

ENERGY RECUPERATION



# CARMA®

9023

Very high efficiency (90%),  
high performance, self-regulating  
double flow unit. Economical solution®  
Flow rate 200 to 8000 m<sup>3</sup>/h

## 02



## APPLICATION

- ▲ Very high efficiency and high performance ventilation and self-regulating energy recuperation for office and industrial installations.
- ▲ Performance greater than **90%** (EN308) compliant with **RT2012** and **ErP directive 2009/125/EC**.
- Air filtration, temperature control.
- ▲ One-piece, compact, smart (EN 15232) and plug and play unit.

## RANGE

- Available in 6 sizes and 7 models, the **CARMA**<sup>®</sup> range covers flow rates from 200 to 8000 m<sup>3</sup>/h. Each **CARMA**<sup>®</sup> model has two programmable flow rates as standard to be selected on commissioning.

The **CARMA**<sup>®</sup> range is available in 5 versions:

**SEASON** : Central for use in moderate climatic zone, intended for the renewal of air of buildings (ships) with energy recovery, functioning summer / winter of the bypass, the regulation of flow splens by potentiometer.

**FIRST** : self-regulating unit for use in temperate climate areas.

**SMART** : Central self regulated with electric drum kit of defrosting for compensation with outside temperature until -20°C.

**PREMIUM** : self-regulating unit fitted with a hot water coil or an electric coil for external temperatures down to -10°C.

**INFINITE** : Idem finish **PREMIUM** with as standard an electric drum kit of defrosting for outside temperatures until -20°C.

## CONSTRUCTION

- ▲ Structure in aluminium profile with **thermal breaks using** polyamide spacers built in to the profile (class TB2 in accordance with EN1886).
- Corners in reinforced polyamide.
- Double skin panels 10/10°.
- ▲ Insulation: 50 mm high density A1 (MO) mineral wool (class T2 and L1 for air tightness of the envelope in accordance with EN1886).
- External face: RAL 7035 pre-lacquered metal sheet with protective film.
- Internal face: galvanized steel.
- ▲ Circular branch connections with lip seals to guarantee the systems are airtight (ATEC CSTB n° 13-224-12), square for 9070.
- Brackets crimped into the structure for fixing to the ground (9008 to 9070) or ceiling (9008 to 9035).
- ▲ **"EASY"** technical compartment holding the electrical components and regulation system. Access by hinged door with latch incorporating the IP65 control panel with LCD display and local padlockable switch on the front panel, potentiometers (version **SEASON**).
- ▲ Access to internal components by security latch on removable panels.
- Condensate tray and removal of condensates.
- ▲ **100% internal bypass**, motorised and self-regulating (**RT2012** air relationship).

## MOTOR FANS

- Fans with free impellers.
- ▲ Direct drive DC motor with high efficiency electronic commutation (**EC**), integral thermal cut-out and speed variation. **EC** technology is an ecological<sup>®</sup> solution guaranteeing low energy consumption (**RT2012**) for the management, checking and control of the operating point (regulation of flow rates from 10 to 100%). Low sound levels for better acoustic comfort.

## HEAT EXCHANGER

- Echangeur statique haut rendement à **contre-courant**, à plaque d'aluminium. Echangeurs air - air produits par KLINGENBURG qui participe au programme **Eurovent** certification pour les AAHE.
- ▲ Efficiency greater than 90% (**EN 308**) under operating conditions as follows:
  - Fresh air -10°C/90% - Return air 20°C/50%.
- Automatic defrost by proportional opening of the bypass (except **SEASON**, All or nothing) and possible modulation of the flow mixes Fresh air on versions **FIRST** and **PREMIUM**, and by autorégulée electric drum kit on version **SMART** and **INFINITE**.



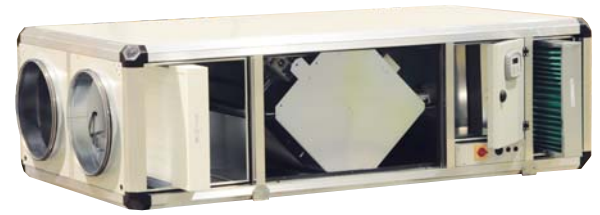
## FILTERS

- ▲ As standard, the **CARMA**<sup>®</sup> unit has a high efficiency **F7** opacimetric filter (large filtration surface) on the fresh air intake and a G4 gravimetric filter on the extracted air intake.
- Filters are always mounted upstream of components to ensure they are protected.
- Mounted on runners fitted with lip seals to ensure effective air tightness.

## EQUIPMENT AND FEATURES

The **CARMA**<sup>®</sup> central has finishes allowing to assure an optimal climatic comfort (except **SEASON**).

- ▲ Regulation **"EASY"** integrated (joined) with bulletin board into facade IP65 for internal or outside, communicating installation in **MODBUS**, **BACNET** or **WEB** (choice of on-site actionable language). Possibility of associating or a remote control LCD (100 m or 1 km with repeater) or a tactile remote control with interfaces and screens user for the main functions (offices) (check/control) temperature, relaunching (reflation), defect) as well as an interface maintenance allowing to reach the general parameters (command (order) déportable until 100 m).
- ▲ **100% bypass**, internal to the unit, fitted with servomotors automatically controlled by the integrated regulation system providing **FREE-COOLING** and **NIGHT-COOLING** functions (night over-ventilation with adjustable flow rate). To release the **SEASON** **100 % Bypass** ensures management summer / winter mode All or Nothing with integrated thermostats.



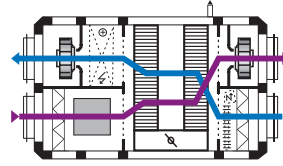
## Configurations

### HORIZONTAL MOUNTING FLOWS SIDE BY SIDE

(View from above)

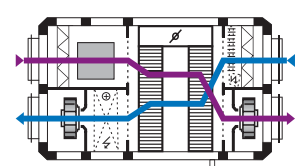
#### Configuration L

except CARMA<sup>®</sup> 9048 and 9070



#### Configuration P

except CARMA<sup>®</sup> 9048 and 9070

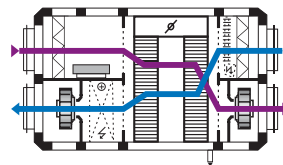


### VERTICAL MOUNTING FLOWS ONE ABOVE THE OTHER

(View from access side)

