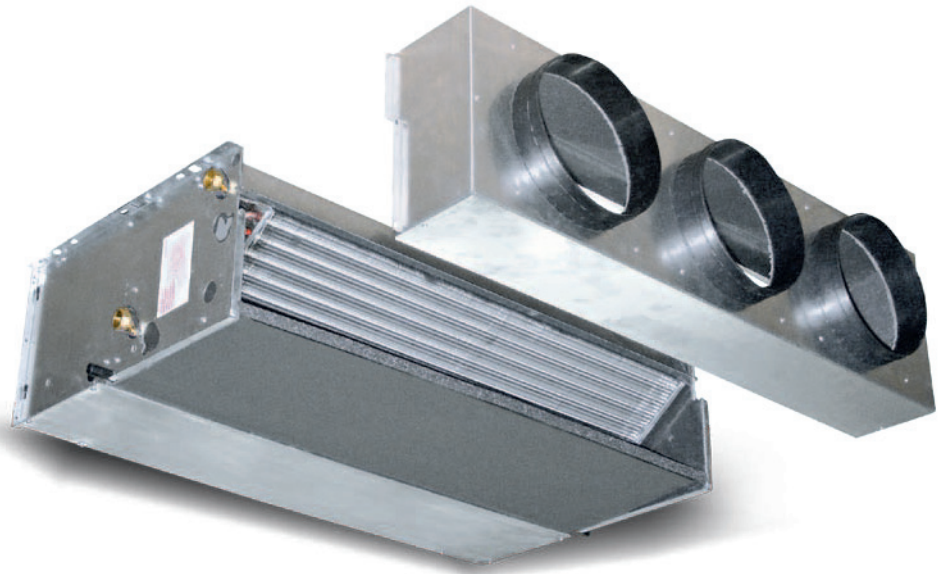


SABIANA
IL CLIMA AMICO

A leading brand of  AFG



Carisma CRS-ECM

High Pressure Fan Coil Unit with EC Brushless Electronic Motor and Inverter Board

Range includes **3 air flow rates** (from 350 to 1450 m³/h) each equipped with 3 or 4 row coil and with the possibility to add a 1 or 2 row coil for 4 pipe systems. In high pressure ducted fan coils, the ability **to continuously vary** the air flow gives great regulation and control flexibility, at the same time **ensuring** excellent environmental conditions and extremely low electrical consumption.

All range is compliant with the new **ERP 2013 Regulation (EU) No. 327/2011** which requires **very low electric consumption ratings** in relation to performances provided.

The **ECM range** makes use of the excellent experience gained with the SkyStar Cassette fan coils with inverter board, first in the world in production since 2009, and which have had great success on all markets.

The innovative **brushless** and **sensor-less** type synchronous electronic motor with permanent magnets, is controlled by an inverter board designed and developed in Italy. The board is mounted on the unit, closed to the motor, without the need to be cooled down by the air flow.



The air flow rate can be varied **in continuously** by means of a 1-10 V signal generated by Sabiana controls or by independent control systems. The continuous air flow control improves the acoustic comfort and allows a quicker response to the variation of the thermal loads and a greater stability of the requested ambient temperature.

The extreme efficiency, also at low speed, makes it possible to greatly reduce electrical consumption (50% less in comparison to CRSO AC motor) with absorption values under normal operating conditions that **do not exceed 50 Watt**. The excellent values of the CRS range in terms of sound levels have been maintained **in all working conditions**, without any resonance phenomenon at any frequency.

The full compliance with the Electromagnetic Compatibility Directive and with the other severe Standards in force is certified by an independent institute.



Technical characteristics of the main components:

For the technical characteristics of the various components refer to Carisma CRS Fan Coil Unit, except for

