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Air Conditioning
Carisma CFR / CFR-ECM Fan Coil Units



SABIANA
IL CLIMA AMICO

A leading brand of  **AFG**

CONTENTS

• **CFR version**

- Construction features and main components **Page 3**
- Dimensions, Weight, Water content **Page 4**
- Operating principle of the radiant element (MVR model) **Page 4**
- EUROVENT Certification **Page 6**
- Operation limits **Page 7**
- Positioning the unit **Page 7**
- Cooling emission tables **Page 8**
- Heating emission tables **Page 10**
- Water pressure drop **Page 11**
- Accessories **Page 12**
- Electronic controls **Page 14**

• **CFR-ECM version**

- Construction features and main components **Page 17**
- Dimensions, Weight, Water content **Page 18**
- Operating principle of the radiant element (MVR model) **Page 18**
- EUROVENT Certification **Page 20**
- Operation limits **Page 21**
- Positioning the unit **Page 21**
- Cooling emission tables **Page 22**
- Heating emission tables **Page 23**
- Water pressure drop **Page 24**
- Accessories **Page 25**
- Electronic controls **Page 27**

INTRODUCTION

Carisma CFR fan coils are designed to meet the frequent requirement in homes of combining the typical qualities of radiators, such as reduced depth and quiet operation, with the typical quality of fan coils for controlling the climate in environments all year round with a high comfort air outlet temperature. They are available into two main versions: with front radial panel or with front panel for covering only. In winter, the first solution provides both a convective and radiant thermal exchange, further improving the feeling of well being.

All models can be supplied with low energy consumption electronic motors.

On demand, recessed versions, horizontal ceiling mounted versions and 4 pipe systems (*) are available for installation in non residential buildings.

4 sizes are available, with:

- air flow rates from 100 to 575 m³/h
- heating emissions from 0,64 to 4,10 kW
- cooling emissions from 0,38 to 3,31 kW.



(*) = For the controls of the 4-pipe units, contact "Sabiana".



Sabiana take part to the Eurovent program of fan coil performance certification.

The official figures are published in the web site

www.eurovent-certification.com and in the web site www.certiflash.com.

The tested performances are:

- Cooling total emission at the following conditions:
 - Water temperature +7°C E.W.T. +12°C L.W.T.
 - Entering air temperature +27°C dry bulb +19°C wet bulb
- Heating emission (2 pipe units) at the following conditions:
 - Entering water temperature +50°C
 - Entering air temperature +20°C
 - Water flow rate as for the cooling conditions
- Cooling sensible emission at the following conditions:
 - Water temperature +7°C E.W.T. +12°C L.W.T.
 - Entering air temperature +27°C dry bulb +19°C wet bulb
- Heating emission (4 pipe units) at the following conditions:
 - Water temperature +70°C E.W.T. +60°C L.W.T.
 - Entering air temperature +20°C

• Fan absorption

• Water pressure drop

• Sound power

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.

Construction features and main components

Carisma CFR fan coils are available in two models:

- with coil for **MV** and **IV-IO** models;
- with coil coupled to a radiant element for **MVR** models.

MV and **IV-IO** models, aided by the water coil only, meet all the typical requirements of a fan coil with especially reduced size.

MVR model, in addition to the water coil, includes an integrated radiant element which enhances the efficiency of the unit, providing in winter both a convective and radiant static thermal exchange.

Frontal panel and removable lateral corners (to inspect the compartment, electric or hydraulic connections) in galvanised steel painted with oven-dried epoxy powders RAL 9010.

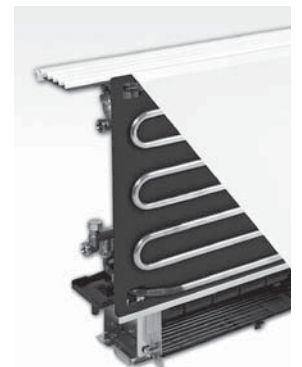
Casing in high resistance galvanised steel.

Coil:

- **Coil** in copper pipes and aluminium fins with high efficiency turbulence. Eurokonus 3/4" threaded fittings, comply with the new requirements of EU standards; the headers are equipped with air vent and water drains. The coil is equipped with a sensor to detect water temperature. The standard position of the hydraulic connections is on the left side looking at the unit from the front. However the coils are reversible: the side of the connections can therefore be inverted on site. Right side connections are possible on demand. The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.



