KRUGER

CENTRALIZED HEAT
RECOVERY UNIT

CAD COMPACT
SERIES

SMART VENTILATION SYSTEMS

HEAT RECOVERY

F7+F9

EFFECTIVE FILTRATION

Heat recovery units with high-efficiency counterflow Aluminium plate heat exchanger (up to 78%) certified by Eurovent, mounted in a galvanized steel double-walled enclosure with internal thermo-acoustic fireproof insulation (A1/M0) made of 25 mm thick mineral wool in models 500 to 2500. Circular inlet and outlet flanges with seals in models 500 to 1800, and rectangular flanges in models 2500. Only available in horizontal version.

Applications
Air renewal in commercial premises, offices, hotels, public buildings, schools.

Fans
Plug fans with reverse impeller blades. Single-phase EC motors with integrated electronic protection. IP44, Class B.

Filters
- ISO ePM2.5 98.5% filters (F7 + F9) are used on the supply air side.
- ISO ePM10 50% filter (M5) is used on the extract air side.

Control
An integrated function control, located inside the electrical box and wired to all the components (fans, bypass, filter
clogging detectors, temperature probes, etc.). Includes control terminal for remote control which allows manual and
automatic fan control.

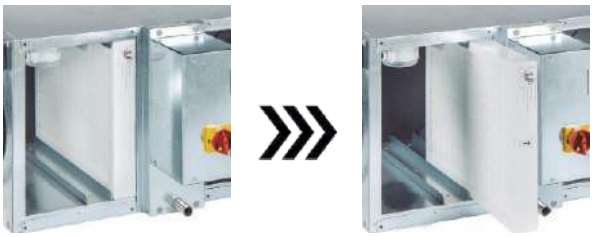
Other data
Single-phase electrical supply 230V 50-60Hz in models 500 to 2500. Nominal airflow of 460 to 2140 m³/h with 150 Pa of available pressure. All models include internal bypass.

Electrical box included
Built-in control circuit board and external safety switch, ensuring safer operation and environment.

ETD Touch Screen Control
Selectable operation mode - variable air volume, Constant pressure, Constant airflow volume and manual control modes (included with CAD-COMPACT unit).

AirSens-Pro touch control
The unit can automatically control with PM2.5, CO2, and VOCs level (accessory).