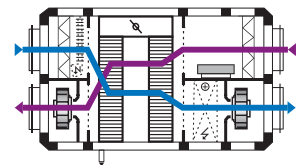
#### Configuration W

except CARMA<sup>®</sup> 9070



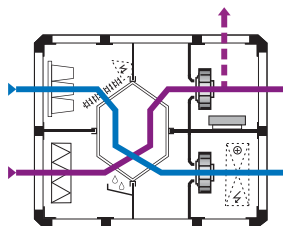
#### Configuration Y

except CARMA<sup>®</sup> 9070



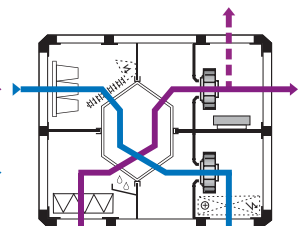
#### Configuration D

only CARMA<sup>®</sup> 9070



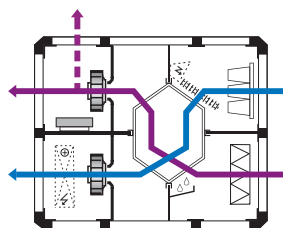
#### Configuration E

only CARMA<sup>®</sup> 9070



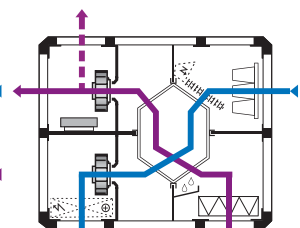
#### Configuration G

only CARMA<sup>®</sup> 9070



#### Configuration F

only CARMA<sup>®</sup> 9070



➡ Fresh air

➡ Return air



DOUBLE FLOW UNIT DESCRIPTION

CARMA®

- ▲ Large selection of flow rate adjustments to guarantee optimum energy consumption (RT2012, EN 15232).
- Temperature probes (x4) incorporated into the unit: air supply, extraction, defrosting by bypass, external temperature and a probe for The SMART-versions and the INFINITY a probe for the battery of defrosting.
- Integrated antifreeze thermostat (THA) providing protection for the hot water coil for the PREMIUM/INFINITY BC version.
- Integrated manually-reset safety thermostat (THS) providing protection electric batteries defrosting and heating for versions SMART, PREMIUM and INFINITY.
- Internal timers allow operation at two flow rates, programmable on-site at will (except SEASON).
- Weekly, holiday and public holiday timer (except SEASON).
- ▲ New air filter fouling pressure switch with fault notification on request (contact sec for SEASON).
- Pressure switch controls the flow of air across each fan with fault notification on control panel (contact sec for SEASON).
- ▲ Padlockable local circuit breaker mounted on front panel.
- ▲ Fire safety function (except SEASON) allowing control supply and return fans following 5 modes in the control parameters (function can be activated on site). A alarm will be displayed on the "Fire Alarm" screen:
  - "Off": Complete shutdown of the central
  - "On": Starting or maintaining the plant in GV. Function fire will override all other alarms.
  - "Auto": Hold the central depending on the setting made on website (Off / LS / HS)
  - "On blowing" Starting or maintaining in GV fan blowing (taken off)
  - "On recovery" Starting or maintaining in GV return fan (Blowing off)

In it, the CARMA® central has a digital entrance " External Stop " which allows to link on-site a manual control. In this case, the external control is priority on the fire safety possibly activated by one of the 5 modes above.

- ▲ Dehumidifying function (activated depending on the site sauf SEASON). It is possible to associate the central CARMA® a module COMBIBOX CONCEPT® equipped with a cooling coil (water or DX cooling only) followed by a heating coil (water, electric or DX). In this case the controller automatically manage hot and cold intake necessary dehumidifying while maintaining a temperature optimum operating. During the application period cold, temperature management overrides that of dehumidifying.

INSTALLATION

- ▲ Vertical or horizontal (except CARMA® 9048 and 9070).
- Indoors or outdoors (rain hood optional).
- In false ceiling (9008 to 9035).
- ▲ New and innovative configurations (E and F) for CARMA® 9070 with air supply and extraction from below.

OPTIONS CLIMATIQUES

- COMBIBOX CONCEPT® chilled water module (CBX-BF) on all versions and use of changeover possible FIRST and SMART version.
- Direct expansion module CBX-DX to R410A.
- Module dehumidifying on versions FIRST and SMART.
- ▲ "EASY" regulation built in to the CARMA® for managing the heat modules described above.

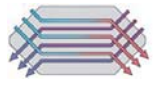
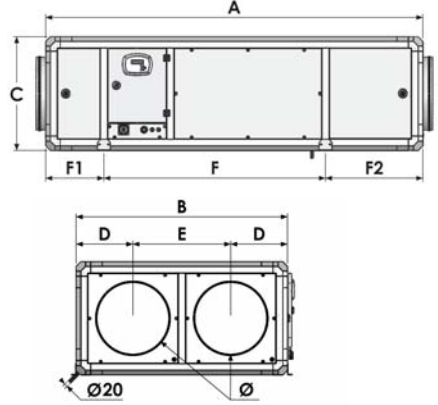
DIMENSIONS CHARACTERISTICS

CARMA®

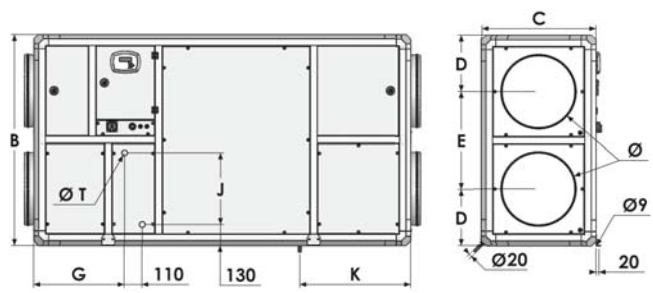
CARMA® model	Ø mm	A mm	B mm	C mm	D mm	E mm	F mm	F1 mm	F2 mm	G mm	J mm	K mm	T ø	SEASON kg	FIRST kg	SMART kg	PREMIUM kg	INFINITE kg
9008	315	2010	915	505	255	405	1097	362	517	500	245	540	1/2	210	215	217	218	220
9010	315	2010	915	505	255	405	1097	362	517	500	245	540	1/2	215	220	222	223	225
9016	400	2230	1115	605	305	505	1261	362	607	565	345	690	1/2	295	295	298	300	303
9023	450	2345	1315	705	355	605	1376	362	607	565	445	690	3/4	390	395	400	402	407
9035	500	2625	1515	805	405	705	1520	450	655	640	545	740	3/4	545	550	554	560	564
9048	630	2970	1715	1030	455	805	1677	535	758	685	645	840	1"	715	720	727	735	742
9070					See coast below								1"	895	900	915	930	945