- **Radiant element (MVR models only)** connected in parallel to the coil and equipped with a thermostatic valve which opens when the water reaches a temperature of 29°C.



Fan assembly including tangential fan in synthetic material with offset fins (extremely silent) mounted on EPDM anti-vibration supports. Statically and dynamically balanced rotor, coupled directly on the motor shaft.

Single-phase resin pack **electric motor** mounted on EPDM anti-vibration supports with sensor for HALL effect.

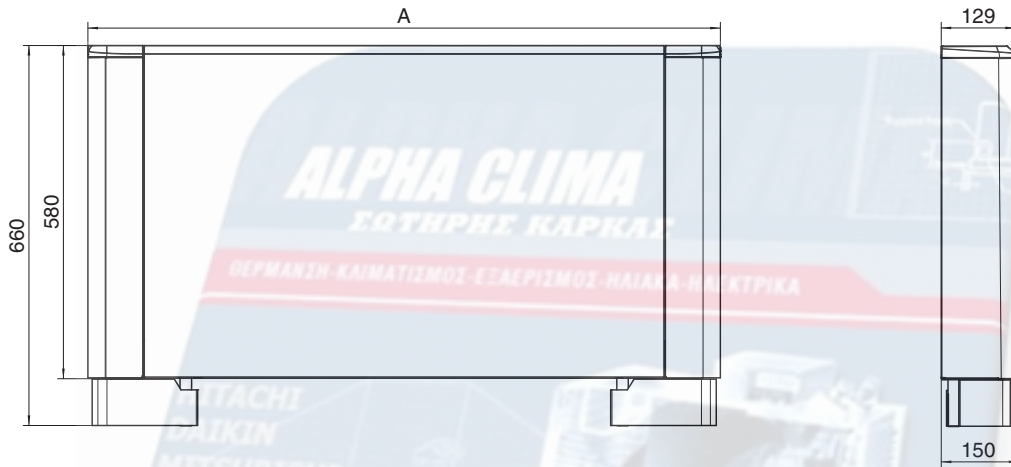
Reversible **supply air grid** in galvanised steel painted with oven-dried epoxy powders RAL 9010. Large size with high mechanical resistance.

Condensate collection tray in shockproof PVC, easily removable for periodical cleaning. Condensate collection tray in shockproof ABS for horizontal installation (optional).

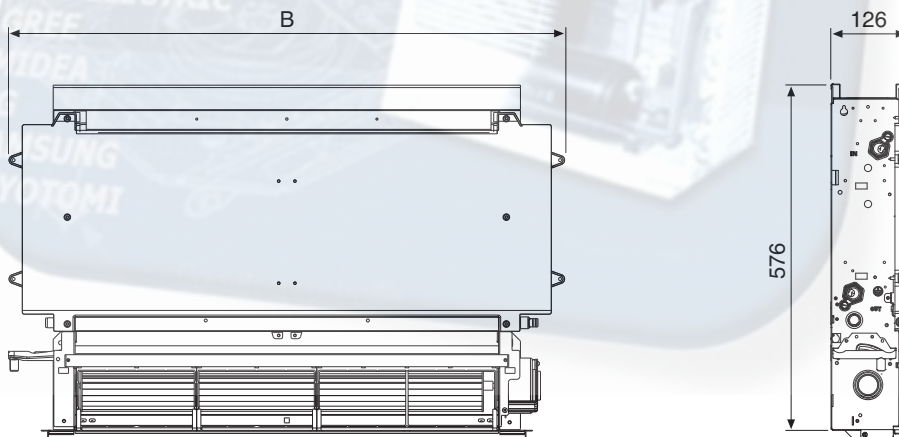
Anti-condensation **structural back casing**.

Dimensions, Weight, Water content

MV-MVR



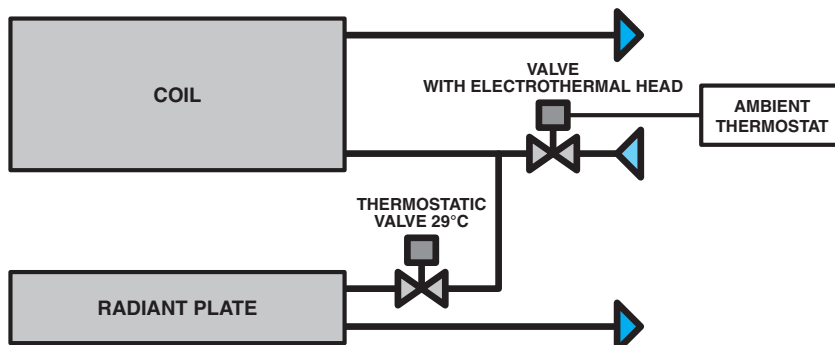
IV-IO



Operating principle of the radiant element (MVR model)