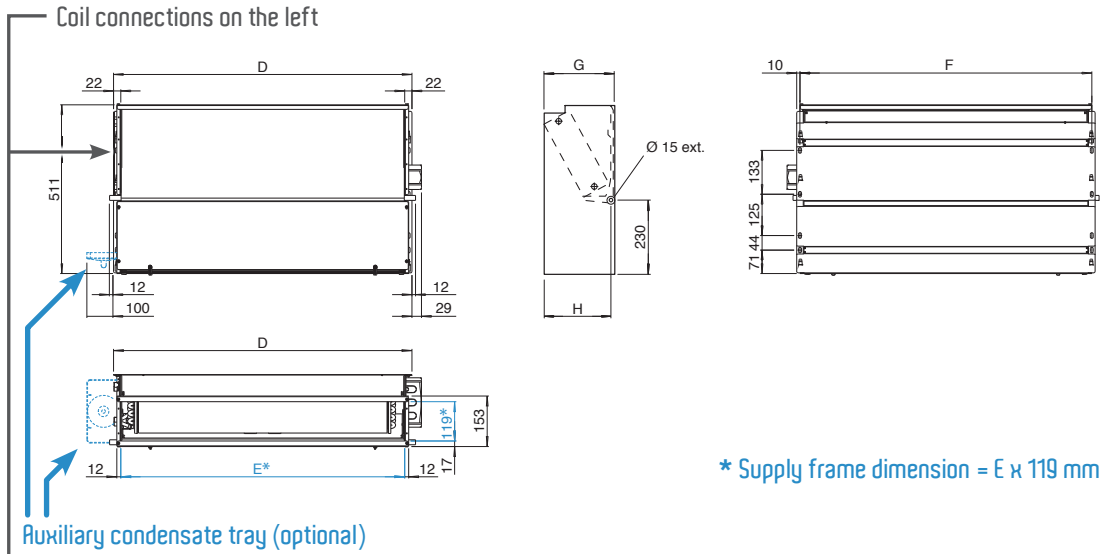
Electronic motor: three phase permanent magnet brushless electronic motor that is controlled with current reconstructed according to a **BLAC** sinusoidal wave.

The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **switching system**, it generates a three-phase frequency modulated, wave form power supply.

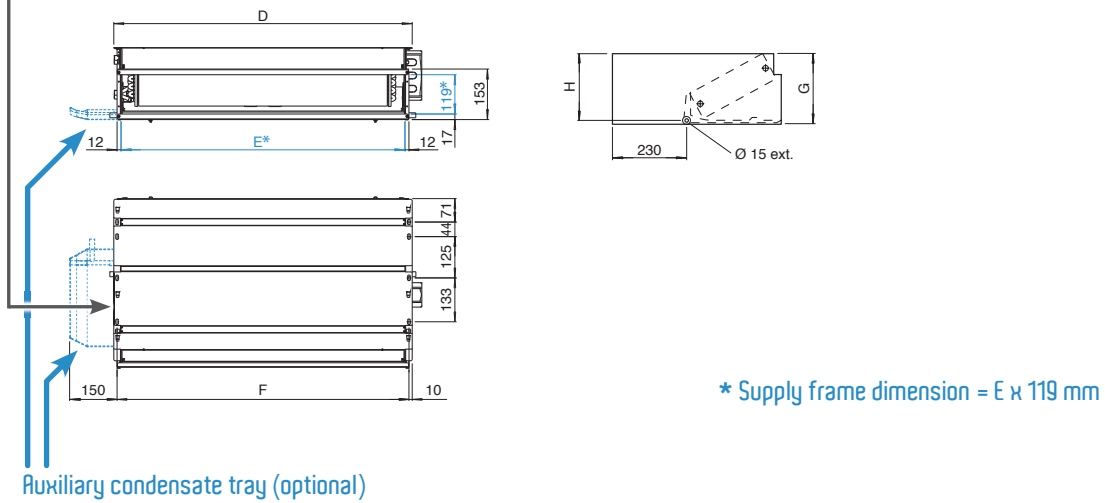
The electric power supply required for the machine is therefore single-phase with voltage of **230 - 240 U** and frequency of **50 - 60 Hz**.

Dimensions, Weight, Water content

Vertical Installation

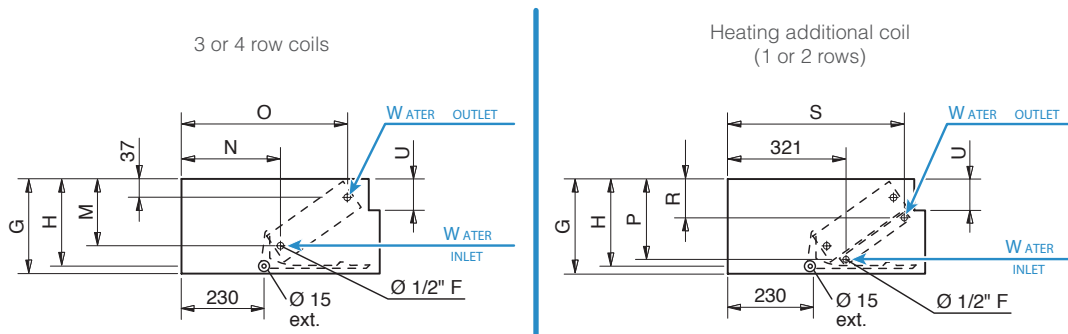


Horizontal Installation



Dimensions, Weight, Water content

Coil connections



Dimension (mm)