\*Available only in vertical configuration

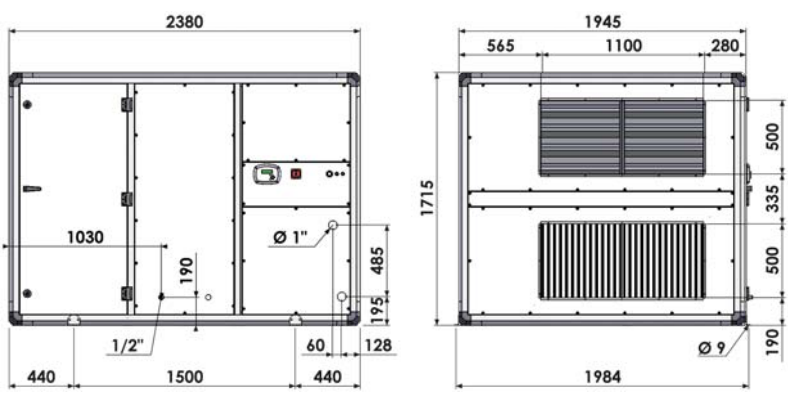
HORIZONTAL MOUNTING 9008 TO 9035



VERTICAL MOUNTING 9008 TO 9048



VERTICAL MOUNTING 9070



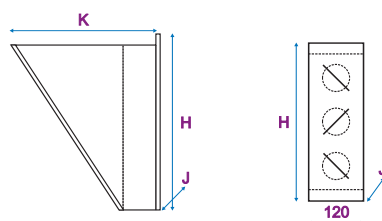
CARMA® model	Electrical power (W)	Usage temp. (°C / °C)	Protection index Classe	Thermal cutout *	FIRST PREMIUM BC & SEASON		INFINITE BC & SMART		PREMIUM BE			INFINITE BE		
					Power supply voltage (V / Ph / Hz)	Protection current (A)	Power supply voltage (V / Ph / Hz)	Protection current (A)	Power supply voltage (V / Ph / Hz)	Model	Protection current (A)	Power supply voltage (V / Ph / Hz)	Model	Protection current (A)
9008	2x220	-20 / 60	IP44 / B	PTI	230/1/50	3,4	230/1/50	14,3	230/1/50	BE 025	14,3	230/1/50	BE 025	25,2
9010	2x480	-20 / 60	IP54 / B	PTI	230/1/50	4,3	230/1/50	20,6	230/1/50	BE 025	15,2	230/1/50	BE 025	31,5
9016	2x480	-20 / 60	IP54 / B	PTI	230/1/50	4,3	400/3+N/50	11,9	230/1/50	BE 037	20,6	400/3+N/50	BE 052	19,5
9023	2x700	-20 / 40	IP54 / B	PTI	230/1/50	6	400/3+N/50	15,7	230/1/50	BE 037	22,3	400/3+N/50	BE 067	25,4
9035	2x2500	-20 / 40	IP54 / B	PTI	400/3+N/50	7,7	400/3+N/50	19,6	400/3+N/50	BE 067	17,4	400/3+N/50	BE 067	29,3
9048	2x1950	-20 / 50	IP54 / B	PTI	400/3+N/50	6,3	400/3+N/50	32,3	400/3+N/50	BE 137	27,2	400/3+N/50	BE 137	39,1
9070	2x2730	-20 / 60	IP54 / F	PTI	400/3+N/50	8,4	400/3+N/50	44,1	400/3+N/50	BE 067	16	400/3+N/50	BE 067	42
									400/3+N/50	BE 137	25,8	400/3+N/50	BE 137	51,8
									400/3+N/50	BE 105	23,6	400/3+N/50	BE 105	29,3
									400/3+N/50	BE 157	31,1	400/3+N/50	BE 157	66,9

\*PTI: Integrated thermal cutout

FITTED  
OPTIONS

CARMA®

CARMA® model	AGC			RM	
	Weight kg	K mm	H mm	J mm	Weight kg
9008	4	340	362	362	8
9010	4	340	362	362	8
9016	5	440	462	462	10
9023	7	540	562	562	13
9035	10	640	662	662	15
9048	13	740	762	762	17
9070	9	540	562	1162	14



CARMA® horizontal configuration  
except 11048 and 9070



CARMA® vertical configuration  
except 9070

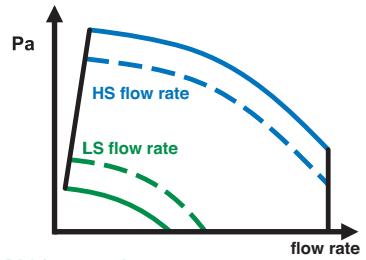


CARMA® 9070

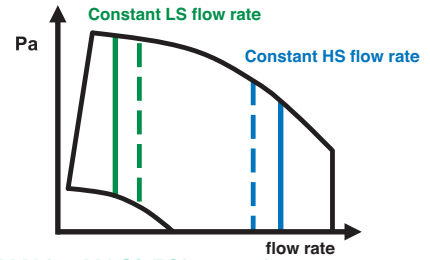




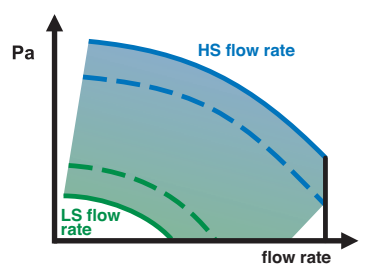
The CARMA® unit has a factory-programmable regulator as standard used to configure the flow modulations described below:



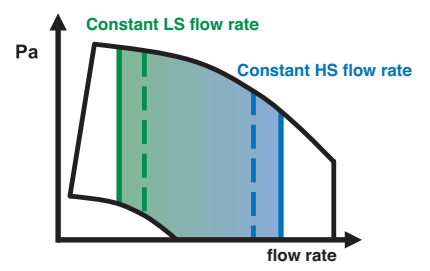
CARMA® operation
1 or 2 flow rates as required (Low Speed(LS)/High speed(HS)) per fan
Except SEASON, 1 flow adjustable spleen by potentiometer



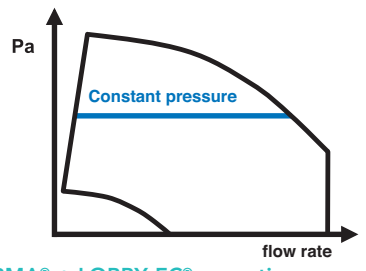
CARMA® + MAC2 EC® operation
Optional 1 or 2 CONSTANT flow rates by fan (except CARMA® 9008)



CARMA® + DIVA EC® operation
PROPORTIONAL ventilation between two flow rates (LS/HS) by fan



CARMA® + QUATTRO EC® operation
PROPORTIONAL ventilation between two CONSTANT flow rates by fan (except CARMA® 9008)



CARMA® + LOBBY EC® operation
CONSTANT PRESSURE ventilation by fan



Internal view of "EASY" technical compartment



Access door to "EASY" technical compartment



Remote control LCD display
(option not compatible with SEASON)
max 100 m or 1000 m with repeater (optional).
Same functionality as the cover display of the central CARMA®



Touchscreen (option not compatible SEASON)
with user interfaces and screen and / or maintenance interface



Panneau de commande à affichage LCD "EASY" monté en façade de la centrale CARMA® pour réglage horloges, flow rates, température (gestion proportionnelle du bypass interne, de la batterie chaude pour les versions BC ou électrique pour les versions BE, surventilation nocturne), contrôle et lecture défaut(s)...

