



Carisma CRSL and CRSL-ECM

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

Carisma CRSL

High Pressure Fan Coil Unit with Asynchronous Motor



Range includes **7 air flow rates** (from 340 to 2100 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.

It is the perfect range to meet all air-conditioning requirements of work environments like offices, shops, restaurants and hotel rooms featuring ducted installations with available pressure **up to 80 Pa**.

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

Casing: made from 1 mm galvanized steel insulated with 3 mm polyolefin (PO) foam B-s2-d0 EN 13501-1.

Filter: polypropylene cellular fabric regenerating filter. The filter frame of galvanized steel is inserted into special plastic sliding guides fastened to the internal structure for easy insertion and removal of the filter.

Fan assembly: the fans have aluminium or plastic blades directly keyed on the motor with double aspiration and they are dynamically and statically balanced during manufacture in order to have an extremely quiet operation.

Electric motor: the motor is wired for single phase and has five speeds, with capacitor.

The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings.

Internal thermal protection with automatic reset, protection IP 20, class B.

Coil: it is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process.

The coil has two 1/2inch BSP internal connections and 1/8 inch BSP air vent and drain.

The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

The connections are on the left hand side looking from the air outlet of the unit (see picture).

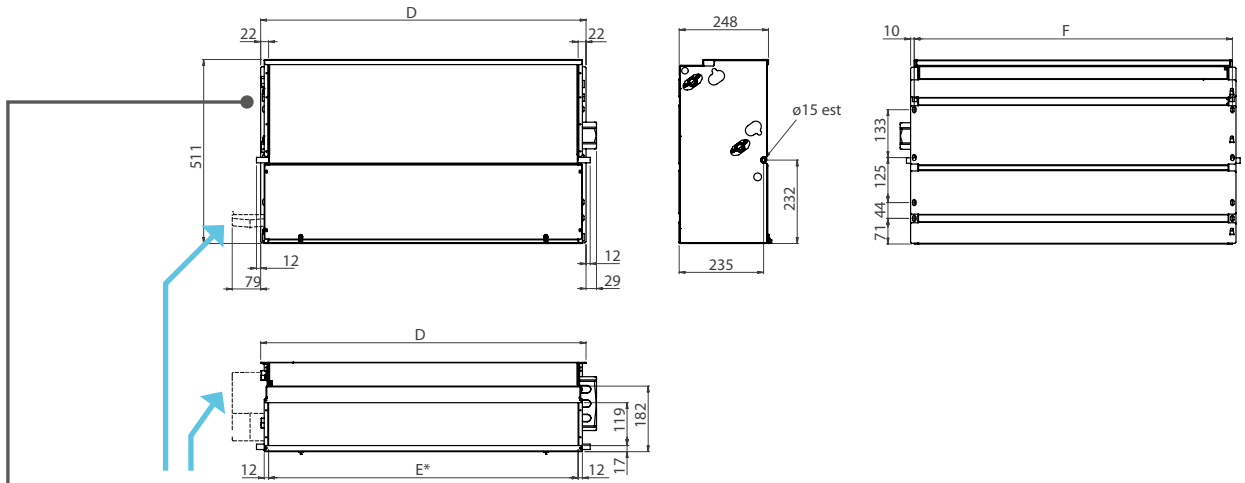
On request or on site the connections can be moved to the other side.

Condensate collection tray: "L"-shaped, fitted on the inner casing, for size 1÷4 made of plastic and for sizes 5÷7, made in painted steel; the tray is insulated with 3 mm polyolefin (PO) foam B-s2-d0 EN 13501-1.

The outside diameter of the condensate discharge pipe is 15 mm.



