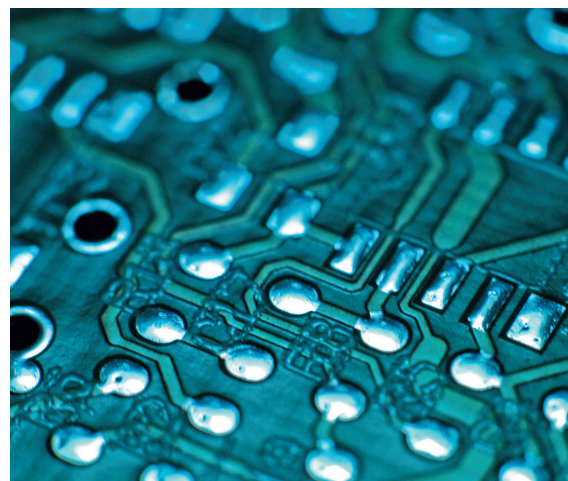


Close control air conditioners

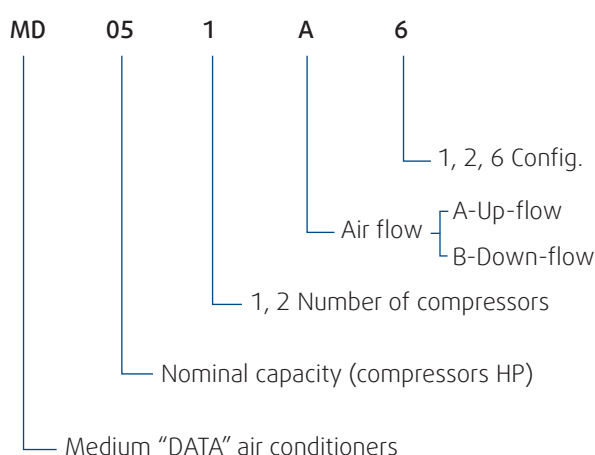
## MD data series



## MD data series



## Unit identification



## Technical specifications

The air conditioners belonging to the "DATA" series have been specifically designed and manufactured for close control air conditioning where the almost exclusive handling of sensible heat loads is a fundamental requirement. The typical applications are computer rooms, digital telephone exchanges, switch rooms, weather stations, medical laboratories, CAT and MR scanners, as well as any other application where a sensible heat load must be dissipated without modifying the relative humidity.

The series, which can be either upflow or downflow, offers a large range of accessories and variations in design, allowing for maximum flexibility in the use of the units. The overall noise level of the units is maintained at a low level by the use of "scroll" compressors, size of the fans used and the face area of the coils.

The compressor(s) and the refrigeration circuit(s) are positioned in a separate compartment out of the airflow ensuring a reduction in the transmission of noise and the possibility of maintenance with the machine in operation.

### Standard version

**Frame** in painted aluminium profiles. Painted aluminium alloy corner joints.

**Panels** (external and internal) in galvanized sheet steel with an external plastic coating. Panels are mounted with stainless steel screws; inspection panels are fitted on hinges and equipped with easy to open locks requiring a separate key. Room air return grill in galvanized steel with an external plastic coating, for up-flow models only.

**Air-tight gaskets** on panel edges in polyurethane with dual density.

**Internal structure** in galvanized sheet steel. Compressor section separate from air flow.

### Internal lining

- Doors: thermal insulation between two aluminium sheets in rigid polyurethane foam class1, non-flammable, 22 mm thickness, density of 47 kg/m<sup>3</sup> and a thermal conductivity of, 0.024 W/(m°C).
- Panels: in thermo-acoustic open-cell expanded polyurethane, 22 mm thickness for the external panels and 15 mm for the internal ones, selfextinguishing class 1, density of 33 kg/m<sup>3</sup> and a thermal conductivity of, 0.036 W/(m°C).

**Evaporating coil**, DX type in copper tubes mechanically expanded into aluminium fins; frame in galvanized steel. Double refrigerant circuit for dehumidification operation, optional, each connection complete with "Venturi" type distributor.







**Drain pan** in stainless steel with plastic connection to external discharge.

**Air filter** cleanable type in synthetic fibre, stainless steel frame, G4 efficiency.

**Supply air centrifugal fan** single inlet, backward curved blades, impeller statically and dynamically balanced, directly coupled to brushless electric motor EC (electronically commutated) type with built-in overload protection. Electrical supply from autotransformer.