Feature and Benefits

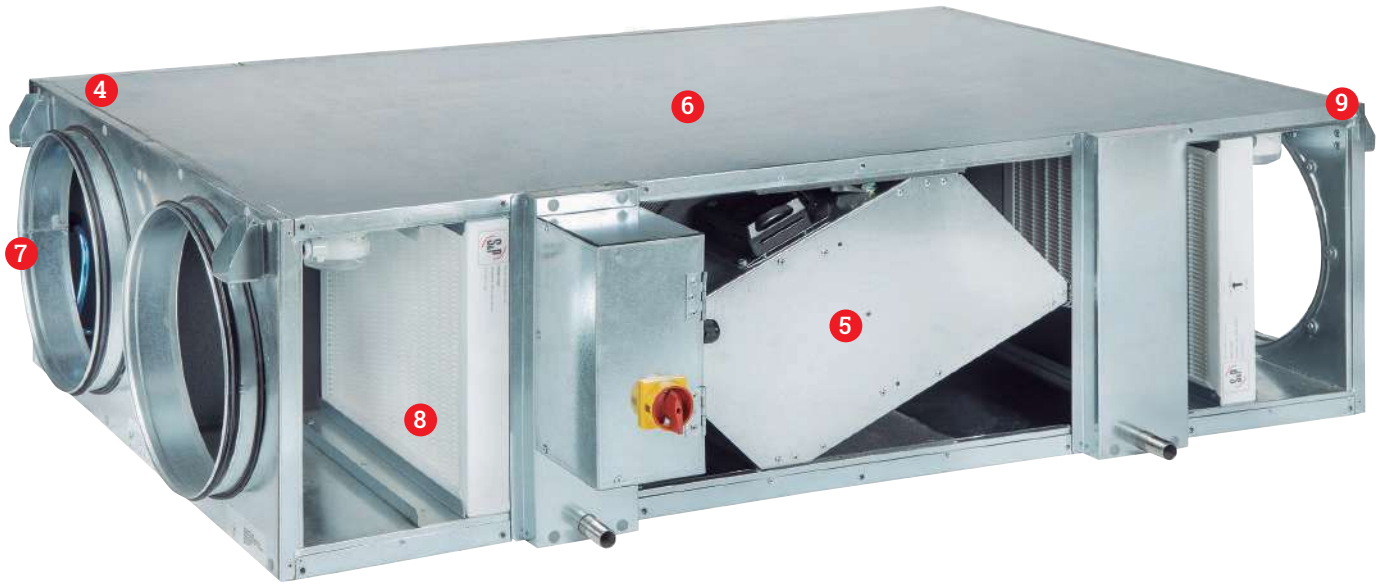


1 Easy maintenance
Filters can be accessed quickly through the side panels.

2 Reduced height
Minimum installation height thanks to its reduced profile combined with the side condensation outlet.

3 Easy inspection
Easy access for cleaning the Exchanger and Bypass valve from the side panels.

Component details and specification



4 Low noise level and robust construction
Twin panel enclosure. Fireproof thermo-acoustic insulation A1/M0 of 25 or 30 mm thickness, depending on the model.

5 Bypass
All versions include internal bypass with an integrated actuator.

6 High efficient heat exchanger
made of aluminium (up to 78%).

7 Motors
Equipped with plug-fans with single-phase EC motors.

8 High-efficiency filters:
- Low pressure drop F7+F9 filters (ISO ePM 2.5 98.5%) for air supply.
- M5 filters (ISO ePM 10 50%) in the extraction.

9 Easy assembly
Specific supports for installation in false ceilings.

Nomenclature

C A D - C O M P A C T	500	ADVANCED
1	2	3

1 - Series:
CAD-COMPACT: High-efficiency compact heat recovery units.

2 - Size
500
900
1300
2500

3 - ADVANCED: Plug & Play ADVANCED control included.

TECHNICAL CHARACTERISTICS

Model	Air connections diameter (mm)	Nominal airflow 150Pa (m^3/h)	Recovery unit efficiency*1 (%)	Electrical supply	Maximum absorbed power*2 (kW)	Maximum current*2 (A)	Weight (kg)
CAD-COMPACT 500	Ø200	460	78	1/230V, 50-60 Hz	0,31	2,1	70
CAD-COMPACT 900	Ø315	790	76	1/230V, 50-60 Hz	0,45	3,0	86
CAD-COMPACT 1300	Ø315	1.360	77	1/230V, 50-60 Hz	0,88	3,9	137
CAD-COMPACT 2500	570x375	2.140	78	1/230V, 50 Hz	0,92	3,9	200

*1 Wet efficiency refered to nominal airflow, outdoor (35°C/40% RH) and indoor conditions (26°C/40% RH).
*2 Sum of both fans.

ACOUSTIC CHARACTERISTICS

Model	Sound pressure (LpA)*			Sound power (LwA)		
	Suction	Output	Radiated	Suction	Output	Radiated
CAD-COMPACT 500	38	56	37	58	76	57
CAD-COMPACT 900	37	55	38	57	75	58
CAD-COMPACT 1300	46	61	46	66	81	66
CAD-COMPACT 2500	51	62	45	71	82	65

* Sound pressure level, in dB(A), measured in free field, at a distance of 3m.
Depending on the installation conditions, type of enclosures, as well as the characteristics of the materials used in walls and false ceilings, the actual sound pressure levels may be quite different from the values indicated in the table.