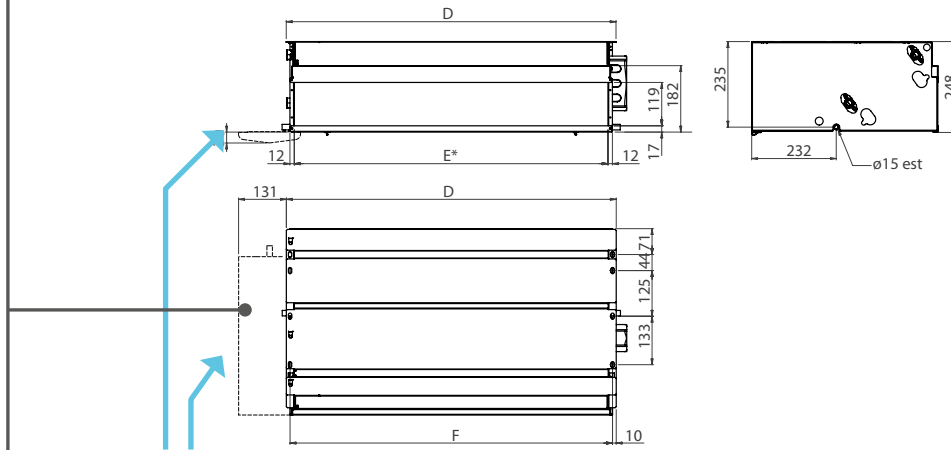
Vertical Installation



Auxiliary condensate tray (optional)

* Supply frame dimension = E x 119 mm

Horizontal Installation

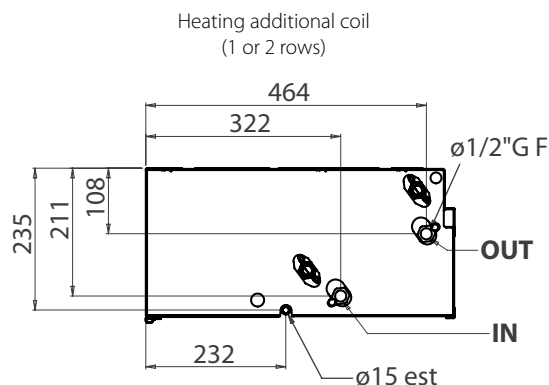
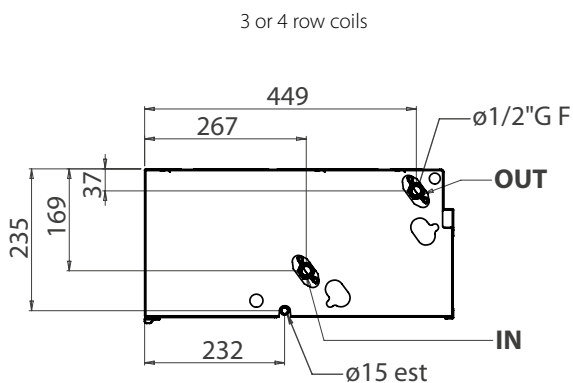


Auxiliary condensate tray (optional)

Coil connections on the left

* Supply frame dimension = E x 119 mm

Coil connections



Dimension (mm)

Model	1	2	3	4	5	6	7
D	689	904	1119	1119	1334	1549	1549
E	645	860	1075	1075	1290	1505	1505
F	669	884	1099	1099	1314	1529	1529

Weight (kg)

Model	Weight with packaging							Weight without packaging						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3	19,5	26,4	29,5	30,9	42,4	52,2	52,4	18,5	25,4	26,5	27,9	38,4	47,2	47,4
3+1	20,7	27,9	31,3	32,7	44,3	54,5	54,7	19,7	26,9	28,3	29,7	40,3	49,5	49,7
3+2	21,4	28,8	32,4	33,8	-	-	-	20,4	27,8	29,4	30,8	-	-	-
4	20,5	27,7	30,9	32,0	43,8	53,9	54,1	19,5	26,7	27,9	29,0	39,8	48,9	49,1
4+1	21,7	29,2	32,7	33,8	45,7	56,2	56,4	20,7	28,2	29,7	30,8	41,7	51,2	51,4

Water content (litres)

	1	2	3	4	5	6	7
3	0,9	1,6	1,9	1,9	2,6	3,2	3,2
4	1,3	2,2	2,8	2,8	3,4	4,2	4,2
+1	0,3	0,5	0,6	0,6	0,8	0,9	0,9
+2	0,6	1,0	1,2	1,2	-	-	-