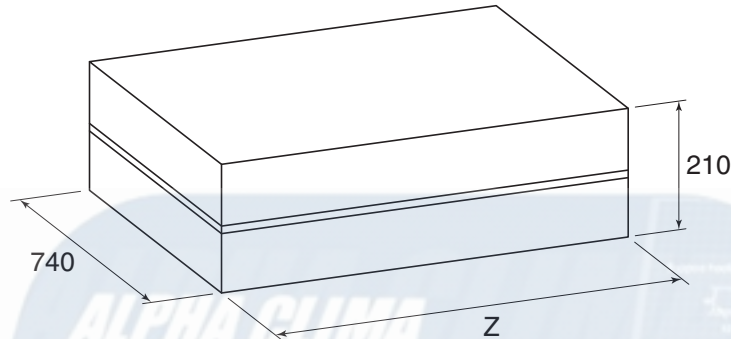
It is connected in parallel to the coil and equipped with a thermostatic valve which opens when the water reaches a temperature of 29°C.

In the "night time" cycle, the thermostat always keeps the fan off and, when required, opens the valve on the main coil. In the winter cycle, the radiant element valve opens when water temperature exceeds 29°C.



Dimensions, Weight, Water content

PACKED UNIT



Dimension (mm)

MODEL	1	2	3	4
A	698	898	1098	1298
B	525	725	925	1125
Z	800	1000	1200	1400

Weight (kg)

MODEL	Weight with packaging				Weight without packaging			
	1	2	3	4	1	2	3	4
MV	15,0	17,0	20,0	23,0	12,5	14,0	16,5	19,5
MVR	17,0	19,5	24,0	27,5	14,5	16,5	20,5	23,5
IV-IO	11,5	15,0	18,5	22,0	9,0	12,0	15,0	18,0

Water content (litres)

MODEL	Coil				Radiant element			
	1	2	3	4	1	2	3	4
MV	0,47	0,8	1,13	1,46	–	–	–	–
MVR	0,47	0,8	1,13	1,46	0,3	0,5	0,7	0,9
IV-IO	0,47	0,8	1,13	1,46	–	–	–	–

EUROVENT Certification

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The following standard rating conditions are used:

COOLING

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

HEATING

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

Water flow rate as for the cooling conditions

MODEL		CFR 1			CFR 2			CFR 3			CFR 4		
		MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX
Speed													
Air flow	m ³ /h	100	125	160	170	230	320	180	270	460	370	450	575
Cooling total emission (E)	kW	0,38	0,72	0,83	0,92	1,36	1,76	1,51	2,11	2,56	1,99	2,70	3,31
Cooling sensible emission (E)	kW	0,26	0,51	0,65	0,66	1,04	1,27	1,11	1,57	1,96	1,55	2,10	2,56
Heating (E)	kW	0,64	0,84	1,05	1,25	1,65	2,31	1,75	2,56	3,12	2,21	3,10	4,10
Dp Cooling (E)	kPa	3,8	10,6	13,1	2,4	5,5	8,2	7,5	14,2	19,0	7,3	13,8	18,7
Dp Heating (E)	kPa	3,2	8,8	10,9	2,0	4,6	6,8	6,2	11,8	15,8	6,1	11,5	15,5
Fan (E)	W	6	10	17	9	18	28	9	21	35	17	27	38
Sound power (E)	Lw dB(A)	38	45	52	39	46	53	41	47	53	39	45	53
Sound pressure (*)	Lp dB(A)	29	36	43	30	37	44	32	38	44	30	36	44

(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.