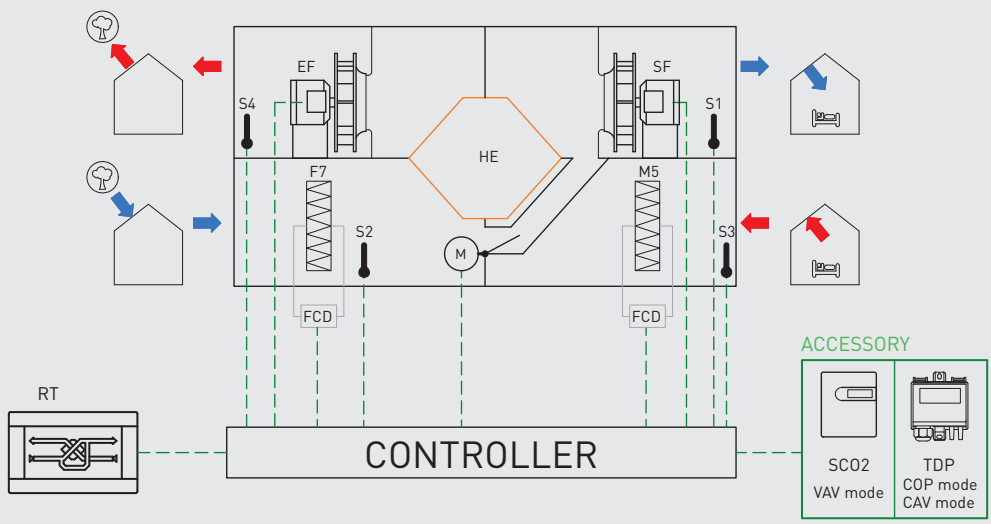
THERMAL PERFORMANCE OF RECOVERY UNITS DEPENDING ON DIFFERENT TEMPERATURES

		SUMMER CLIMATE					
		OUTDOOR AIR		INCOMING AIR*		PERFORMANCE	
Model	Airflow (m^3/h)	Temperature (ºC)	H.R. (%)	Temperature (ºC)	H.R. (%)	Efficiency (%)	Recovered power (kW)
CAD-COMPACT 500	400	35	40	28	59	78	0.89
CAD-COMPACT 900	700	35	40	28	59	78	1.53
CAD-COMPACT 1300	1100	35	40	28	59	78	2.44
CAD-COMPACT 2500	2000	35	40	28	59	78	4.45

*For indoor temperature of 26ºC, 40%RH.

Fan components diagram

CAD COMPACT ADVANCED (Control Plug&Play)



SF Supply fan
EF Extraction fan
S1 Supply temperature probe
S2 Outdoor temperature probe
S3 Extraction temperature probe
S4 Exhaust temperature probe
FCD Filter clogging detector (Pressure switch)
HE High-efficiency heat exchanger
RT Remote control panel
F7 Supply filter
M5 Extraction filter
M Bypass actuator
SCO2 CO_2 sensor (Accessory)
TDP TDP-S pressure transmitter (Accessory)
For CAV mode, 2 units of TDP-S are required