CARMA® and FLOW RATE MODULATION	STOP => GV	STOP => PV => GV	STOP => PV	&	PV => GV	FORCED STOP
<b>CARMA®</b> Regulation at 1 or 2 (LS/HS) flow rates except SEASON 1 flow adjustable by potentiometer	TIMER (Except SEASON)	TIMER (Except SEASON)	TIMER (Except SEASON)	&	Contact sec* (CDCPVG2)	"EASY" LCD control or remote control (Except SEASON)
	or	or		or		or
	Dry contact* (CDC1V2)	Dry contact* (CDC2V2)	Dry contact* (CDC2V2)	&	Dry contact* (CDC2V2)	Dry contact* (CDC1V2)
<b>CARMA MAC2 EC®</b> Regulation at 1 or 2 CONSTANT adjustable flow rates <sup>(1)</sup>	TIMER	TIMER	TIMER	&	Dry contact* (CDCPVG2)	"EASY" LCD control or remote control
	or	or		or		or
	Dry contact* (CDC1V2)	Dry contact* (CDC2V2)	Dry contact* (CDC2V2)	&	Dry contact* (CDC2V2)	Dry contact* (CDC1V2)
<b>CARMA LOBBY®</b> Regulation at adjustable CONSTANT PRESSURE and variable flow rates	TIMER					"EASY" LCD control or remote control
	or					or
	Dry contact* (CDC1V2)					Dry contact* (CDC1V2)
<b>CARMA DIVA EC®</b> Regulation with PROPORTIONAL ventilation between 2 adjustable flow rates			TIMER	&	010V CO2 probe	"EASY" LCD control or remote control
				or		or
					010V CO2 probe	Contact sec* (CDC1V2)
<b>CARMA QUATTRO EC®</b> Regulation with PROPORTIONAL ventilation between 2 CONSTANT adjustable flow rates <sup>(1)</sup>			TIMER	&	010V CO2 probe	"EASY" LCD control or remote control
				or		or
					010V CO2 probe	Dry contact* (CDC1V2)

(1): Except CARMA® 9008 Standard function built in to the unit Standard function built in to the unit

\*Dry contact: CDC type remote control/On-Off CO2 probe/On-Off humidity probe/All types of dry contact, etc.





EQUIPMENT	SEASON	FIRST	SMART	PREMIUM BE	PREMIUM BC	INFINITE BE	INFINITE BC
Low energy consumption, EC fan motors	●	●	●	●	●	●	●
Opacimetric, F7 new air filter	●	●	●	●	●	●	●
Gravimetric, G4 intake filter	●	●	●	●	●	●	●
High efficiency plates (>90%), EUROVENT certified counter-flow exchanger	●	●	●	●	●	●	●
100% internal bypass	●	●	●	●	●	●	●
Inclined condensate trays (exchanger)	●	●	●	●	●	●	●
50 mm, RAL7035 double skin	●	●	●	●	●	●	●
Circular branch connections with lip seals (ATEC CSTB n° 13-224-12)	●	●	●	●	●	●	●
Remote, LCD display control (up to 100m)	-	●	●	●	●	●	●
Regulation MODBUS in RS485 or TCP/IP, BACNET IP, WEB TCP/IP (selected from the menu)	-	●	●	●	●	●	●
Rotation speed regulating potentiometer	●	-	-	-	-	-	-
Discharge temperature sensor	-	●	●	●	●	●	●
Intake temperature sensor	-	●	●	●	●	●	●
Bypass defrost sensor	●	●	●	●	●	●	●
Exterior temperature sensor	●	●	●	●	●	●	●
Defrost battery sensor	-	-	●	-	-	●	●
Anti-freeze thermostat on the water battery	-	-	-	-	●	-	●
Electric safety thermostat defrost battery	-	-	●	-	-	●	●
Electric safety thermostat heating battery	-	-	-	●	-	●	-
Lockable proximity switch	●	●	●	●	●	●	●
Power cord grommet	●	●	●	●	●	●	●
FUNCTIONS	SEASON	FIRST	SMART	PREMIUM BE	PREMIUM BC	INFINITE BE	INFINITE BC
Bypass defrost	●	-	-	-	-	-	-
Sequenced defrost: bypass + battery (SMART/INFINITE) + new air flow rate modulation	-	●	●	●	●	●	●
Self-regulating, electric, defrost battery	-	-	●	-	-	●	●
Self-regulating, electric, heating battery	-	-	-	●	-	●	-
Self-regulating water heating unit	-	-	-	-	●	-	●
100% internal bypass, All or Nothing, automatic management summer/winter	●	-	-	-	-	-	-
100% internal bypass, self-regulating and modulating (0-100%)	-	●	●	●	●	●	●
Free-Cooling Management	-	●	●	●	●	●	●
Night-cooling management (night-time over-ventilation)	-	●	●	●	●	●	●
Output air temperature management (air regulation)	-	●	●	●	●	●	●
Ambient temperature management (intake)	-	●	●	●	●	●	●
Weekly timer	-	●	●	●	●	●	●
Holiday and public holiday timer	-	●	●	●	●	●	●
New Air filter pressure switch	●	●	●	●	●	●	●
Flow rate control pressure switch (output and intake)	●	●	●	●	●	●	●
Fire safety in accordance with 5 available modes	-	●	●	●	●	●	●
COMBIBOX CONCEPT® dehumidification management module	-	●	●	●	●	●	●
FACTORY INSTALLED OPTIONS	SEASON	FIRST	SMART	PREMIUM BE	PREMIUM BC	INFINITE BE	INFINITE BC
LOBBY® EC : air flow modulation at CONSTANT PRESSURE	-	○	○	○	○	○	○
DIVA® EC : proportional CO2 flow rate modulation	-	○	○	○	○	○	○
MAC2 EC : air flow modulation at CONSTANT PRESSURE	-	○	○	○	○	○	○
QUATTRO EC: proportional adjustment by CO2 level between 2 CONSTANT FLOWS	-	○	○	○	○	○	○
OPTIONS	SEASON	FIRST	SMART	PREMIUM BE	PREMIUM BC	INFINITE BE	INFINITE BC
COMBIBOX CONCEPT® cooling module (water or R410A)	-	◆	◆	-	◆	-	◆
COMBIBOX CONCEPT® dehumidification module	-	◆	◆	-	◆	-	◆
Changeover pad for switching between hot/ cold for CO versions	-	◆	◆	◆	◆	◆	◆
Touch activated remote control (up to 100m)	-	◆	◆	◆	◆	◆	◆
LON networked	-	◆	◆	◆	◆	◆	◆
Ambient temperature management via touch activated remote control	-	◆	◆	◆	◆	◆	◆
1000M LCD repeater for remote control	-	◆	◆	◆	◆	◆	◆
Wonderoom®, networked area regulator Automatically with the CARMA® -	-	◆	◆	◆	◆	◆	◆