Units with 3 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
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model		CRSL 13			CRSL 23			CRSL 33			CRSL 43		
		1	4	5	1	4	5	1	4	5	1	4	5
Speed													
Air flow (E)	m ³ /h	205	290	315	395	575	625	380	720	790	600	850	980
Available pressure (E)	Pa	25	50	58	26	50	58	14	50	60	23	50	65
Cooling total emission (E)	kW	1,43	1,88	2,00	2,57	3,40	3,60	2,68	4,42	4,72	3,85	4,97	5,47
Cooling sensible emission (E)	kW	1,01	1,35	1,44	1,85	2,53	2,70	1,90	3,30	3,55	2,82	3,77	4,22
Heating (E)	kW	1,43	1,96	2,11	2,67	3,70	3,98	2,71	4,82	5,22	4,10	5,56	6,27
Dp Cooling (E)	kPa	11	17	20	10,6	17,7	19,6	6,3	15,7	17,7	12,2	19,4	23,2
Dp Heating (E)	kPa	9	16	18	8,9	16,1	18,3	5,1	14,3	16,6	10,7	18,6	23,0
Fan (E)	W	27	45	51	59	87	94	50	96	110	88	122	148
Sound power outlet (E)	dB(A)	34	42	43	38	47	49	36	48	51	44	52	55
Sound power inlet + radiated (E)	dB(A)	42	50	52	45	55	56	43	56	58	51	59	62
Sound pressure outlet (*)	dB(A)	25	33	34	29	38	40	27	39	42	35	43	46
Sound pressure inlet + radiated (*)	dB(A)	33	41	43	36	46	47	34	47	49	42	50	53
Plenum code		9069191			9069222			9066368			9066368		

Model		CRSL 53			CRSL 63			CRSL 73		
		1	4	5	1	4	5	1	3	4
Speed										
Air flow (E)	m ³ /h	475	810	970	580	1120	1240	905	1270	1425
Available pressure (E)	Pa	18	50	70	15	50	60	26	50	63
Cooling total emission (E)	kW	3,30	5,04	5,72	3,99	6,62	7,11	5,58	7,11	7,70
Cooling sensible emission (E)	kW	2,31	3,64	4,19	2,83	4,94	5,36	4,06	5,37	5,89
Heating (E)	kW	3,33	5,36	6,25	3,94	6,96	7,58	5,82	7,73	8,49
Dp Cooling (E)	kPa	12,2	26,3	33,1	6,6	16,4	18,7	12,2	18,8	21,7
Dp Heating (E)	kPa	9,7	23,0	30,4	5,1	14,2	16,5	10,3	17,1	20,2
Fan (E)	W	65	110	140	69	125	145	155	177	186
Sound power outlet (E)	dB(A)	37	48	53	38	50	52	46	53	56
Sound power inlet + radiated (E)	dB(A)	43	56	60	46	58	60	53	60	63
Sound pressure outlet (*)	dB(A)	28	39	44	29	41	43	37	44	47
Sound pressure inlet + radiated (*)	dB(A)	34	47	51	37	49	51	44	51	54
Plenum code		9069195			9069196			9069196		

(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.

Units with 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
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model		CRSL 14			CRSL 24			CRSL 34			CRSL 44		
		1	4	5	1	4	5	1	4	5	1	4	5
Speed													
Air flow (E)	m ³ /h	205	290	315	395	575	625	380	720	790	600	850	980
Available pressure (E)	Pa	25	50	58	26	50	58	14	50	60	23	50	65
Cooling total emission (E)	kW	1,54	2,07	2,22	2,93	4,01	4,28	2,89	4,99	5,36	4,10	5,36	5,94
Cooling sensible emission (E)	kW	1,07	1,46	1,57	2,03	2,84	3,04	2,00	3,55	3,84	2,95	3,97	4,46
Heating (E)	kW	1,49	2,07	2,23	2,85	4,02	4,34	2,76	4,99	5,42	4,22	5,77	6,55
Dp Cooling (E)	kPa	5,6	9,7	11,0	15,8	27,9	31,3	11,8	31,7	36,1	7,9	12,9	15,6
Dp Heating (E)	kPa	5,1	9,2	10,5	12,3	22,8	26,2	8,6	24,9	28,9	6,6	11,5	14,5
Fan (E)	W	27	45	51	59	87	94	50	96	110	89	120	146
Sound power outlet (E)	dB(A)	34	42	43	38	47	49	36	48	51	44	52	55
Sound power inlet + radiated (E)	dB(A)	42	50	52	45	55	56	43	56	58	51	59	62
Sound pressure outlet (*)	dB(A)	25	33	34	29	38	40	27	39	42	35	43	46
Sound pressure inlet + radiated (*)	dB(A)	33	41	43	36	46	47	34	47	49	42	50	53
Plenum code		9069191			9069222			9066368			9066368		