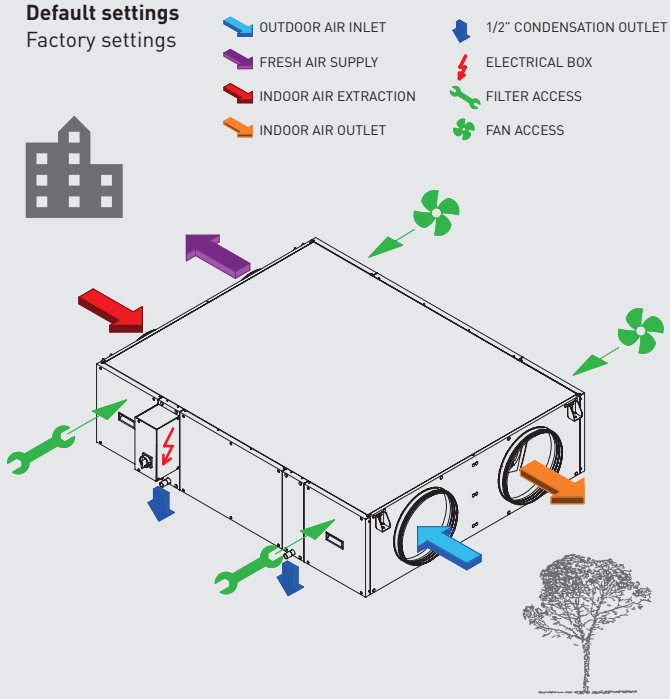
Plug&Play Control Functions

	ADVANCED
MAIN ELEMENTS	
Electrical panel including controller and component wiring, accessible from the side of the unit.	✓
Safety switch.	✓
ETD Remote control wwith touch panel (including a 10m cable).	✓
Filter clogging detector pressure switches (2 units).	✓
Air temperature probes (supply, extract, outdoor and exhaust)	✓
Bypass actuator.	✓
FUNCTIONS	
Fans adjustments	
Manual fan speed adjustment, with three pre-set, adjustable speeds.	✓
Automatic fan speed adjustment in VAV mode, based on an external 0-10V signal (CO_2 sensor accessory, or PM2.5, CO2, VOCs via AirSens-Pro accessory).	✓
Automatic fan speed adjustment in COP mode (Constant Pressure). The fan speed is adjusted to maintain a constant pressure in the duct network. Applicable to multi-zone installations with motorised dampers. A TDP-S accessory is required.	✓
Automatic fans speed adjustment in CAV mode (Constant Arflow). The fans speed is adjusted to compensate filters fouling. Supply and extract fans independent control allowing the configuration of differents airflow values for each one. (2 units of accessory TDP-S are required.)	✓
BOOST function (high-speed timed activation via external volt-free contact).	✓
Automatic fans speed adjustment, according to a configurable time schedule (Configurable Timer).	✓
STOP/START function via external volt-free contact.	✓
Temperature regulation	
Display of the temperatures in the touch panel.	✓
Control of the supply temperature by opening the bypass (when the outside temperature allows it).	✓
Bypass adjustment	
Manual operation of bypass.	✓
Automatic operation of bypass free-cooling function.	✓
Automatic operation of bypass as part of the heat exchanger defrost strategy.	✓
SECURITY FUNCTIONS	
Control of clogged filters via pressure switches (included).	✓
Alarm display in remote control.	✓
Fan failure detection.	✓
Temperature probes failure detector.	✓
Fire alarm function. Activation of a predetermined behaviour of supply and extract fans after receive the input by an external contact.	✓
COMMUNICATION	
Wired remote control (10m cable included).	✓
ON/OFF remote digital input via external volt-free contact.	✓
Digital input for BOOST function (High speed timed activation).	✓
Digital input available for connection to fire central.	✓
ALARM digital output.	✓
Fans status (Run/Stop) digital output.	✓
Can be integrated into the BMS - Modbus RTU (RS-485).	✓

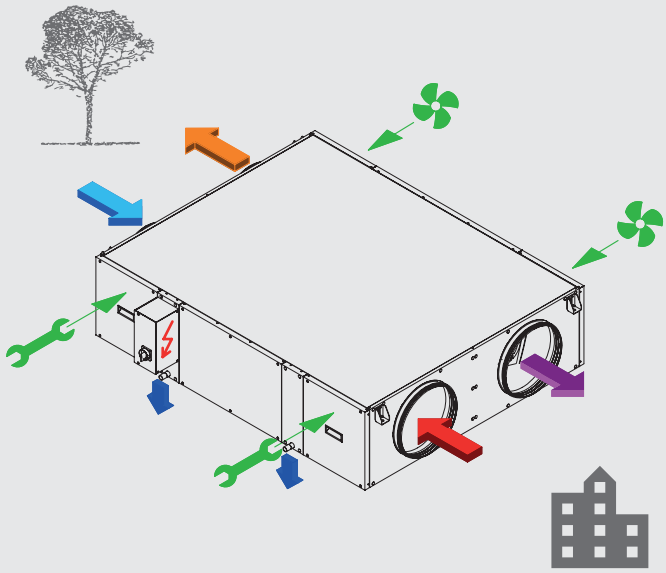
✓: Available / Included. ✗: Not available / Not included.