Operation limits

Highest water inlet temperature..... + 80 °C

Lowest water inlet temperature..... + 5 °C

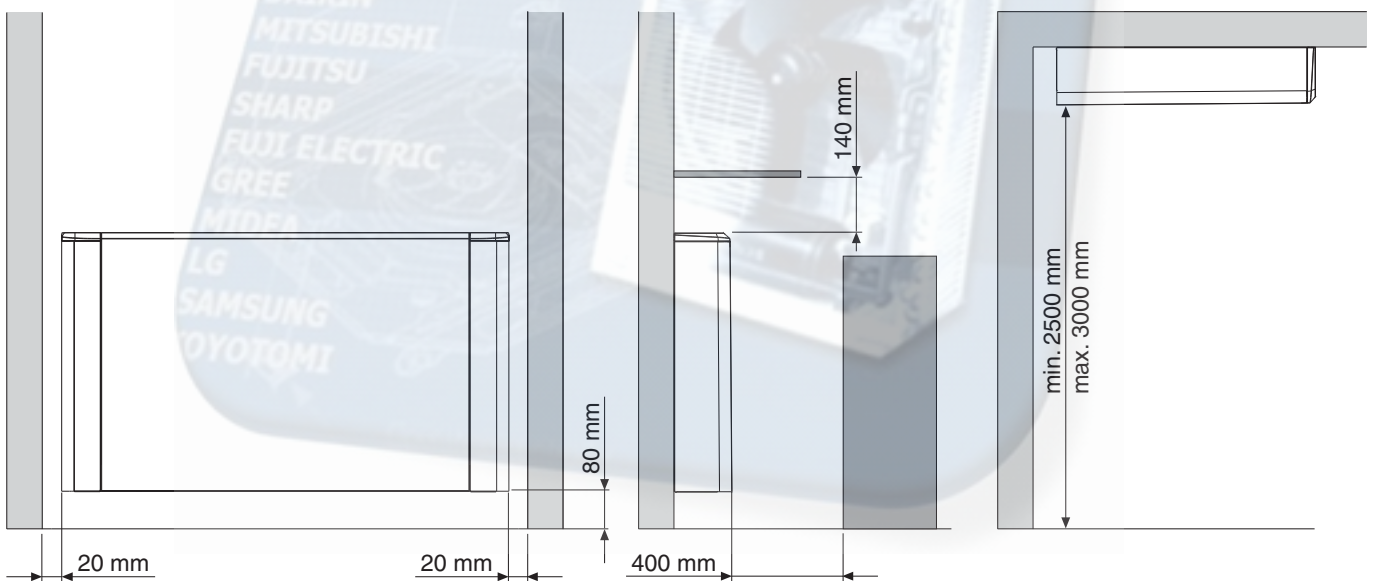
for entering water temperatures below + 5°C, contact “SABIANA” technical department

Highest working pressure..... 1000 kPa (10 bars)

Motor electrical data (max. absorption)

MODEL		CFR 1	CFR 2	CFR 3	CFR 4
230/1 50Hz	W	17	28	35	38
	A	0,11	0,24	0,25	0,26

Positioning the unit



Cooling emission tables

Entering air temperature: 27°C – Relative Humidity: 50%

MOD.	SPEED	WT: 7/12 °C					WT: 8/13 °C					WT: 10/15 °C				WT: 12/17 °C			
		Qv	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	
		m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	
MV MVR 1	MAX	160	0,90	0,67	155	14,5	0,78	0,58	134	11,8	0,61	0,45	105	8,0	0,46	0,34	79	4,8	
	MED *	125	0,77	0,51	132	11,6	0,67	0,44	115	9,4	0,52	0,35	90	6,1	0,39	0,26	68	3,3	
	MIN	100	0,41	0,27	71	3,8	0,36	0,23	61	2,5	0,28	0,18	48	0,8	0,21	0,14	36	0,4	
MV MVR 2	MAX	320	1,91	1,28	328	8,9	1,66	1,11	286	7,2	1,29	0,86	222	4,8	0,97	0,65	167	2,7	
	MED *	230	1,49	1,05	256	6,1	1,29	0,91	223	4,8	1,01	0,71	173	2,9	0,76	0,53	130	1,3	
	MIN	170	1,01	0,67	173	3,0	0,88	0,48	151	2,1	0,68	0,45	117	0,8	0,51	0,34	88	0,3	
MV MVR 3	MAX	460	2,76	1,96	474	20,1	2,42	1,72	416	16,5	1,92	1,36	330	11,3	1,38	0,98	237	5,7	
	MED *	270	2,28	1,56	392	15,2	2,00	1,37	344	12,2	1,59	1,09	273	7,9	1,14	0,78	196	3,3	
	MIN	180	1,63	1,11	280	8,4	1,43	0,77	246	6,3	1,13	0,77	195	3,2	0,82	0,56	140	0,3	
MV MVR 4	MAX	575	3,33	2,65	572	15,6	2,88	2,29	495	12,3	2,22	1,77	382	7,4	1,56	1,24	268	2,6	
	MED *	450	2,70	2,33	531	13,8	2,37	2,02	408	8,6	1,83	1,55	314	4,6	1,28	1,09	221	0,7	
	MIN	370	1,99	1,55	342	5,8	1,72	0,45	296	3,8	1,33	1,03	228	1,0	0,93	0,73	160	0,4	