Model		CRSL 54			CRSL 64			CRSL 74		
		1	4	5	1	4	5	1	3	4
Speed										
Air flow (E)	m ³ /h	475	810	970	580	1120	1240	905	1270	1425
Available pressure (E)	Pa	18	50	70	15	50	60	26	50	63
Cooling total emission (E)	kW	3,48	5,44	6,22	4,23	7,25	7,82	6,10	7,92	8,62
Cooling sensible emission (E)	kW	2,43	3,89	4,52	2,96	5,26	5,72	4,34	5,80	6,38
Heating (E)	kW	3,41	5,57	6,54	4,17	7,63	8,34	6,30	8,52	9,42
Dp Cooling (E)	kPa	6,3	14,2	18,1	5,1	13,6	15,6	10,1	16,1	18,7
Dp Heating (E)	kPa	5,2	12,5	16,7	4,3	12,7	15,0	9,0	15,6	18,6
Fan (E)	W	65	110	140	66	125	145	155	177	186
Sound power outlet (E)	dB(A)	37	48	53	38	50	52	46	53	56
Sound power inlet + radiated (E)	dB(A)	43	56	60	46	58	60	53	60	63
Sound pressure outlet (*)	dB(A)	28	39	44	29	41	43	37	44	47
Sound pressure inlet + radiated (*)	dB(A)	34	47	51	37	49	51	44	51	54
Plenum code		9069195			9069196			9069196		

(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.

Electronic wall controls

WM-3V	3 speed control
WM-T	3 speed control with electronic thermostat and manual summer/winter switch
WM-TQR	3 speed control with electronic thermostat and centralized/manual summer/winter switch
WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
T2T	Electromechanical thermostat with summer/winter switch (only for 2 pipe units)
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls for MB boards

MB-M	MB electronic board fitted on the unit
MB-S	MB electronic board supplied with separate packaging
T-MB2	Wall control with LCD color display and WiFi (to be used with MB board only)
RS-RT03	RT03 infra-red remote control with receiver supplied with separate packaging (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 separate packaging (to be used with MB board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MB board only)
T-DI	T-DI touch screen multifunction control panel (to be used with MB board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MB board only)

Sabianet management system for a network of fan coils

Sabianet	Hardware/software supervisory system (to be used with MB board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

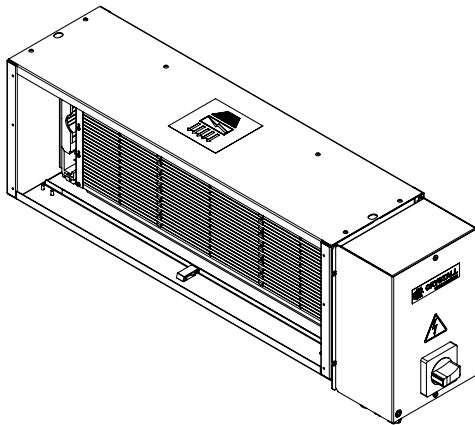
Controls for KNX systems

KNX systems

WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

Crystall CRY-CRSL



Crystall 50 filtering active electrostatic plenum for terminal unit CRSL / CRSL-ECM.

CRY-CRSL is an innovative filtering system to be used with the high pressure fan coil units Carisma CRSL/CRSL-ECM.

It is composed of three elements:

1. Active electrostatic Crystall 50 filtering assembly made of ionizing frame and filter pack
2. Metal covering frame properly equipped with flanges to allow an easy combination either towards the terminal unit and in regard to the duct or to any accessories such as flanges, silencers and plenums for a total adaptability
3. Wired control and power box available into the "fitted" on the plenum version

The active electrostatic filter allows a consistent reduction of the fine particles existing in the environment thanks to the high efficiency filtration, performance certified in accordance to the Standard in force EN ISO 16890.

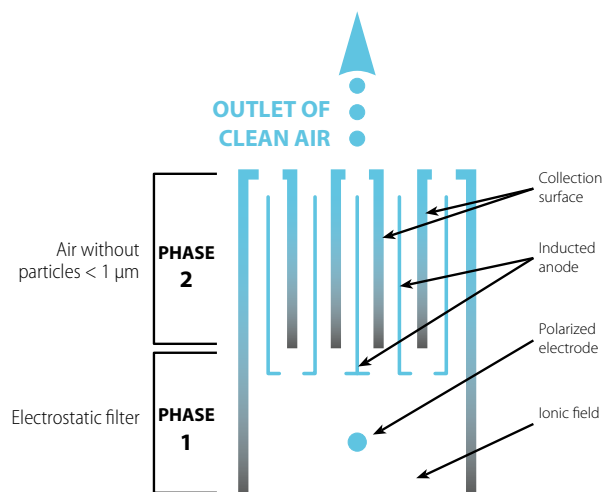
Operating principle of the Crystall Sabiana electrostatic filter

The air is sucked in and first passes a mechanical prefilter, which stops away particles of more than 50 μm (dust, insects, etc.).