● : Standard equipment or functions. ○ : OPTIONAL equipment or functions. Supplied assembled and cabled at the factory

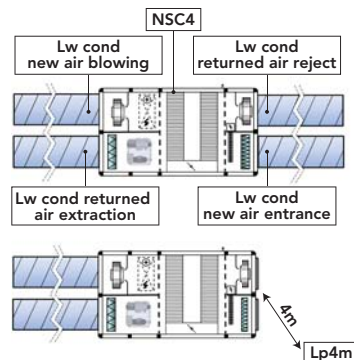
◆ : OPTIONAL equipment or functions. Supplied unassembled

- The Lp4m dB(A) curves correspond to the level of acoustic pressure at 4m in a hemispherical free field on a reflective plain, the "new air inlet" and "discharge intake air" sides not being connected, the "new output air" and "extraction intake air" not being connected. To achieve the overall acoustic pressure Lp dB(A), at a certain distance, add the values below to Lp4m.

Distance (m)	1,5	3	4	5	7	10
Distance weighting dB(A)	9	3	0	-2	-5	-8

- The curves for "Lw output air cond dB(A)" correspond to the overall acoustic power emitted on the "new output air" side or "discharge intake air". To achieve the range of acoustic power Lw cond output dB(A), on the "new output air" or "discharge intake air", add the below values to the acoustic power "Lw cond output" displayed on the curves.

Downstream acoustic spectrum weighting function "Lw cond blower dB(A)" Indicated on the curves								
Frequency	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Weighting CARMA 9008 dB(A)	-30	-18	-12	-7	-5	-6	-12	-18
Weighting CARMA 9010 dB(A)	-27	-16	-8	-8	-5	-7	-13	-20
Weighting CARMA 9016 dB(A)	-31	-19	-11	-8	-5	-6	-12	-19
Weighting CARMA 9023 dB(A)	-28	-26	-15	-9	-6	-4	-11	-14
Weighting CARMA 9035 dB(A)	-32	-20	-12	-7	-4	-7	-11	-19
Weighting CARMA 9048 dB(A)	-35	-20	-13	-7	-4	-7	-11	-18
Weighting CARMA 9070 dB(A)	-39	-29	-12	-7	-4	-7	-11	-16



- The curves for "Lw cond extraction dB(A)" correspond to the overall acoustic power emitted on the duct sides "extraction air intake" and new air inlet". To achieve the range of acoustic power Lw cond extraction dB(A), on the "extraction air intake" and "new air inlet" sides, add the values below to the acoustic power "Lw cond extraction" read on the curves

Upstream acoustic spectrum weighting function "Lw cond extraction dB(A)" Indicated on the curves								
Frequency	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Weighting CARMA 9008 dB(A)	-22	-12	-8	-6 -5	-10	-16	-23	
Weighting CARMA 9010 dB(A)	-18	-11	-6	-6	-8	-10	-15	-23
Weighting CARMA 9016 dB(A)	-21	-13	-7	-6	-6	-8	-14	-21
Weighting CARMA 9023 dB(A)	-19	-20	-9	-6	-6	-8	-12	-15
Weighting CARMA 9035 dB(A)	-21	-13	-7	-5	-8	-9	-15	-21
Weighting CARMA 9048 dB(A)	-24	-12	-8	-5	-8	-8	-13	-21
Weighting CARMA 9070 dB(A)	-32	-23	-6	-6	-8	-8	-13	-17

NOTE: Tolerance =  
Global Values + / - 3 dB(A)  
Acoustic spectra +/- 5 dB(A)

- To achieve the acoustic range NSC4 dB(A) (noise level at 4m in a hemispherical free field, with the device placed on the ground on a reflecting plane, with station terminals connected to the intake and discharge by ducts with the same level of sound insulation), deduct 18 dB(A) from the Lp4m value.

The "EASY" regulation system for the CARMA® unit enables one or more heat coils to be managed as standard (depending on version, **FIRST**, **PREMIUM** and **INFINITE**):

CARMA® Versions	INTEGRATED HEAT COIL(S)			EXTERNAL MODULE					
	DEFROSTING	HEATING		REFRESH		DEHUMIDIFYING (Cold + Warm)			
	Electric	Electric	Water	Water	R410A	Water/Water	Water/Elec	R410A/Water	R410A/ELEC
FIRST	-	-	-	CBX-BF <sup>(2)</sup>	CBX-DX	CH	CE	DXH	DXE
SMART	✓	-	-	CBX-BF <sup>(1)</sup>	CBX-DX	CH	CE	DXH	DXE
PREMIUM BC	-	-	✓	CBX-BF	CBX-DX	-	-	-	-
PREMIUM BE	-	✓	-	CBX-BF	CBX-DX	-	-	-	-
INFINITE BC	✓	-	✓	CBX-BF	CBX-DX	-	-	-	-
INFINITE BE	✓	✓	-	CBX-BF	CBX-DX	-	-	-	-

