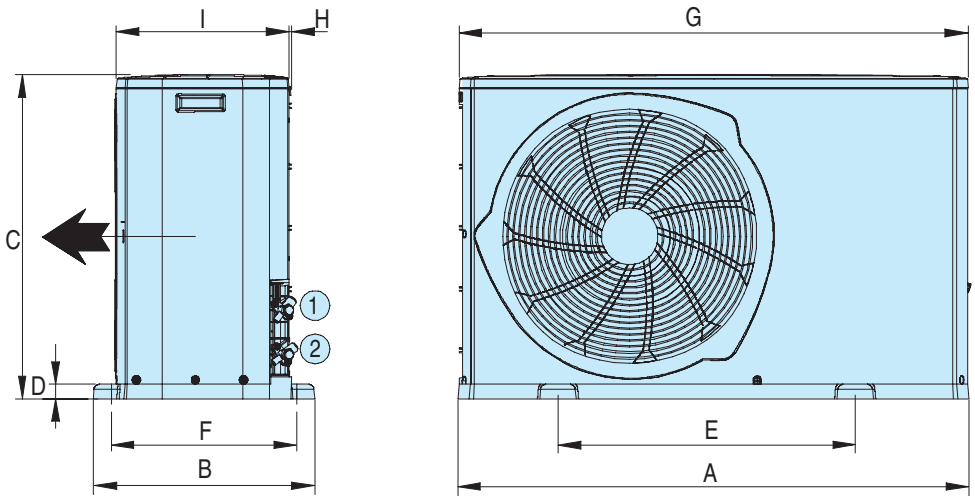
CW 59
DXA 38/48



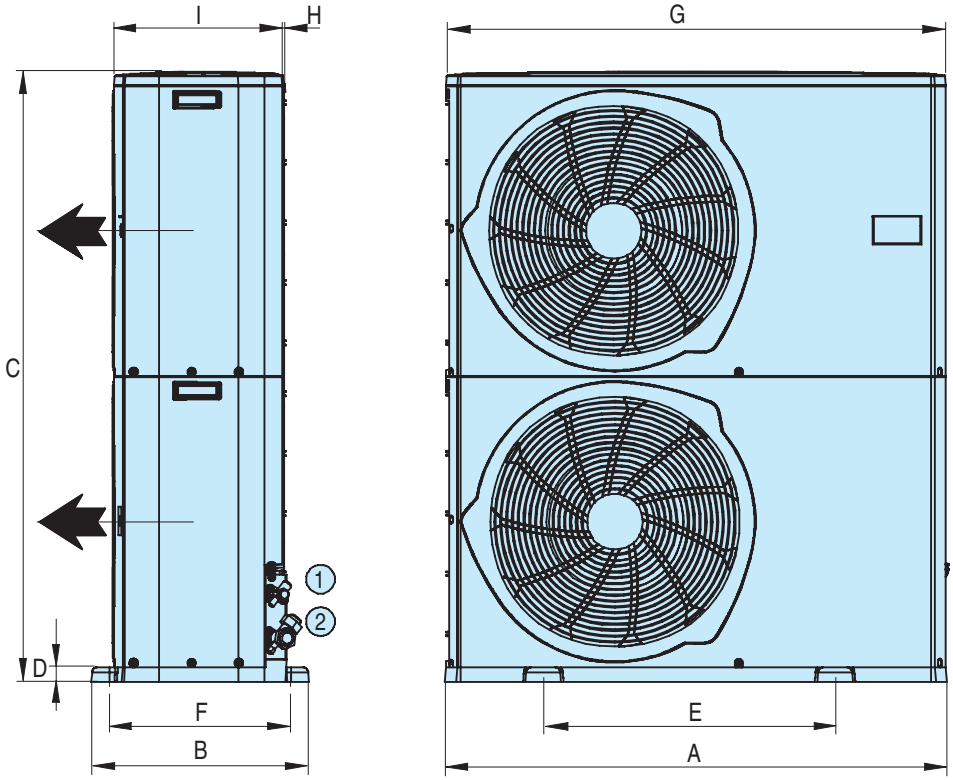
DIMENSIONS

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

EXTERNAL AIR FLOW

1 LIQUID LINE

2 SUCTION GAS LINE

Precision air handling cabinets

EXPAIR

Head office
Avenue Jean Falconnier - B.P. 14
01350 - Culoz - France
Tel.: +33 (0)4 79 42 42 42
Fax: +33 (0)4 79 42 42 10
info@ciat.fr - www.ciat.com

CIAT Service
Tel. : 08 11 65 98 98 (0,15 € / mn)
Fax : 08 26 10 13 63 (0,15 € / mn)

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OHSAS 18001

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