Then the smallest particles ($50 \div 0.01 \mu\text{m}$) are exposed to an intensive ionic field and are polarized (**Phase 1**).

The charged particles passing through the second filter section, are pushed back by the anode and attracted by the collection surfaces by a strong, inducted magnetic field (**Phase 2**).

The air which leaves the unit is free from polluting particles.



Carisma CRSL-ECM

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



Range includes **4 air flow rates** (from 330 to 2460 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.

The ECM range makes use of the excellent experience gained with the 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 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 1-10V 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 (in comparison to CRSL AC motor) under normal operating conditions.

The excellent values of the CRSL-ECM 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.

For the technical characteristics of the various components refer to Carisma CRSL, **except for Electronic motor**:

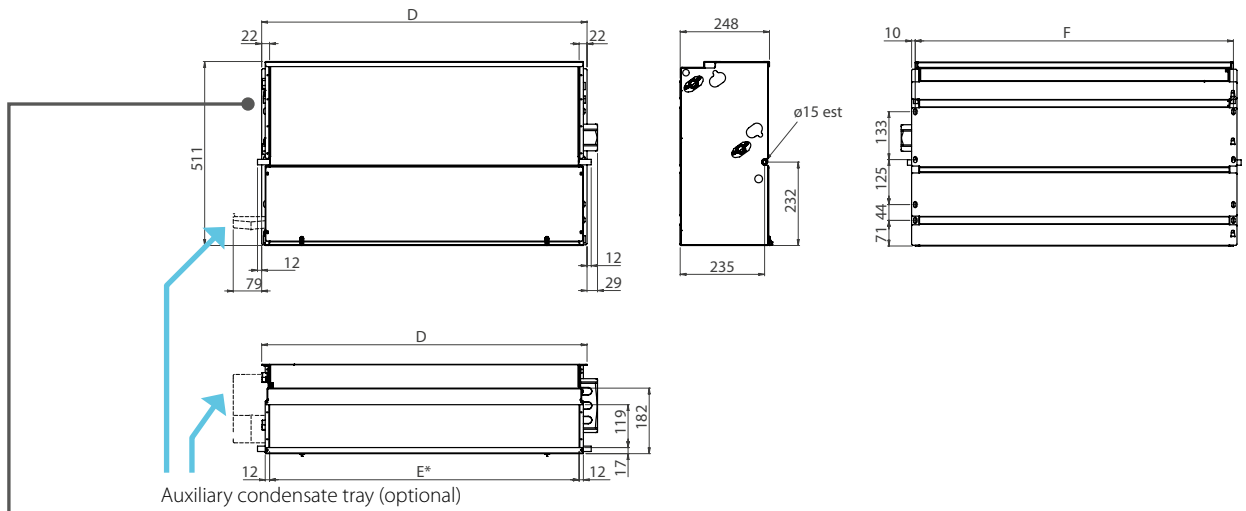
Three phase permanent magnet electronic motor that is controlled with current reconstructed according to a **BLAC** sinusoidal wave.

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 V** and frequency of **50 - 60 Hz**.