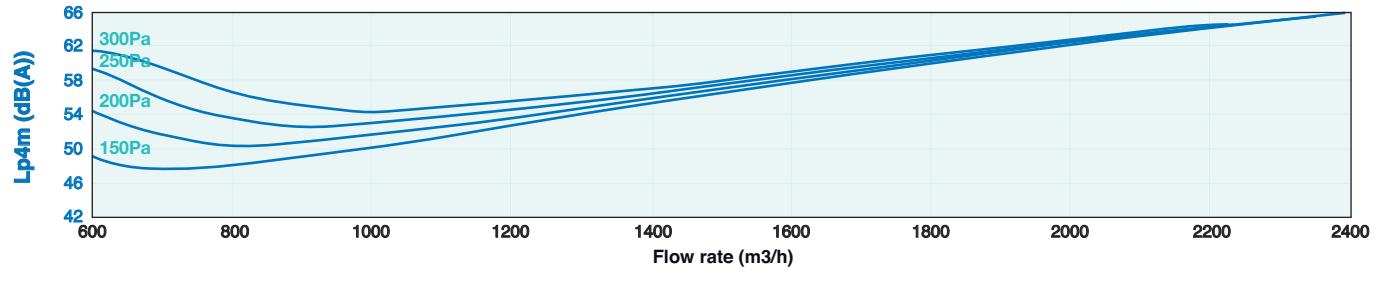
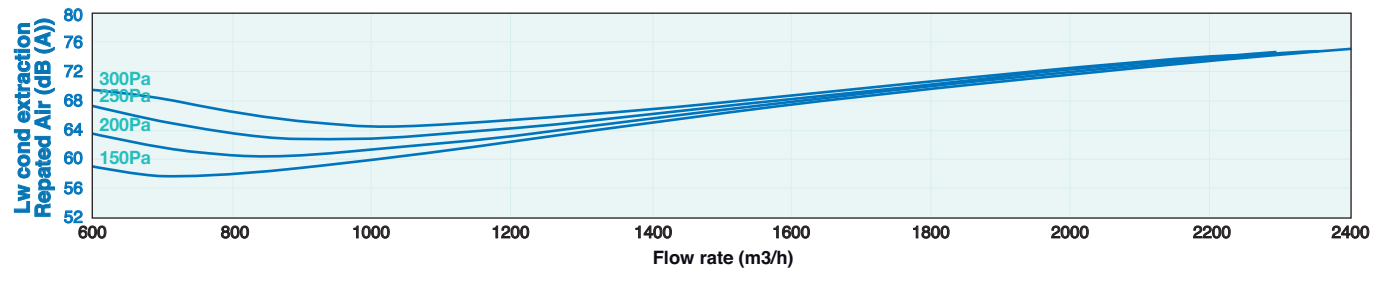
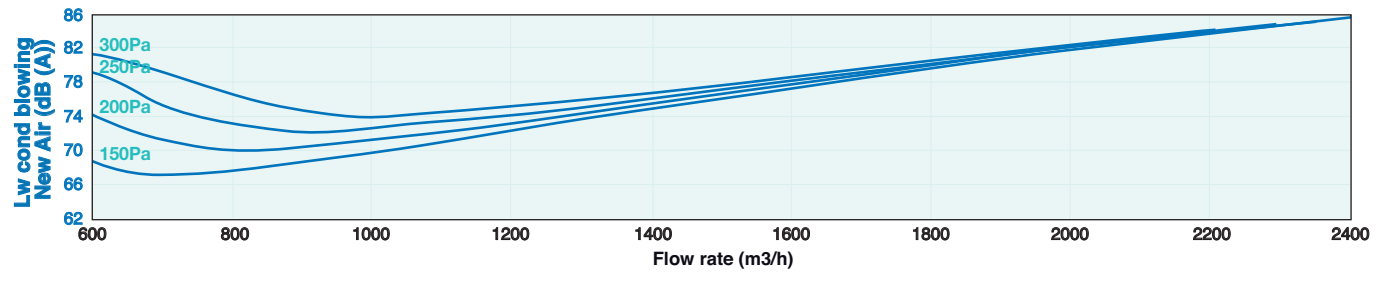
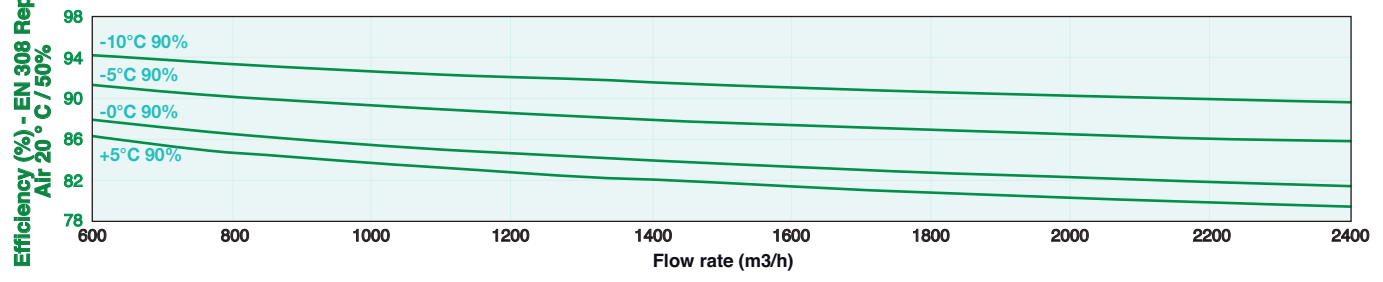
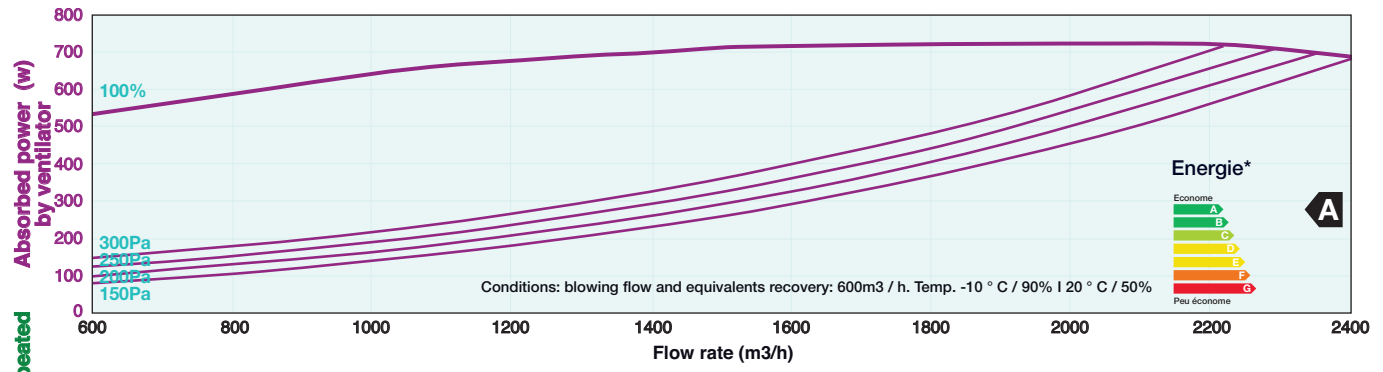
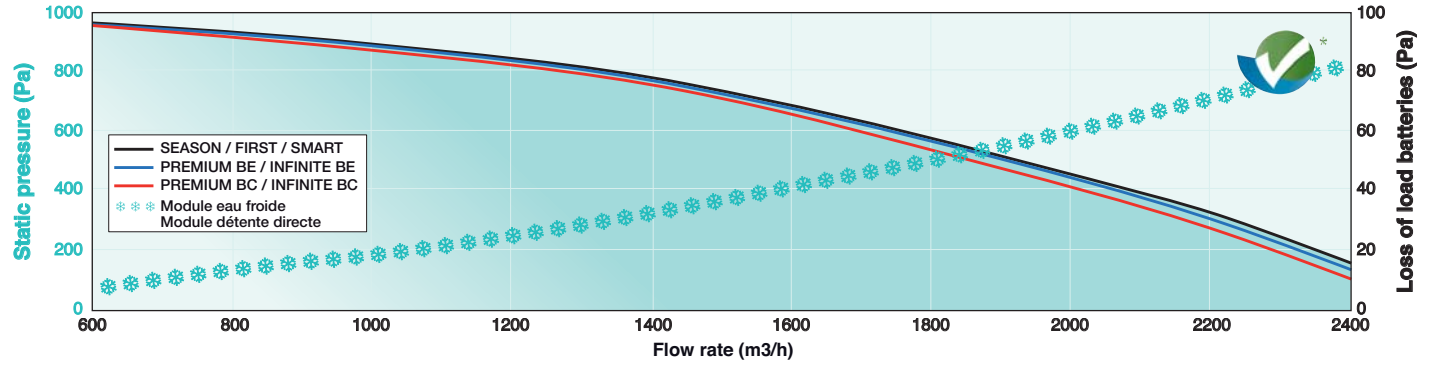
(1) Direct connection to the CARMA® except 9070, or to sheath (option circular connection panels available)  
(2) Can be used chnageover. Provide patch (see options)

The CARMA® range meets all the requirements of the **Bluetech®** concept.  
Complies with **EUROVENT**, **RT2012**, **ErP 2009/125/EC** and **EN 15232**.