**Air flow switch** on room supply air fan.

**Hermetic compressor "scroll"**, type with built-in safety valve. 2-pole electric motor with integrated electronic overload protection. Mounted on rubber shock absorbers. Valves for welding mounted on suction and discharge connections (conf. 2).

**Refrigerant filter** with mechanical and desiccant action, molecular-sieve type.

**Liquid sight-glass** with colour-change for moisture indication.

**Expansion valve** with plastic external equalizer.

**Refrigerant circuit** in copper piping that has been brazed welded with silver alloy. Suction line insulated with closed-cell vapour-proof material.

**High-pressure switch** with manual reset.

**Low-pressure switch** with automatic reset.

**Safety device** in high-pressure section.

**Electric control panel** complete with:

- Main interlocking power switch.
- Automatic fuse protections are each single utility.
- Compressor motor contactor.
- Fan motor contactors.
- Auxiliary services transformer.
- Components and wiring in compliance with applicable IEC Norms.

**Microprocessor control** for single or multi-unit management system, with the following characteristics:

- room air temperature control through the activation of the compressor or the electric heater or the modulation of the three-way valve (the later are options);
- supply air temperature limit;
- management of all alarm conditions;
- remote start-stop;
- general alarm;
- password.

**Advanced microprocessor** high performance 16 bit programmable control. It is used when customized programmes are required, or an increased number of alarms, or advanced functions for LAN connections.

**User interface** for the display of unit conditions, status and operating parameters, with the following characteristics:

- display of room temperature and temperature set-point for supply air;
- display of operating parameters;
- control keyboard with two levels of "password";
- alarm reset and unit set-up;
- on/off safety switch;
- watchdog function.

**R407C refrigerant and oil charge** (anti freeze oil type).

**Factory tests and inspection.**

## Configurations

### Configuration 1

Direct expansion packaged water cooled unit, condensing water from cooling tower, spring water or city water. It is to use water-regulating valve in case of city or spring water



operating to reduce the water consumption. The unit, as described above, is complete with:

**Condenser** water cooled plate heat exchanger, braze-welded stainless steel plates.

#### Configuration 2

Self-contained direct expansion unit in two sections, with air-cooled condenser for remote installation. The unit, as described above, is complete with:

**Shut-off valves** on refrigerant pipes. Standard supply also includes remote condenser, all electrical and pipe connections on site to be effected by the contractor.

#### Configuration 6

Direct expansion packaged unit cooled with water-glycol coming from a dry-cooler or from an industrial cooling system. The unit is similar to Configuration 1 with the condenser oversized to allow increased temperature and density typical of operation with a water-glycol mixture.

### Accessories and options

**Differential pressure switch** for clogged filter alarm.

**Water leakage alarm** complete with control relay and two sensors to be installed in the raised floor.

**Fire alarm** consist of an optical survey presence smoke directly wired to the microprocessor where the alarm can be customized.

**Electric reheating coil** one, two or three stages, available depending on the size and manufactured in extruded aluminium; complete with contactor, thermal overload protection and safety thermostat. It is controlled directly by the microprocessor.

**Steam humidifier** immersed electrodes type, modulating version, complete with probe mounted on the return air and with microprocessor control card.

**Dehumidification system** made with fan speed and consequently air flow reduction. Humidity probe on return air.

**Fresh air intake kit** separately supplied for assembly on site. It is composed of a container with G4 air filter; the container is equipped with a circular connection (80 mm diam.) that has to be connected to the fresh air duct. Drilling and flexible connection with diameter of 100 mm are to be effected by the contractor. Max available air flow 0,04 m<sup>3</sup>/sec.

**Rear return air** only for up-flow models. Closed front panel and return air intake on the rear side with flange for connection to the duct system.



**Air delivery plenum** frame and panels in galvanized steel sheet with plastic coating and internally lined with thermo acoustic polyurethane open cell foam, complete with a grill with a double row of adjustable vanes.

**Base frame** made in strong painted steel welded profiles and is equipped with adjustable pedestals (adjustment 50 mm) and air deflector. The height, has to be indicated by the mechanical contractor, and can be comprised between 150 and 700 mm.

**Non-return damper** with aluminium fins fitted on nylon bushings. For down-flow version please contact our sales dept.

**Advance microprocessor** high performance 16 bit programmable control. It is used when customized programmes are required, or an increased number of alarms, or advanced functions for LAN connections.