STANDARD CONFIGURATIONS

Default settings
Factory settings

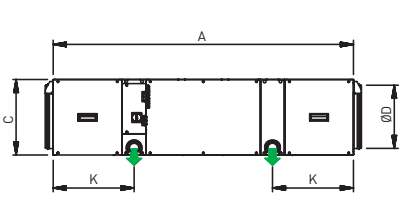


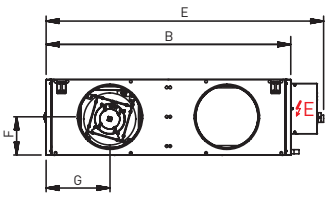
Symmetrical configuration
Achieved by a simple modification over the unit, once on site



DIMENSIONS (mm)

CAD-COMPACT 500 TO 1300

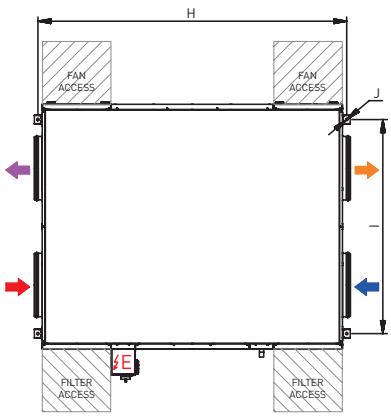




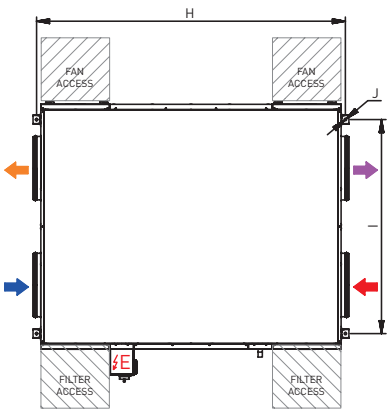
ELECTRICAL BOX
OUTDOOR AIR INLET
FRESH AIR SUPPLY
INDOOR AIR EXTRACTION
INDOOR AIR OUTLET
1/2" CONDENSATE OUTLET

UPPER VIEW

DEFAULT (FACTORY SUPPLIED)



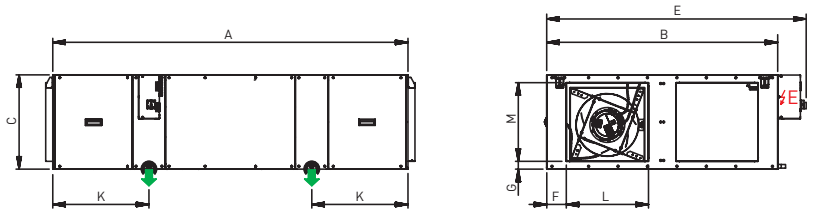
OBTAINED BY A SIMPLE ON-SITE MODIFICATION



Model	A	B	C	D	E	F	G	H	I	J	K
CAD-COMPACT 500	1120	698	289	200	862	147	188	1163	546	12	256
CAD-COMPACT 900	1345	843	376	315	1007	190	225	1388	691	12	328
CAD-COMPACT 1300	1495	1218	376	315	1382	190	318	1538	1066	12	403

DIMENSIONS (mm)