# CARMA® 9023



**BC** for PREMIUM and INFINITE versions

Hot water coil

Water temp. (°C/°C)	Air inlet temp. (°C)	Flow rate (m³/h)	600	1200	1600	2000	2400
<b>90/70</b>	11	Motor (kW)/Air outlet temp (°C)	13,3 / 61	17,9 / 56	21,8 / 52	25,3 / 49	28,5 / 46
		Water flow(l/h)/DP water (kPa)	590 / 4	790 / 6	960 / 8	1110 / 11	1250 / 12
	15	Motor (kW)/Air outlet temp (°C)	12,5 / 62	16,8 / 57	20,5 / 53	23,8 / 51	26,7 / 48
		Water flow(l/h)/DP water (kPa)	550 / 4	740 / 7	900 / 7	1050 / 10	1180 / 11
<b>80/60</b>	11	Motor (kW)/Air outlet temp (°C)	11,2 / 53	15,1 / 49	18,3 / 45	21,2 / 43	23,8 / 41
		Water flow(l/h)/DP water (kPa)	490 / 3	660 / 6	810 / 6	930 / 8	1050 / 10
	15	Motor (kW)/Air outlet temp (°C)	10,4 / 54	14,0 / 50	17,0 / 47	19,7 / 44	22,1 / 43
		Water flow(l/h)/DP water (kPa)	460 / 5	610 / 5	750 / 7	860 / 7	970 / 9
<b>60/50</b>	11	Motor (kW)/Air outlet temp (°C)	8,4 / 42	11,3 / 39	13,9 / 37	16,1 / 35	18,1 / 34
		Water flow(l/h)/DP water (kPa)	740 / 7	990 / 9	1210 / 12	1400 / 16	1580 / 17
	15	Motor (kW)/Air outlet temp (°C)	7,6 / 44	10,3 / 41	12,5 / 38	14,5 / 37	16,3 / 35
		Water flow(l/h)/DP water (kPa)	670 / 6	900 / 8	1090 / 11	1270 / 13	1430 / 16
<b>45/40</b>	11	Motor (kW)/Air outlet temp (°C)	5,8 / 33	7,8 / 30	9,5 / 29	11,0 / 27	12,4 / 26
		Water flow(l/h)/DP water (kPa)	1008 / 7	1344 / 9	1652 / 12	1918 / 15	2142 / 19
	15	Motor (kW)/Air outlet temp (°C)	5,0 / 34	6,7 / 32	8,2 / 30	9,5 / 29	10,6 / 28
		Water flow(l/h)/DP water (kPa)	868 / 5	1162 / 7	1414 / 10	1638 / 12	1848 / 15

**BE** for PREMIUM and INFINITE versions

Electric coil

Fresh air Flow rate (m³/h)	0°C 2300	0°C 2300	-5°C 2300	-10°C 2300	-15°C 2300	-20°C 2300
Version	Season / First	Premium BE037		Premium BE067	Infinite BE067	
		Heating coil			Preheating + heating coil	
Total power kW	-	3,75	3,75	6,75	6,75 + 6,75	
Temp. °C on output from the unit	16,6	21,5	21	20,1	24	19,1

**CBX 6 BF**

Module cold water and battery changeover

Water temp. (°C/°C)	Air inlet temp. (°C-%HR)	Flow rate (m³/h)	600	1200	1600	2000	2400
<b>7/12</b>	32-40	Power (kW)/Air outlet temp (°C-%HR)	6,7 / 14,4-87	9,1 / 15,8-84	11,2 / 16,8-81	13,0 / 17,6-79	14,7 / 18,3-78
		Water flow(l/h)/DP water (kPa)	1150 / 7	1560 / 10	1910 / 15	2230 / 20	2510 / 24
	27-50	Power (kW)/Air outlet temp (°C-%HR)	5,1 / 13,7-91	6,9 / 14,8-88	8,4 / 15,6-86	9,8 / 16,2-84	11,0 / 16,7-83
		Water flow(l/h)/DP water (kPa)	880 / 5	1180 / 8	1440 / 11	1670 / 12	1880 / 15
	25-50	Power (kW)/Air outlet temp (°C-%HR)	3,9 / 13,4-91	5,2 / 14,3-88	6,4 / 15-86	6,5 / 15,4-91	7,3 / 16-87
		Water flow(l/h)/DP water (kPa)	670 / 5	900 / 6	1090 / 8	1110 / 8	1250 / 8
<b>6/11</b>	32-40	Power (kW)/Air outlet temp (°C-%HR)	7,2 / 13,7-87	9,8 / 15,1-83	12,1 / 16,2-81	14,1 / 17-79	15,9 / 17,7-77
		Water flow(l/h)/DP water (kPa)	1240 / 8	1680 / 12	2070 / 17	2410 / 23	2720 / 27
	27-50	Power (kW)/Air outlet temp (°C-%HR)	5,7 / 12,9-90	7,6 / 14,1-88	9,3 / 14,9-86	10,9 / 15,6-84	12,2 / 16,1-83
		Water flow(l/h)/DP water (kPa)	970 / 7	1310 / 9	1600 / 11	1860 / 14	2090 / 18
	25-50	Power (kW)/Air outlet temp (°C-%HR)	4,5 / 12,6-91	6,0 / 13,6-88	7,3 / 14,3-86	8,4 / 14,9-84	9,5 / 15,4-83
		Water flow(l/h)/DP water (kPa)	770 / 4	1030 / 7	1250 / 8	1450 / 11	1630 / 11
<b>45/40</b>	11	Power (kW)/Air outlet temp (°C-%HR)	6,8 / 36	9,3 / 34	11,6 / 33	13,6 / 31	15,5 / 30
		Water flow(l/h)/DP water (kPa)	1176 / 4	1624 / 6	2016 / 9	2366 / 10	2688 / 13
	15	Power (kW)/Air outlet temp (°C-%HR)	5,9 / 37	8,1 / 35	10,0 / 34	11,8 / 33	13,4 / 32
		Water flow(l/h)/DP water (kPa)	1022 / 5	1400 / 6	1736 / 7	2044 / 10	2324 / 10