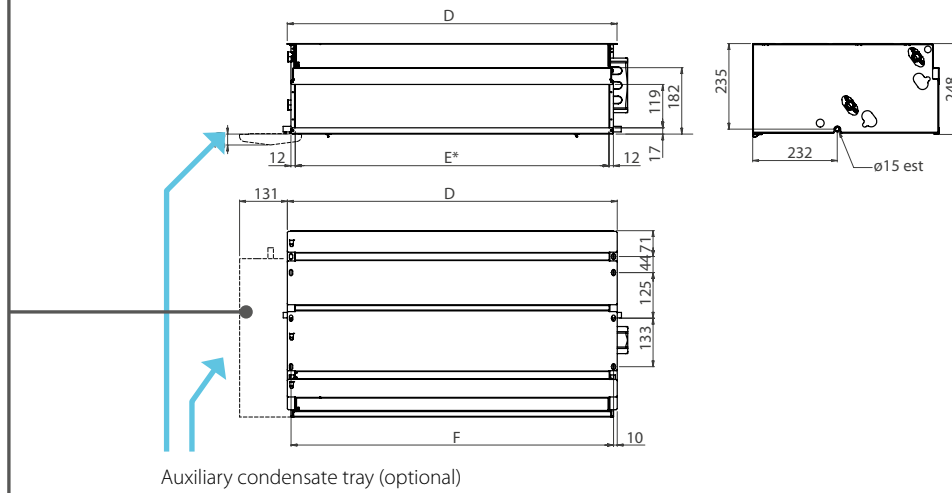


Vertical Installation



* Supply frame dimension = E x 119 mm

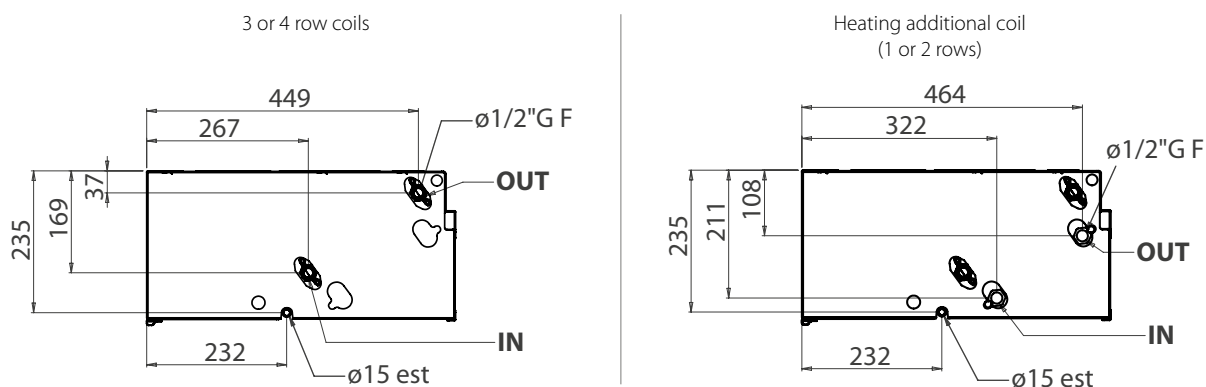
Horizontal Installation



Coil connections on the left

* Supply frame dimension = E x 119 mm

Coil connections



Dimension (mm)

Model	1	2	4	7
D	689	904	1119	1549
E	645	860	1075	1505
F	669	884	1099	1529

Weight (kg)

Model	Weight with packaging				Weight without packaging			
	1	2	4	7	1	2	4	7
3	18,9	25,6	29,4	49,9	17,9	24,6	26,4	44,9
3+1	20,1	27,1	31,2	52,2	19,1	26,1	28,2	47,2
3+2	20,8	28,0	32,3	-	19,8	27,0	29,3	-
4	19,9	26,9	30,5	51,6	18,9	25,9	27,5	46,6
4+1	21,1	28,4	32,3	53,9	20,1	27,4	29,3	48,9

Water content (litres)

	1	2	4	7
3	0,9	1,6	1,9	3,2
4	1,3	2,2	2,8	4,2
+1	0,3	0,5	0,6	0,9
+2	0,6	1,0	1,2	-

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
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Model	CRSL-ECM 13			CRSL-ECM 23			CRSL-ECM 43			CRSL-ECM 73		
	1	2	3	1	2	3	1	2	3	1	2	3
Inverter Power	4	6,3	8	4	6,5	8,5	3,5	7	9	2,5	5	8
Speed	1	2	3	1	2	3	1	2	3	1	2	3
Air flow (E) m ³ /h	240	305	360	430	540	630	595	850	980	900	1175	1410
Available pressure (E) Pa	32	50	68	34	50	70	24	50	66	30	50	72
Cooling total emission (E) kW	1,64	1,97	2,23	2,72	3,21	3,55	3,84	4,94	5,43	5,66	6,81	7,67
Cooling sensible emission (E) kW	1,17	1,42	1,63	1,99	2,38	2,68	2,83	3,77	4,21	4,15	5,11	5,86
Heating (E) kW	1,65	2,05	2,37	2,88	3,51	4,00	4,07	5,56	6,27	5,69	7,09	8,24
Dp Cooling (E) kPa	13,3	18,7	23,5	11,5	15,6	18,9	11,8	18,9	22,5	12,1	17,1	21,4
Dp Heating (E) kPa	11,6	17,0	22,1	10,2	14,6	18,5	10,6	18,6	23,0	9,8	14,6	19,1
Fan (E) W	18	29	39	26	43	64	30	67	98	52	100	155
Sound power outlet (E) dB(A)	38	44	48	42	47	49	44	52	55	47	54	57
Sound power inlet + radiated (E) dB(A)	45	51	55	48	55	58	51	59	62	54	61	64
Sound pressure outlet (*) dB(A)	29	35	39	33	38	40	35	43	46	38	45	48
Sound pressure inlet + radiated (*) dB(A)	36	42	46	39	46	49	42	50	53	45	52	55
Plenum code	9069191			9069222			9066368			9069196		