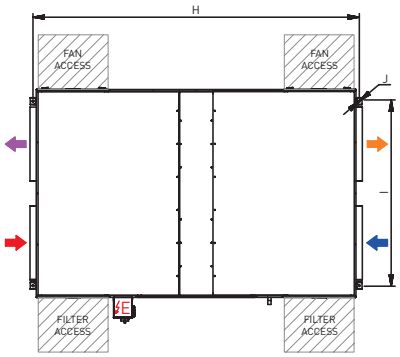
CAD-COMPACT 2500



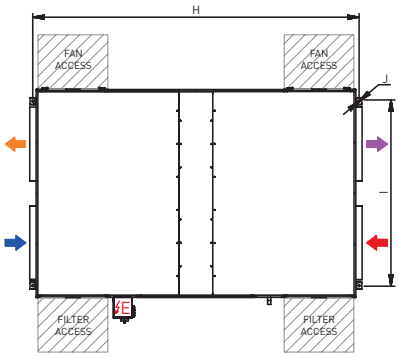
E ELECTRICAL BOX
OUTDOOR AIR INLET
FRESH AIR SUPPLY
INDOOR AIR EXTRACTION
INDOOR AIR OUTLET
1/2" CONDENSATE OUTLET

UPPER VIEW

DEFAULT (FACTORY SETTINGS)



OBTAINED BY A SIMPLE ON-SITE MODIFICATION



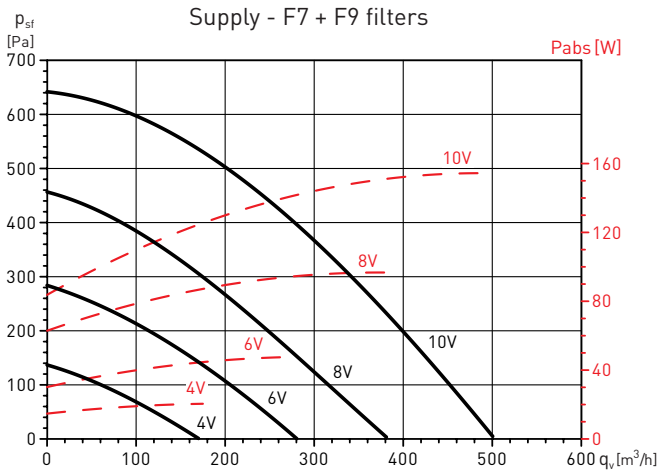
Model	A	B	C	D	E	F	G	H	I	J	K	L	M
CAD-COMPACT 2500	1845	1495	453	—	1670	127	41	1888	1343	17	385	570	375

CHARACTERISTICS CURVES

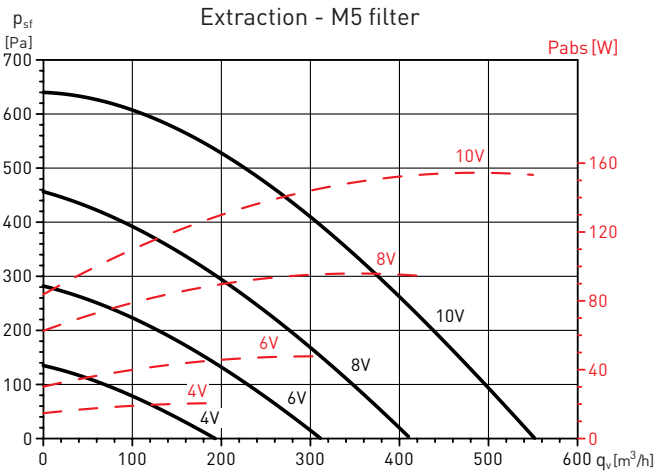
- q_v: Flow rate m^3/h.
- p_{sf}: Static pressure in Pa and mmcda.
- Pabs = Absorbed power at maximum speed (W).
- Normal dry air at 20°C and 760 mm.c.d.Hg.
- Tests performed according to ISO 5801 and AMCA 210-99.
- Absorbed power corresponding to a single circuit.