**Clock module** accessory for microprocessor, necessary for alarm reports and and history of alarm situations.

**Advanced microprocessor** for **temperature + humidity** control, complete with card and probe for relative humidity control on return air and dehumidification system

**Air filter** with efficiency F5 or F7 instead of the standard filters. Made in synthetic fiber with stainless steel frame; the filters are not washable.

**Special coils** with an anti corrosion surface treatment.

**Special refrigerant, R134a o R22 HCFC** (only for export to non-EEC countries).

**Internal lining** of the panels in double layers of open-cell polyurethane foam with interposed lead sheet, weight of 6.3 kg/m<sup>2</sup>, 22 mm thickness for external panels and 15 mm for internal ones. It has the same thermal insulation characteristics of the standard and improves of 4 dB(A) the noise of the unit.

**Sandwich panels** external in galvanized steel sheet plastic coated, internal in pre-painted galvanized steel sheet. Thermal insulation between the two metal sheets in rigid polyurethane foam class1, non-flammable, density 47 kg/m<sup>3</sup> and conductivity 0.024 W/(m °C). It has the same thermal insulation characteristics of the standard and improves of 4 dB(A) the noise of the unit. Can be used when high pressure fans are required.

**Serial output card RS 485.**

**Remote condenser** with electrical and pipe connection in field in charge at the mechanical contractor.

**Air cooled condenser** with:

- **Casing** in prepainted aluminium sheet fixed with rivets, floor supports for air horizontal discharge.
- **Propeller fan**, aluminium blades statically and dynamically balanced, protection grille on air discharge, directly coupled to external rotor electric motor.
- **Condensing coil** made in copper tubes mechanically expanded into aluminium fins, copper header with threaded connection for rotalock valves.
- **Taps** on refrigerant pipes.

## Technical data

Main technical data						
Data series	Size		061	071	091	101
Config. 1. with compressor	Total cooling capacity (1)	kW	20.5	26.4	31.4	36.1
	Sensible cooling capacity (1)	kW	18.6	24.8	28.5	32.7
	Input power (1)	kW	3.9	5.1	6.2	7.1
Config. 2. 6. With compressor	Total cooling capacity (2)	kW	18.3	24.3	28.4	32.9
	Sensible cooling capacity (2)	kW	17.4	23.0	26.3	30.5
	Input power (2)	kW	4.9	6.3	7.8	8.7
Supply fan EC	Nominal air flow	m <sup>3</sup> /s	1.39	2.08	2.08	2.50
	External static pressure	pa	250	300	300	200
	Power input	kW	0.8	1.2	1.2	1.3
	Engaged electric power	kW	2.7	2.7	2.7	3.1
	Available static pressure	pa	650	500	500	500
Cooling coil	Face area	m <sup>2</sup>	0.576	0.850	0.850	1.016
	Number of rows	nr.	4	4	4	4
	Fin spacing	mm	1.8	1.8	1.8	1.8
Compressor	Number of compressors	nr.	1	1	1	1
	Nominal compressor power	hP	6	7.5	9	10
Conf. 1 water cooled condens.	Water flow	l/sec	0.29	0.38	0.45	0.52
	Water pressure drop	kPa	3.1	4.5	3.4	4.6
Conf. 6 water cooled condens.	30% Glycol water flow	l/sec	1.2	1.59	1.88	2.15
	Water pressure drop	kPa	53.1	42.0	56.6	49.0
Air cooled condensed model		CG	060	075	100	100
Oil charge per circuit		l	1.6	4	4	4
Refrigerant charge	Configuration 1, 6	kg	1.7	2.1	2.5	2.8
	Configuration 2	kg	5.6	6.7	8.1	9.0
Sound pressure level (up-flow/down-flow) (5)		dB(A)	55/51	61.5/57.5	61.5/57.5	60.5/56.5
Dimensions	Length	mm	860	1.258	1.258	1.448
	Width	mm	860	860	860	860
	Height	mm	1.980	1.980	1.980	1.980
Operating weight	Configuration 1, 6	kg	280	340	350	400
	Configuration 2	kg	270	330	340	380

Capacities referred to:

(1) Room air conditions +24°C/50%UR. Condensing water temperature +15/35°C.

(2) External air temperature +32°C.

(5) Sound pressure level measured a 2 mt from the machine at 1 m from the ground in free field conditions

The fan power input has not been subtracted from the capacities indicated above.