Entering air temperature: 26°C – Relative Humidity: 50%

MOD.	SPEED	WT: 7/12 °C					WT: 8/13 °C					WT: 10/15 °C				WT: 12/17 °C			
		Qv	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	
		m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	
MV MVR 1	MAX	160	0,79	0,63	136	12,1	0,67	0,53	115	9,4	0,50	0,50	86	5,7	0,41	0,29	71	3,7	
	MED *	125	0,68	0,47	117	9,7	0,58	0,40	99	7,4	0,43	0,37	74	4,2	0,35	0,22	61	2,5	
	MIN	100	0,36	0,25	62	2,7	0,31	0,21	53	1,5	0,23	0,20	39	0,2	0,19	0,12	32	0,3	
MV MVR 2	MAX	320	1,67	1,18	287	7,3	1,41	1,11	243	5,6	1,06	0,76	182	3,3	0,88	0,56	151	2,1	
	MED *	230	1,28	0,96	220	4,8	1,08	0,91	186	3,4	0,81	0,62	140	1,7	0,67	0,46	116	0,8	
	MIN	170	0,86	0,61	148	2,0	0,73	0,58	125	1,1	0,55	0,40	94	0,0	0,45	0,29	78	0,2	
MV MVR 3	MAX	460	2,45	1,83	421	16,9	2,09	1,59	359	13,1	1,58	1,20	272	7,8	1,25	0,85	215	4,4	
	MED *	270	2,00	1,45	344	12,3	1,71	1,26	293	9,2	1,29	0,95	222	4,8	1,02	0,67	176	2,1	
	MIN	180	1,44	1,03	248	6,5	1,23	0,89	211	4,2	0,93	0,68	160	1,1	0,73	0,48	126	0,2	
MV MVR 4	MAX	575	2,91	2,48	501	12,5	2,45	2,11	421	9,1	1,76	1,76	303	4,1	1,39	1,07	239	1,4	
	MED *	450	2,36	2,18	406	8,5	1,99	1,86	342	5,8	1,43	1,55	246	1,7	1,13	0,94	194	0,2	
	MIN	370	1,74	1,45	299	4,0	1,46	1,23	252	2,0	1,05	1,03	181	0,5	0,83	0,63	143	0,3	

LEGEND

SPEED = Fan speed

MIN = Low speed

MED = Medium speed

MAX = High speed

Qv = Air flow

WT = Water temperature

Pc = Cooling total emission

Ps = Cooling sensible emission

Qw = Water flow

Dp(c) = Water pressure drop

Cooling emission tables

Entering air temperature: 25°C – Relative Humidity: 50%

MOD.	SPEED	WT: 7/12 °C					WT: 8/13 °C					WT: 10/15 °C				WT: 12/17 °C			
		Qv	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	
		m ³ /h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	
MV MVR 1	MAX	160	0,67	0,60	115	9,5	0,54	0,48	93	6,6	0,45	0,45	77	4,6	0,36	0,24	62	2,6	
	MED *	125	0,58	0,43	100	7,5	0,47	0,34	80	5,0	0,39	0,32	67	3,3	0,31	0,17	54	1,6	
	MIN	100	0,34	0,24	58	2,2	0,27	0,19	47	0,8	0,23	0,18	39	0,2	0,18	0,10	31	0,2	
MV MVR 2	MAX	320	1,43	1,18	246	5,8	1,14	0,99	196	3,8	0,96	0,96	165	2,6	0,77	0,45	132	1,4	
	MED *	230	1,07	0,87	184	3,4	0,85	0,73	147	2,0	0,72	0,71	124	1,1	0,58	0,33	99	0,3	
	MIN	170	0,67	0,52	115	0,8	0,53	0,44	92	0,5	0,45	0,42	77	0,3	0,36	0,20	62	0,2	
MV MVR 3	MAX	460	2,12	1,70	365	13,5	1,76	1,58	303	9,7	1,37	1,37	236	5,6	1,12	0,72	193	3,1	
	MED *	270	1,73	1,34	298	9,5	1,44	1,24	247	6,4	1,12	1,08	192	3,1	0,91	0,57	157	0,4	
	MIN	180	1,25	0,95	215	4,5	1,04	0,88	178	2,3	0,81	0,77	139	0,3	0,66	0,40	114	0,2	
MV MVR 4	MAX	575	2,48	2,30	427	9,4	2,00	2,00	344	5,9	1,55	1,55	267	2,6	1,22	0,90	210	1,0	
	MED *	450	1,97	2,01	339	5,7	1,59	1,75	273	2,9	1,23	1,35	212	0,3	0,97	0,79	167	0,8	
	MIN	370	1,47	1,34	253	2,0	1,19	1,17	204	0,9	0,92	0,90	158	0,4	0,72	0,53	124	0,2	