Model	CRSL-ECM 14			CRSL-ECM 24			CRSL-ECM 44			CRSL-ECM 74		
	1	2	3	1	2	3	1	2	3	1	2	3
Inverter Power	4	6,3	8	4	6,5	8,5	3,5	7	9	2,5	5	8
Speed	1	2	3	1	2	3	1	2	3	1	2	3
Air flow (E) m ³ /h	240	305	360	430	540	630	595	850	980	900	1175	1410
Available pressure (E) Pa	32	50	68	34	50	70	24	50	66	30	50	72
Cooling total emission (E) kW	1,77	2,17	2,48	3,14	3,79	4,25	4,09	5,34	5,91	6,12	7,46	8,47
Cooling sensible emission (E) kW	1,25	1,54	1,78	2,20	2,68	3,04	2,95	3,97	4,45	4,40	5,48	6,33
Heating (E) kW	1,73	2,17	2,52	3,08	3,80	4,37	4,19	5,77	6,55	6,26	7,96	9,35
Dp Cooling (E) kPa	7,2	10,3	13,2	17,5	24,7	30,6	7,7	12,6	15,2	9,9	14,3	18,1
Dp Heating (E) kPa	6,7	9,9	13,1	14,1	20,6	26,6	6,5	11,5	14,5	8,9	13,8	18,4
Fan (E) W	18	29	39	26	43	64	30	67	98	52	100	155
Sound power outlet (E) dB(A)	38	44	48	42	47	49	44	52	55	47	54	57
Sound power inlet + radiated (E) dB(A)	45	51	55	48	55	58	51	59	62	54	61	64
Sound pressure outlet (*) dB(A)	29	35	39	33	38	40	35	43	46	38	45	48
Sound pressure inlet + radiated (*) dB(A)	36	42	46	39	46	49	42	50	53	45	52	55
Plenum code	9069191			9069222			9066368			9069196		

(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.

Electronic wall controls

WM-AU	Automatic speed control with electronic thermostat and summer/winter switch (to be used with UPM-AU or UP-AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
WM-S-ECM	Continuous fan speed control with electronic thermostat, summer/winter switch and liquid crystal display
UPM-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU and T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC 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-MB2	Wall control with LCD color display and WiFi (to be used with MB board only)
RS-RT03	RT03 infra-red remote control with receiver supplied with separate packaging (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 separate packaging (to be used with MB board only)
PSM-DI	PSM-DI multifunction control panel (to be used with MB board only)
T-DI	T-DI touch screen multifunction control panel (to be used with MB board only)
SabWeb	Web gateway for Sabiana Cloud (to be used with MB board only)

Sabianet management system for a network of fan coils

Sabianet	Hardware/software supervisory system (to be used with MB board only)
Router-S	Router for Sabianet (default) or for BMS systems not provided by Sabiana
SIOS	Relay output board for Sabianet

Controls for KNX systems

KNX systems	
WM-KNX	Wall control with electronic thermostat and summer/winter switch (to be used with UP-KNX and PL mounting plate only)
UP-KNX	UP-KNX power unit supplied with separate packaging
PL-503-B	Mounting plate for rectangular box
PL-QUA-B	Mounting plate for rectangular box

IAQ accessory

Crystall accessory available also for CRSL-ECM (see CRSL dedicated page)

NOTE: for more information about Controls and for full list of main Accessories, please see the dedicated pages.

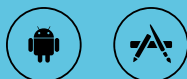


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