## Technical data

Main technical data							
Data series	Size		102	132	152	182	202
Config. 1. with compressor	Total cooling capacity (1)	kW	35.2	47.2	52.6	63.9	69.7
	Sensible cooling capacity (1)	kW	32.3	32.3	50.0	58.7	63.3
	Input power (1)	kW	6.8	9.0	10.2	12.4	14.2
Config. 2. 6. With compressor	Total cooling capacity (2)	kW	32.3	42.6	48.0	57.6	64.1
	Sensible cooling capacity (2)	kW	29.7	39.5	45.0	54.5	59.2
	Input power (2)	kW	8.2	11.2	11.2	11.2	11.2
Supply fan EC	Nominal air flow	m³/s	2.50	3.61	3.89	4.44	4.44
	External static pressure	Pa	200	200	250	250	250
	Power input	kW	1.9	2x0.9	2x1.0	2x1.4	2x1.4
	Engaged electric power	kW	3.1	2x2.7	2x2.7	2x2.7	2x2.7
	Available static pressure	Pa	500	600	550	450	450
Cooling coil	Face area	m²	1.016	1.386	1.692	1.891	1.891
	Number of rows	Nr.	4	4	4	4	4
	Fin spacing	mm	1.8	1.8	1.8	1.8	1.8
Compressor	Number of compressors	Nr.	2	2	2	2	2
	Nominal compressor power	HP	5	6.5	7.5	9	10
Conf. 1 water cooled condens.	Water flow	L/sec	0.50	0.67	0.75	0.91	1.00
	Water pressure drop	kPa	3.0	3.5	4.2	3.5	4.7
Conf. 6 water cooled condens.	30% Glycol water flow	L/sec	2.10	2.79	3.14	3.79	4.22
	Water pressure drop	kPa	47.7	57.4	40.7	58.3	49.9
Air cooled condensed model		CG	2x0.50	2x0.75	2x0.75	2x100	2x100
Oil charge per circuit		L	2.8	3.8	8	8	8
Refrigerant charge	Configuration 1, 6	kg	2.8	3.6	4.2	5.0	5.6
	Configuration 2	kg	9.0	11.6	13.4	16.2	18.0
Sound pressure level (up-flow/down-flow) (5)		dB(A)	60.5/56.5	64/60	65/61	67/63	67/63
Dimensions	Length	mm	1.448	1.885	2.265	2.265	2.265
	Width	mm	860	860	860	860	860
	Height	mm	1.980	1.980	1.980	1.980	1.980
Operating weight	Configuration 1, 6	kg	420	540	660	720	870
	Configuration 2	kg	400	515	630	685	830

Capacities referred to:

(1) Room air conditions +24°C/50%UR. Condensing water temperature +15/35°C.

(2) External air temperature +32°C.

(5) Sound pressure level measured a 2 mt from the machine at 1 m from the ground in free field conditions

The fan power input has not been subtracted from the capacities indicated above.

## Cooling capacity

Cooling capacity R407C - Room air conditions °C-%RH									
Size	Conf.	20-50		22-50		24-50		26-50	
		Ct	Cs	Ct	Cs	Ct	Cs	Ct	Cs
		kW	kW	kW	kW	kW	kW	kW	kW
061	1, 2, 6	18.4	17.6	19.4	18.1	20.5	18.6	21.6	19.0
		16.5	16.5	17.3	16.9	18.3	17.4	19.3	17.8
071	1, 2, 6	23.7	22.6	25.0	23.8	26.4	24.8	27.9	25.6
		21.8	20.9	23.0	22.1	24.3	23.0	25.7	23.8
091	1, 2, 6	28.2	25.8	29.8	27.3	31.4	28.5	33.4	29.5
		25.5	23.8	26.9	25.2	28.4	26.3	30.2	27.2
101	1, 2, 6	32.1	30.9	34.2	31.9	36.1	32.7	38.2	33.6
		29.2	28.9	31.2	29.8	32.9	30.5	34.8	31.3
102	1, 2, 6	31.4	29.7	33.2	31.3	35.2	32.3	37.1	33.2
		28.8	27.3	30.4	28.8	32.3	29.7	34.1	30.5
132	1, 2, 6	42.1	40.0	44.6	41.8	47.2	43.3	50.0	44.6
		38.0	36.5	40.2	38.2	42.6	39.5	45.1	40.6
152	1, 2, 6	47.0	36.5	49.7	48.5	52.6	50.0	55.7	51.4
		42.9	42.2	45.4	43.7	48.0	45.0	50.8	46.2
182	1, 2, 6	56.9	55.1	60.4	57.1	63.9	58.7	67.7	60.1
		51.3	51.2	54.4	53.0	57.6	54.5	61.0	55.8
202	1, 2	62.1	60.0	65.8	61.7	69.7	63.3	74.0	64.8
		57.1	56.2	60.5	57.7	64.1	59.2	68.1	60.6

Ct Total cooling capacity.