LEGEND

SPEED = Fan speed

MIN = Low speed

MED = Medium speed

MAX = High speed

Qv = Air flow

WT = Water temperature

Pc = Cooling total emission

Ps = Cooling sensible emission

Qw = Water flow

Dp(c) = Water pressure drop

Heating emission table – Ventilation

Entering air temperature: 20°C

MOD.	SPEED	WT: 70/60 °C				WT: 60/50 °C			WT: 50/40 °C			WT: 50/45 °C			WT: 45/40 °C		
		Qv m ³ /h	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa
MV MVR 1	MAX	160	1,77	152	10,9	1,37	118	8,01	0,98	84	4,72	1,08	186	15,58	0,88	152	12,23
	MED *	125	1,41	121	7,9	1,09	94	5,51	0,78	67	2,85	0,86	148	11,52	0,70	121	8,83
	MIN	100	1,08	93	5,1	0,84	72	3,23	0,60	52	1,14	0,66	113	7,79	0,54	93	5,70
MV MVR 2	MAX	320	3,88	334	7,0	3,02	259	5,10	2,15	185	2,94	2,37	408	10,06	1,94	334	7,86
	MED *	230	2,79	240	4,3	2,17	186	2,83	1,55	133	1,24	1,70	293	6,37	1,39	240	4,77
	MIN	170	2,13	183	2,6	1,65	142	1,46	1,18	102	0,21	1,30	224	4,14	1,06	183	2,90
MV MVR 3	MAX	460	5,21	448	14,3	4,05	348	10,20	2,89	249	5,57	3,18	548	20,72	2,60	448	16,03
	MED *	270	4,27	368	10,6	3,32	286	7,13	2,37	204	3,27	2,61	449	15,72	2,14	368	11,83
	MIN	180	2,93	252	5,2	2,28	196	2,70	1,63	140	0,40	1,79	308	8,50	1,46	252	5,79
MV MVR 4	MAX	575	6,88	592	12,7	5,35	460	8,82	3,82	329	4,49	4,21	724	18,59	3,44	592	14,21
	MED *	450	5,20	447	7,9	4,04	348	4,92	2,89	248	1,57	3,18	546	12,22	2,60	447	8,87
	MIN	370	3,70	318	3,7	2,88	247	1,46	2,05	177	0,40	2,26	389	6,58	1,85	318	4,14

Heating emission table – Static heating

Entering air temperature: 20°C – **MVR model**

MODEL	Twi	Ph	Qw	Dp(c)
	°C	kW	l/h	kPa
MVR 1	50	0,31	91	2,1
	60	0,45	129	3,1
	70	0,59	166	3,7
MVR 2	50	0,37	189	2,6
	60	0,54	271	4,5
	70	0,71	352	6,4
MVR 3	50	0,45	260	6
	60	0,64	371	10
	70	0,84	481	14,3
MVR 4	50	0,55	334	5,6
	60	0,79	475	10,1
	70	1,03	615	15,3