MODEL	1	2	3
D	689	904	1119
E	645	860	1075
F	669	884	1099
G	218	248	248
H	205	235	235
M	145	170	170
N	260	270	270
O	460	450	450
P	185	210	210
R	105	110	110
S	475	465	465
U	65	95	95

Weight (kg)

MODEL	WEIGHT WITH PACKAGING			WEIGHT WITHOUT PACKAGING		
	1	2	3	1	2	3
ROWS						
3	19,1	26,1	30,4	17,3	23,5	27,3
3+1	20,3	27,6	32,2	18,5	25,0	29,1
3+2	21,0	28,5	33,3	19,2	25,9	30,2
4	20,1	27,4	31,9	18,3	24,8	28,8
4+1	21,3	28,9	33,7	19,5	26,3	30,6

Water content (litres)

MODEL	1	2	3
ROWS			
3	0,9	1,6	1,9
4	1,3	2,2	2,8
+1	0,3	0,5	0,6
+2	0,6	1,0	1,2



Certification

Units with 3 and 4 row coil

2 pipe units. The following standard rating conditions are used:

COOLING (summer mode)

Entering air temperature: +27°C d.b. +19°C w.b.
 Water temperature: + 7°C E.W.T. +12°C L.W.T.

HEATING (winter mode)

Entering air temperature: +20°C
 Entering water temperature: +50°C

Water flow rate as for the cooling conditions

MODEL	CRS-ECM 13			CRS-ECM 23			CRS-ECM 33		
	MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX
Inverter Power (V)	5 (E)	7 (E)	9 (E)	4 (E)	6 (E)	8 (E)	4,5 (E)	6,5 (E)	8,5 (E)
Speed									
Air flow (E) m ³ /h	240	280	325	420	485	560	720	820	950
Available pressure (E) Pa	35	50	65	35	50	65	35	50	65
Cooling total emission (E) kW	1,55	1,76	1,98	2,66	2,98	3,33	4,21	4,64	5,16
Cooling sensible emission (E) kW	1,16	1,33	1,51	2,02	2,28	2,57	3,27	3,64	4,10
Heating (E) kW	1,91	2,18	2,48	3,25	3,46	4,10	5,33	5,94	6,68
Dp Cooling (E) kPa	8,9	11,1	13,7	9,0	11,0	13,4	10,5	12,4	15,0
Dp Heating (E) kPa	7,3	9,0	11,3	7,4	9,1	11,1	8,6	10,2	12,3
Fan (E) W	24	32	43	30	44	64	50	71	102
Sound power outlet (E) dB(A)	45	48	52	45	49	52	50	53	56
Sound power inlet + radiated (E) dB(A)	52	54	58	51	55	58	56	60	63
Sound pressure outlet (*) dB(A)	36	39	43	36	40	43	41	44	47
Sound pressure inlet + radiated (*) dB(A)	43	45	49	42	46	49	47	51	54
Plenum code (E)	9066363			9069222			9066368		
Energy classification FCEER (**) (E)	C			B			B		
Energy classification FCCOP (***) (E)	B			A			A		

MODEL	CRS-ECM 14			CRS-ECM 24			CRS-ECM 34		
	MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX
Inverter Power (V)	5 (E)	7 (E)	9 (E)	4 (E)	6 (E)	8 (E)	4,5 (E)	6,5 (E)	8,5 (E)
Speed									
Air flow (E) m ³ /h	240	280	325	420	485	560	720	820	950
Available pressure (E) Pa	35	50	65	35	50	65	35	50	65
Cooling total emission (E) kW	1,69	1,93	2,19	2,91	3,29	3,70	4,49	4,98	5,58
Cooling sensible emission (E) kW	1,25	1,43	1,64	2,15	2,44	2,77	3,42	3,82	4,32
Heating (E) kW	2,05	2,36	2,69	3,52	3,99	4,53	5,72	6,40	7,21
Dp Cooling (E) kPa	5,4	6,8	8,5	15,1	18,7	23,0	9,1	10,9	13,3
Dp Heating (E) kPa	4,4	5,5	7,0	12,4	15,4	19,0	7,5	9,0	10,9
Fan (E) W	24	32	43	30	44	64	50	71	102
Sound power outlet (E) dB(A)	45	48	52	45	49	52	50	53	56
Sound power inlet + radiated (E) dB(A)	52	54	58	51	55	58	56	60	63
Sound pressure outlet (*) dB(A)	36	39	43	36	40	43	41	44	47
Sound pressure inlet + radiated (*) dB(A)	43	45	49	42	46	49	47	51	54
Plenum code (E)	9066363			9069222			9066368		
Energy classification FCEER (**) (E)	B			A			B		
Energy classification FCCOP (***) (E)	B			A			A		