Cs Sensible cooling capacity.

The fan power input has not been subtracted from the capacities indicated above.

## Heater capacity

Electric heater capacity										
		Size								
		061	071	091	101	102	132	152	182	202
Single stage	kW	6	9	9	12	12	15	18	18	18
Three stages*	kW	2.4/3.6/6	3.6/5.4/9	3.6/5.4/9	4.8/7.2/12	4.8/7.2/12	6/9/15	7.2/10.8/18	7.2/10.8/18	7.2/10.8/18
FLA**	A	8.7	13.0	13.0	17.3	17.3	21.7	26.0	26.0	26.0

\* Only for three phase systems with neutral.

\*\* Referred to single stage heater.

## Water connections

Water connections										
Connection		Size								
		061	071	091	101	102	132	152	182	202
Cond. water connections (conf. 1)	"G	½"	¾"	¾"	¾"	2x½"	2x½"	2x¾"	2x¾"	2x¾"
Nominal pressure drop	kPa	3.1	4.5	3.4	4.6	3.0	3.5	4.2	3.5	4.7
Liquid line (conf. 2)	Ø	½"	⅝"	⅝"	⅝"	2x½"	2x½"	2x⅝"	2x⅝"	2x⅝"
Gs suppli line (conf. 2)	Ø	⅝"	⅞"	⅞"	⅞"	2x⅝"	2x⅝"	2x⅞"	2x⅞"	2x⅞"
Cond. water connections (conf. 6)	"G	1"	1¼"	1¼"	1¼"	2x1	2x1	2x1¼"	2x1¼"	2x1¼"
Nominal pressure drop	kPa	53.1	42.0	56.6	49.0	47.7	57.4	40.7	58.3	49.9
Humidifier water supply	"G	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
Min int. diam. humid. supply	mm	6	6	6	6	6	6	6	6	6
Humidifier water drain	mm	32	32	32	32	32	32	32	32	32
Condensate drain	mm	20	2x20	2x20	2x20	2x20	2x20	2x20	2x20	2x20

## Operating range

Operating range										
		Size								
		061	071	091	101	102	132	152	182	202
Air flow	m³/s	min	1.11	1.66	1.66	1.66	1.66	2.22	3.33	3.33
		max	1.45	2.13	2.13	2.60	2.60	3.70	4.25	4.75
Max condenser water flow	l/s	conf.1	0.58	0.76	0.90	1.04	1.00	1.34	1.50	1.82
		conf.6	2.40	3.18	3.76	4.30	4.20	5.58	3.00	3.64
Hydraulic pressure	kPa	max	600							



## Humidifier

Humidifier										
		Size								
		061	071	091	101	102	132	152	182	202
Max steam production	kg/h	3	8	8	8	8	8	8	8	8
Full load power input	kW	2.3	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Full load ampere	A	3.3	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
Water conductivity min-max	µS/cm²	125-1.250								
Water supply pipe diam.	°G	¾"								
Min int. diam. humid. supply	mm	6								
Water drain pipe diam.	mm	32								

## Electrical data

Electrical data										
		Size								
		061	071	091	101	102	132	152	182	202
Full load power input (1)	kW	17.82	26.5	28.48	33.48	32.9	42.26	46.9	50.96	54.16
FLA (1)	A	29.7	41.1	44	51.6	55.7	70.95	73.5	79.3	84.7
LRA	A	78.3	103.3	127.3	131.9	82.8	125.6	122.7	149.6	156.3
Backward-blade fan	n	1	1	1	1	1	2	2	2	2
	kW tot	1.1	1.6	1.6	1.7	1.7	2.8	2.8	3.0	3.0
	A tot	6.3	4.4	4.4	4.6	4.6	6.2	9.0	8.8	8.8
Copper wire size (2)	5 x mm²	10	16	16	16	16	16	25	25	25
Electrical supply	V/ph/Hz	400 ± 10% / 3 + N/50								

(1) At the maximum operating admitted conditions. Unit complete with humidifier and electric heater.