LEGEND

SPEED = Fan speed

MAX = High speed

MED = Medium speed

MIN = Low speed

Qv = Air flow

WT = Water temperature

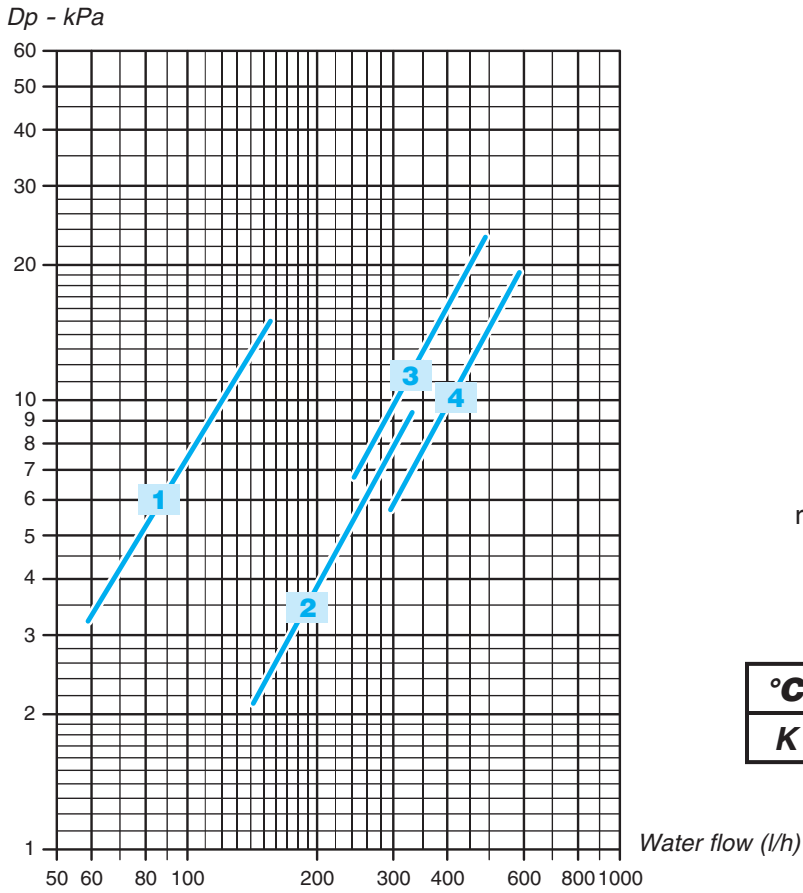
Ph = Emission

Qw = Water flow

Dp(c) = Water pressure drop

Twi = Entering water temperature

Water pressure drop



The water pressure drop figures refer to a mean water temperature of **10°C**; for different temperatures, multiply the pressure drop figures by the correction factors **K**.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

S0139 2 way valve unit kit with thermoelectric actuator

The kit consists of a 2 way ON/OFF valve with thermoelectric actuator and a lockshield valve.



VERSION	CFR	CODE
MODEL	MV - MVR - IV - IO	9075020

S0635 3 way valve unit kit with thermoelectric actuator

The kit consists of a 3 way ON/OFF valve with thermoelectric actuator, a lockshield valve and connection fittings.



VERSION	CFR	CODE
MODEL	MV - MVR - IV - IO	9075022

S0641 3 way valve unit kit with thermoelectric actuator and bypass with overpressure valve

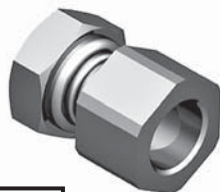
The kit consists of a 3 way ON/OFF valve with thermoelectric actuator, a lockshield valve, connection fittings and a bypass with overpressure valve which keeps the system balanced even without the unit.



VERSION	CFR	CODE
MODEL	MV - MVR - IV - IO	9075021

S0200/S0201 Adaptor kit

This kit transforms the 3/4" Euroconus connection to a standard gas thread 1/2" or 3/4" connection.



VERSION	CFR
MODEL	MV - MVR - IV - IO

GAS THREAD SIZE:	IDENTIFICATION	CODE
1/2"	S0200	9075023
3/4"	S0201	9075024

S0203 Euroconus 90° elbow kit

Facilitates the connection of the pipes to the valves coming out of the wall.



VERSION	CFR	CODE
MODEL	MV - MVR - IV - IO	9075025

S0157 Floor feet kit

The kit consists of two white feet to set the wall-mounted unit on the ground.