CAD-COMPACT 500

Supply - F7 + F9 filters



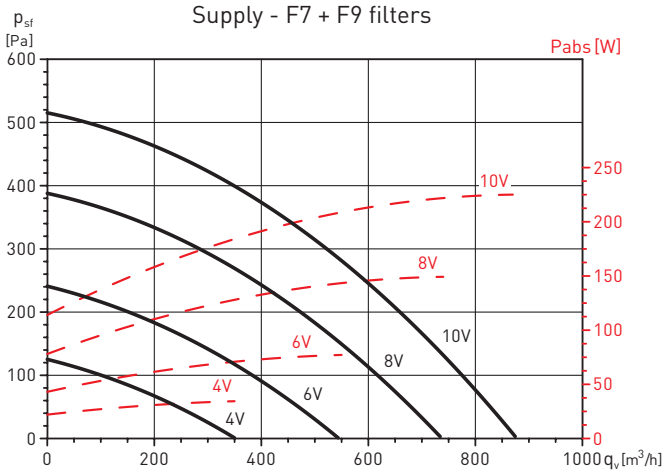
Extraction - M5 filter

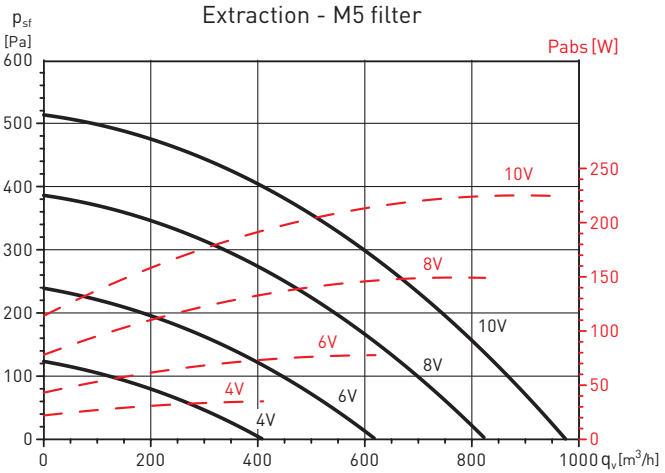


CHARACTERISTICS CURVES

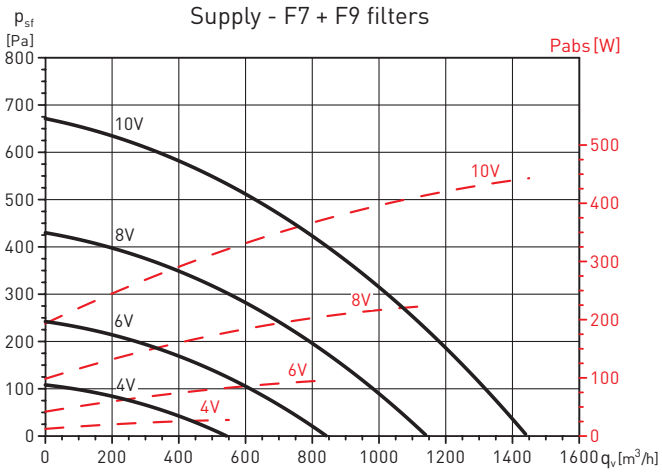
- q_v: Flow rate m^3/h.
- p_{sf}: Static pressure in Pa and mmcda.
- Pabs = Absorbed power at maximum speed (W).
- Normal dry air at 20°C and 760 mm.c.d.Hg.
- Tests performed according to ISO 5801 and AMCA 210-99.
- Absorbed power corresponding to a single circuit.