(2) Wire size valid for distances up to 30 mt. Max. voltage drop 3%.

For the operating data please refer to the unit wiring diagram.

## Air filters

Air filters										
		Size								
		061	071	091	101	102	132	152	182	202
Quantity	n.	2	2	2	3	3	3	5	5	5
Dimensions	mm	305x935	505x885	505x885	400x885	400x885	545x885	410x885	410x985	410x985
Thickness	mm	48	48	48	48	48	48	48	48	48

## Glycol correction factors

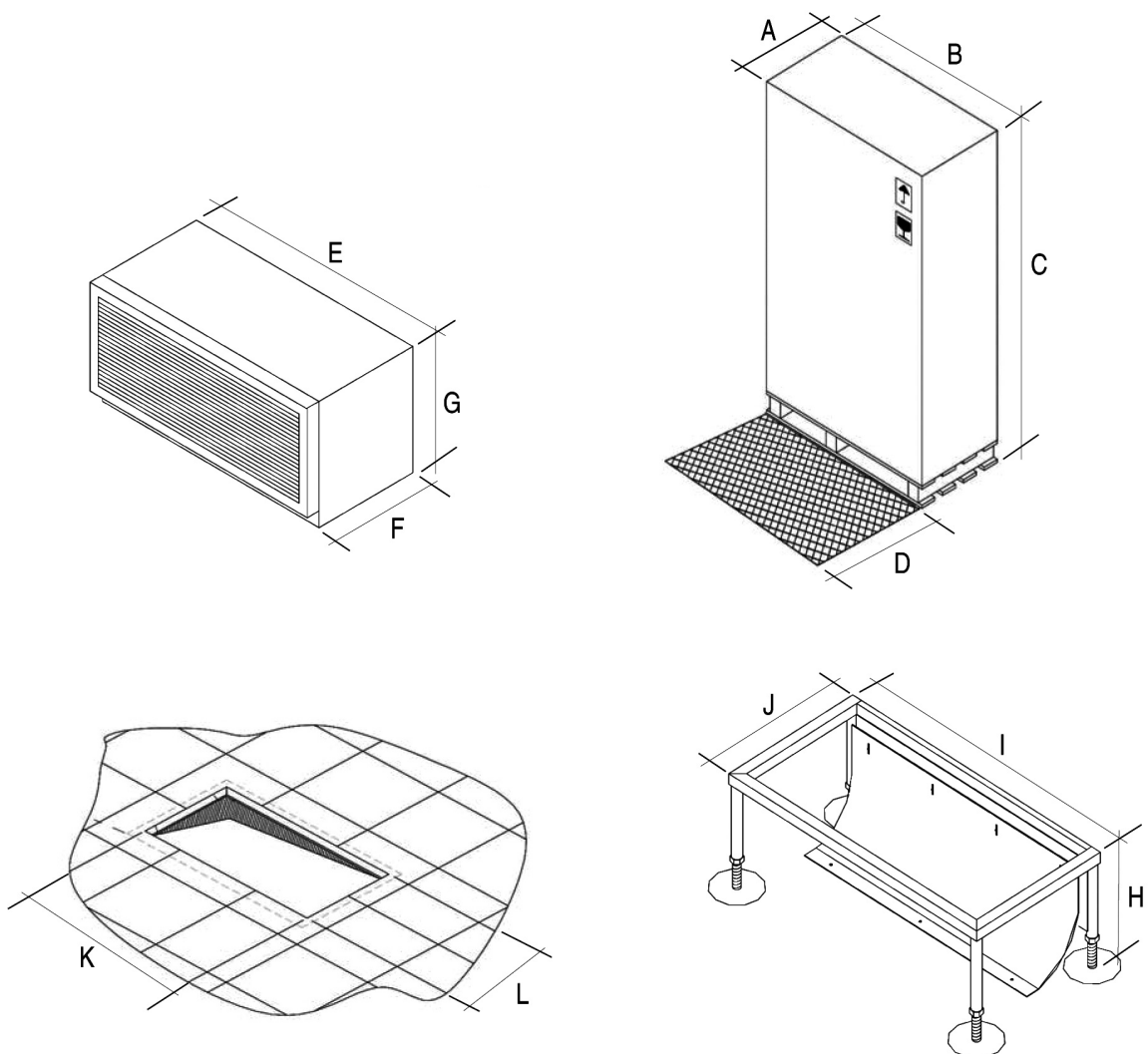
Glycol correction factors							
Glycol percentage		0%	10%	20%	30%	40%	50%
Freezing point	°C	0	-5	-10	-15	-20	-30
Capacity factor		1	0.98	0.95	0.93	0.91	0.88
Water flow factor		1	1.01	1.04	1.08	1.14	1.20
Pressure drop factor		1	1.05	1.13	1.21	1.26	1.32