**CBX 6 DX**

Battery module reversible direct expansion R410A

Evap. Temp. (°C)	Air inlet temp. (°C-%HR)	Flow rate (m³/h)	600	1200	1600	2000	2400
<b>7</b>	32-40	Power (kW)	8,0	10,9	13,3	15,5	17,4
		Air outlet temp (°C-%HR)	11,9-93	13,3-90	14,4-88	15,4-86	16,1-85
	27-50	Power (kW)	6,4	8,7	10,7	12,3	13,8
		Air outlet temp (°C-%HR)	11,3-95	12,5-93	13,3-91	14,1-90	14,7-88
	25-50	Power (kW)	5,2	7,1	8,6	10,0	11,2
		Air outlet temp (°C-%HR)	11,0-95	12,0-93	12,7-91	13,4-90	13,9-89
<b>5</b>	32-40	Power (kW)	9,0	12,2	15,0	17,4	19,5
		Air outlet temp (°C-%HR)	10,3-93	11,9-90	13,2-88	14,2-86	15,1-84
	27-50	Power (kW)	7,4	10,1	12,3	14,4	16,0
		Air outlet temp (°C-%HR)	9,7-95	11,0-92	12,1-91	12,9-89	13,6-88
	25-50	Power (kW)	6,2	8,4	10,3	12,0	13,5
		Air outlet temp (°C-%HR)	9,4-95	10,5-93	11,4-91	12,2-90	12,8-88
<b>40</b>	11	Power (kW)	6,9	9,7	12,2	14,5	16,7
		Air outlet temp (°C)	36,6	35,1	33,8	32,7	31,7
	15	Power (kW)	5,9	8,3	10,5	12,5	14,3
		Air outlet temp (°C)	37	35,7	34,6	33,6	32,8



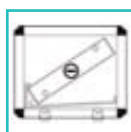
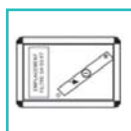
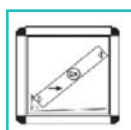
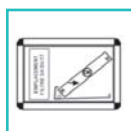
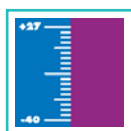
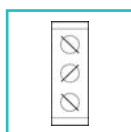
## • SECURITY AND CONTROL

**PRESSOSTAT FOULING**  
ref. DEP  
Return air Filter (IP54)**MANOMETER WITH LIQUID J**  
ref. MANO**SMOKS ALARM**  
ref. CDAD  
Cabinet (IP54)

## • MODULATION FLOW

**DEPORTED COMMAND**  
ref. POT VF  
Potentiometer only for SEASON (IP54)**COMMANDED OUTSTRIP COMFORT**  
ref. CDC2V2  
STOP /PV/GV 2 Ventilators CASE (IP54)**COMMANDED OUTSTRIP COMFORT**  
ref. CDC PVG2  
PV/GV 2 Ventilators CASE (IP54)**PRESENCE DETECTOR**  
ref. 360 TOR SA  
ON/OFF or PV/GV(SEASON incompatible version)**BOX RELEASE** ref. BD  
TBTS 24 or 48Vcc  
CASE (IP67)**COMMANDED OUTSTRIP COMFORT**  
ref. CDC1V2  
ON/OFF  
2 Ventilators CASE (IP54)

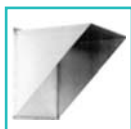
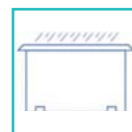
## • CLIMATIC

**DUCT HUMIDITY SENSOR**  
ref. HR 010 SG  
Signal 0-10V (SEASON incompatible version)**THERMOSTAT REVERSER SUMMER/WINTER**  
ref. CHANGEOVER PAD  
For PREMIUM/INFINITE BC versions + CBX module cold water**COLD WATER MODULE**  
ref. CBX BF  
Version SEASON non compatible  
Duct installation (see COMBIBOX CONCEPT® documentation)**COLD WATER MODULE**  
ref. CBX FC  
Module coupled to the central (See documentation COMBIBOX CONCEPT® for descriptions). SEASON versions not compatible size 9070**DIRECT EXPANSION MODULE R410A**  
ref. CBX DX  
Installation in girdle (see COMBIBOX CONCEPT® documentation). SEASON incompatible version**DIRECT EXPANSION MODULE R410A**  
ref. CBX FX  
Module coupled to the central (See documentation COMBIBOX CONCEPT® for descriptions). SEASON versions not compatible size 9070**DUCT HUMIDITY SENSOR**  
ref. HR 010 SA  
Signal 0-10V (SEASON incompatible version)**DEHUMIDIFYING MODULE**  
ref. CBX --  
Installation in girdle (see COMBIBOX CONCEPT® documentation)**REGISTER** ref. RM  
Frost protection.  
Waterproof class 4**SERVOMOTOR ALL OR NOTHING** ref. STOR 24 FROST  
Led by regulation EASY (Except SEASON)**SOLENOID VALVE KIT**  
ref. KEI IP44  
PREMIUM versions / INFINITE PC  
For indoor installation.**SOLENOID VALVE KIT**  
ref. KEE IP54  
PREMIUM versions / INFINITE PC  
For outdoor installation.

## • REGULATION

**WALL CONTROL TOUCH**  
ref. EDTOUCH  
SEASON incompatible version.  
Max 100 m**WALL CONTROL LCD**  
ref. E3-DSP-CLD  
SEASON incompatible version.  
Max 100 m**REPEATER**  
ref. REPEATER 1M  
SEASON incompatible version.  
To deport the standard wall command supplied with the power plant (tactile command not compatible ED-TOUCH) or to pilot with a command until 6 NEOTIME®**LANGUAGE CONTROL LON** ref. LON  
Communication Gateway  
LON language**MULTIFUNCTION ZONE REGULATOR**  
ref. WONDEROOM  
To associate with the versions modulation of flow miss LOBBY® (Constant pressure). Besides the management of the zone. Regulator communicates with the power plan CARMA® In particular for the functions(offices) free-cooling / night-cooling.

## • INSTALLATION

**FLEXIBLE SLEEVE**  
ref. MTS M0  
Circular except CARMA® 9070 rectangular.Fire classification: M0  
Male diameters (supply) / Female (Central side)**SUPPORT FEET** ref. PCB  
Set of 4 (100 mm). For floor mounting. Frame included as standard for CARMA® 9070.**CANOPY WIRE**  
ref. AGC  
Steel galvanized 10/10°. Delivered flat ready to mount**ROOF** ref. DPC  
Sheet 10/10<sup>th</sup> prelacquered