(E) = Eurovent certified performance.

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

(**) FCEER = Energy classification in Cooling.

(***) FCCOP = Energy classification in Heating.



Certification

Units with 1 row additional coil

4 pipe units. The following standard rating conditions are used:

COOLING (summer mode)

Entering air temperature: +27°C d.b. +19°C w.b.
Water temperature: +7°C E.W.T. +12°C L.W.T.

HEATING (winter mode)

Entering air temperature: +20°C
Water temperature: +70°C E.W.T. +60°C L.W.T.

MODEL	CRS-ECM 13+1			CRS-ECM 23+1			CRS-ECM 33+1			
	MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX	
Inverter Power (V)	5 (E)	7 (E)	9 (E)	4 (E)	6 (E)	8 (E)	4,5 (E)	6,5 (E)	8,5 (E)	
Speed										
Air flow (E)	m ³ /h	240	280	325	420	485	560	720	820	950
Available pressure (E)	Pa	35	50	65	35	50	65	35	50	65
Cooling total emission (E)	kW	1,55	1,76	1,98	2,66	2,98	3,33	4,21	4,64	5,16
Cooling sensible emission (E)	kW	1,16	1,33	1,51	2,02	2,28	2,57	3,27	3,64	4,10
Heating (E)	kW	1,64	1,83	2,02	2,62	2,89	3,19	3,97	4,33	4,79
Dp Cooling (E)	kPa	8,9	11,1	13,7	9,0	11,0	13,4	10,5	12,4	15,0
Dp Heating (E)	kPa	5,5	6,6	8,0	3,4	4,1	4,9	6,0	7,0	8,3
Fan (E)	W	24	32	43	30	44	64	50	71	102
Sound power outlet (E)	dB(A)	45	48	52	45	49	52	50	53	56
Sound power inlet + radiated (E)	dB(A)	52	54	58	51	55	58	56	60	63
Sound pressure outlet (*)	dB(A)	36	39	43	36	40	43	41	44	47
Sound pressure inlet + radiated (*)	dB(A)	43	45	49	42	46	49	47	51	54
Plenum code (E)		9066363			9069222			9066368		
Energy classification FCEER (**) (E)		C			B			B		
Energy classification FCCOP (***) (E)		B			B			B		

Wall electronic controls

CR-T-ECM	Continuous fan speed control with electronic thermostat and summer/winter switch
CR-DI-ECM	Continuous fan speed control with electronic thermostat and summer/winter switch
UPM-ECM	Power unit for CR-T-ECM and CR-DI-ECM remote control, fitted on the unit
UPS-ECM	Power unit for CR-T-ECM and CR-DI-ECM remote control, not fitted on the unit

Electronic controls for MB boards

MB-ECM-M	MB electronic board fitted on the unit
MB-ECM-S	MB electronic board supplied with separate packaging
T-MB	Wall control (to be used with MB board only)
RS-RT03	RT03 infra-red remote control with receiver supplied with sep. pack. (to be used with MB board only)
RT03	RT03 infra-red remote control supplied with separate packaging (to be used with MB board only)
RS	Receiver for RT03 infra-red remote control supplied with sep. pack. (to be used with MB board only)
PSM-DI	Multifunction control (to be used with MB board only)

Sabianet management system for a network of fan coils

Sabianet	Sabianet (to be used with MB board only)
ROUTER-S	Router for Sabianet
SIOS	Relay output board for Sabianet

The descriptions and illustrations provided in this publication are not binding: Sabiana reserves the right, whilst maintaining the essential characteristics of the types described and illustrated, to make, at any time, without the requirement to promptly update this piece of literature, any changes that it considers useful for the purpose of improvement or for any other manufacturing or commercial requirements.



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