## Dimensions and weights

Packing - Plenum - Baseframe - Floor hole										
		Size								
		061	071	091	101	102	132	152	182	202
A	mm	900	900	900	900	900	900	900	900	900
B	mm	900	1.300	1.300	1.500	1.500	1.950	2.350	2.350	2.350
C	mm	2.130	2.130	2.130	2.130	2.130	2.130	2.130	2.130	2.130
D	mm	840	650	650	840	840	650	840	840	840
E	mm	860	1.258	1.258	1.448	1.448	1.885	2.265	2.265	2.265
F	mm	860	860	860	860	860	860	860	860	860
G	mm	600	600	600	600	600	600	600	600	600
H*	mm	150/700	150/700	150/700	150/700	150/700	150/700	150/700	150/700	150/700
I	mm	780	1.178	1.178	1.368	1.368	1.805	2.185	2.185	2.185
J	mm	780	780	780	780	780	780	780	780	780
K	mm	740	1.138	1.138	1.328	1.328	1.765	2.145	2.145	2.145
L	mm	720	720	720	720	720	720	720	720	720
Peso**	kg	280	340	350	390	410	525	640	695	840

\* The eight has to be indicated by the mechanical contractor; adjustment 50 mm.

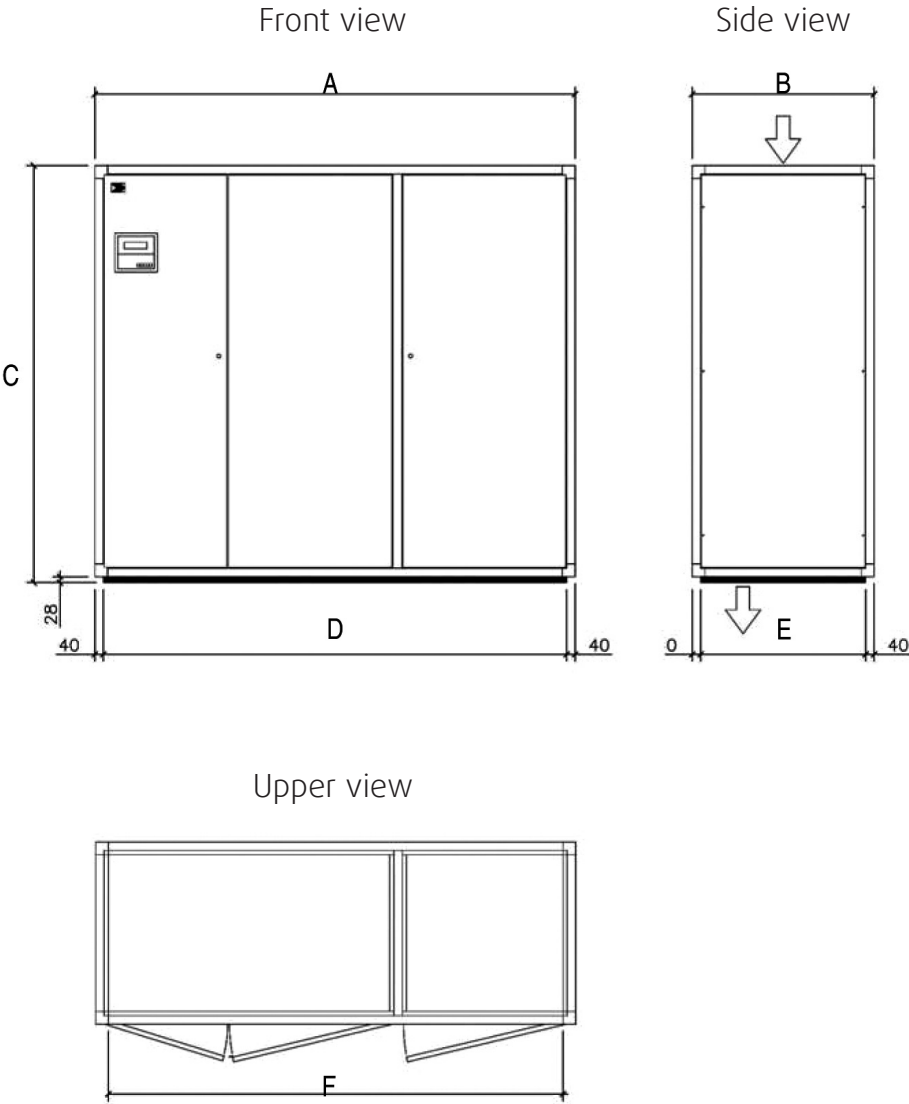
\*\* Shipping weight.