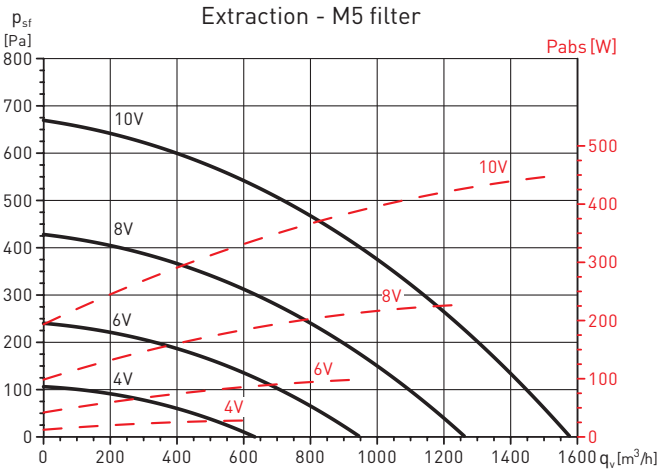
CAD-COMPACT 900



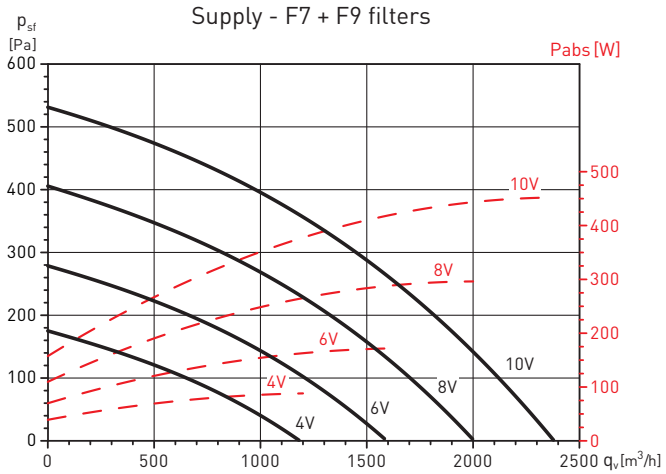


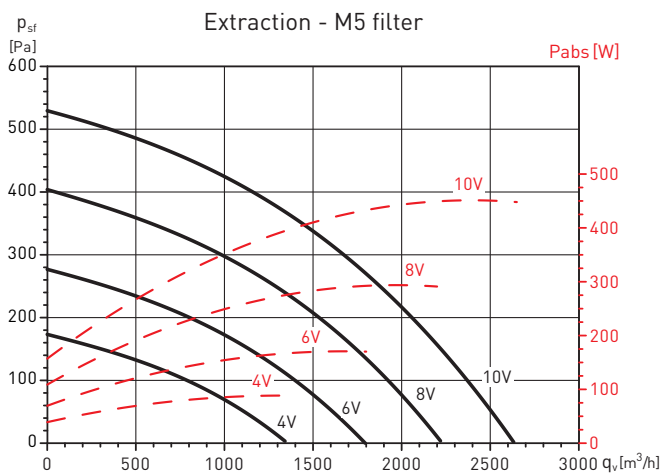
CAD-COMPACT 1300





CAD-COMPACT 2500



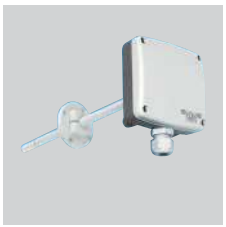


ELECTRICAL ACCESSORIES FOR THE CAD-COMPACT SERIES

Accessories for fan control depending on the control mode

Variable airflow		Constant pressure COP	Constant airflow CAV
Room	Duct		
SCO2-A 0/10V (CO2)	SCO2-G 0/10V	TDP-S	TDP-S (2 units)
AirSens-Pro (CO2, PM2.5, VOCs)			

SCO2-A 0/10V
Ambient CO_2 and temperature sensor without display.
Outlet: 0-10V.
Power: 24 VDC.



SCO2-G 0/10V
CO_2 sensor for the duct.
It controls the ventilation in sections of the extraction duct depending on the CO_2 concentration of the air circulating through it.
Outlet: 0-10V.
Power: 24 VDC.

TDP-S probe
For COP control. They are used to control the pressure in constant-pressure and continuous-flow ventilation systems. They allow the reading of pressure differentials at two points and convert it into an electrical signal suitable for the different types of control.

TG-K NTC 4M
NTC temperature sensor
Allows control of the delivery temperature.
Range:0°C-+60°C

AirSens-Pro touch control
Automatically control the unit with PM2.5, CO2 and VOCs
Display Temperature, Humidity, PM2.5, CO2, VOCs
Wall mount installation

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A member of

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