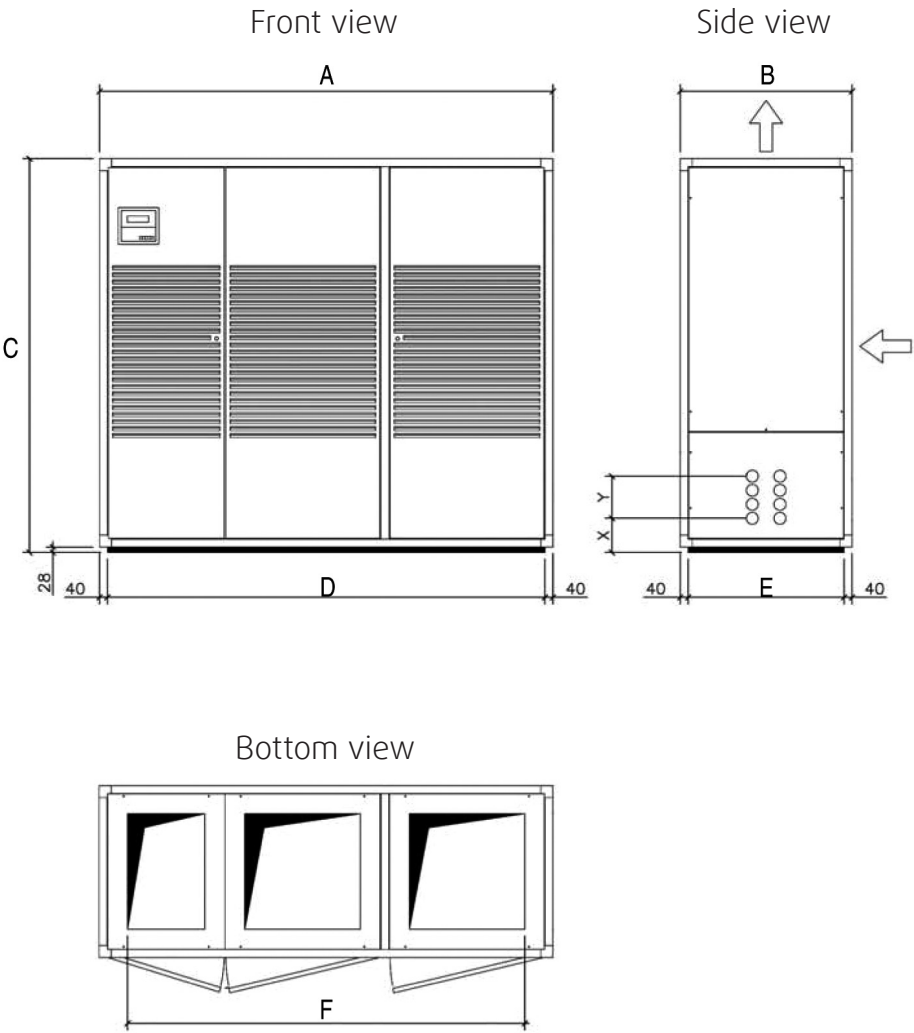
Down flow & Up flow versions

Down flow & Up flow versions										
		Size								
		061	071	091	101	102	132	152	182	202
A	mm	860	1.258	1.258	1.448	1.448	1.885	2.265	2.265	2.265
B	mm	860	860	860	860	860	860	860	860	860
C	mm	1.980	1.980	1.980	1.980	1.980	1.980	1.980	1.980	1.980
D	mm	780	1.178	1.178	1.368	1.368	1.805	2.185	2.185	2.185
E	mm	780	780	780	780	780	780	780	780	780
F	mm	740	1.138	1.138	1.328	1.138	1.765	2.145	2.145	2.145
G	mm	740	740	740	740	740	740	740	740	740
H	mm	150	150	150	150	150	150	150	150	150

Down flow version



Up flow version



## Notes

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## Notes

[illegible]





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