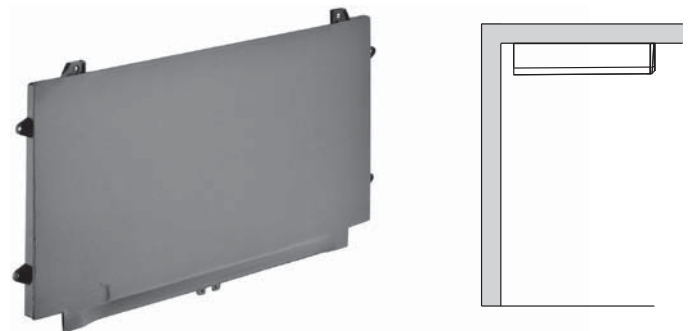
VERSION	CFR	CODE
MODEL	MV - MVR	9075030

Condensate collection tray kit (for horizontal installations only)

Accessory to collect condensation on the MV model mounted horizontally.

VERSION	CFR
MODEL	MV - MVR - IV - IO

SIZE	IDENTIFICATION	CODE
CFR 1	S0520	9075031
CFR 2	S0521	9075032
CFR 3	S0522	9075033
CFR 4	S0523	9075034



Recessed installation frame IV-IO (2 pipe units)

For vertical/horizontal installation. Frame to couple to recessed closing panel IV-IO, code S0578 --> S0581.

SIZE	IDENTIFICATION	CODE
CFR 1	S0568	9075041
CFR 2	S0569	9075042
CFR 3	S0570	9075043
CFR 4	S0571	9075044

VERSION	CFR
MODEL	IV - IO



Recessed closing panel IV-IO (2 pipe units)

For vertical/horizontal installation. White RAL 9010 panel to couple with recessed installation frame IV-IO, code S0568 --> S0571.

SIZE	IDENTIFICATION	CODE
CFR 1	S0578	9075051
CFR 2	S0579	9075052
CFR 3	S0580	9075053
CFR 4	S0581	9075054

VERSION	CFR
MODEL	IV - IO



Available on demand:

- Rear closing panel
- Floor fastening bracket

IDENTIFICATION	CODE
S0658	9075001



On board electronic control for MV models.

- On board control with On-Off and fan speed selection.
- Suitable for installation on board on MV models.
- Has a 230Vac outlet for controlling a solenoid valve.
- Set up for connection of an external contact or room thermostat (minimum contact rate: 2A-250Vac).

IDENTIFICATION	CODE
S0659	9075002



On board electronic control with thermostat for MV and MVR models.

- Control with adjustable room thermostat 15-30°C, operating mode selection (ventilation, summer, winter, automatic) and installation program (minimum, maximum, night time and automatic), water temperature suitability control.
- Has an inlet for connecting presence sensor and two 230V outlets to control 2 solenoid valves.
- The low temperature cut-out is installed as per standard on the unit.

IDENTIFICATION	CODE
S0373	9075004



Wall mounted control (must be coupled to Slave control S0372).

- Wall mounted control to be coupled to board code S0372.
- Possibility of controlling up to 30 units.
- Selection of Max, Auto, Quiet and Night time modes.
- Temperature sensor.
- BUS type communication with the board.
- The control makes it possible to implement a loop up to 1 Km long; the cables must be shielded.
- The control is equipped with a 230/12 V power transformer.
- The low temperature cut-out is installed as per standard on the unit.

IDENTIFICATION	CODE
S0372	9075003



Slave electronic control for remote control of MV, MVR and IV-IO models (coupled to Master control: S0373).

- Can be installed on all CFR 2-pipe versions, the control has an LED indicating operating status and the presence of faults and a key for temporary isolation from the mains.
- The main operating parameters, the set point and the ambient temperature are transmitted by remote control S0373 to all the fan coils connected online, allowing for homogeneous operation.
- It has a 230V outlet for controlling a solenoid valve, two potential-free contacts to control a chiller or a boiler and one presence input.

IDENTIFICATION	CODE
WM-T	9066630

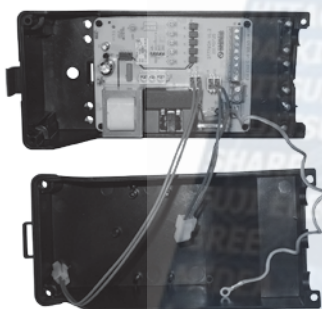


Wall control (*must be coupled to on board control S0707*).

- Manual 3 speed switch.
- Manual Summer/Winter switch.
- Electronic room thermostat for fan control (ON-OFF).
- Electronic room thermostat for valve control (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TMM).

Dimensions: 135x86x31 mm

IDENTIFICATION	CODE
S0707	9075012



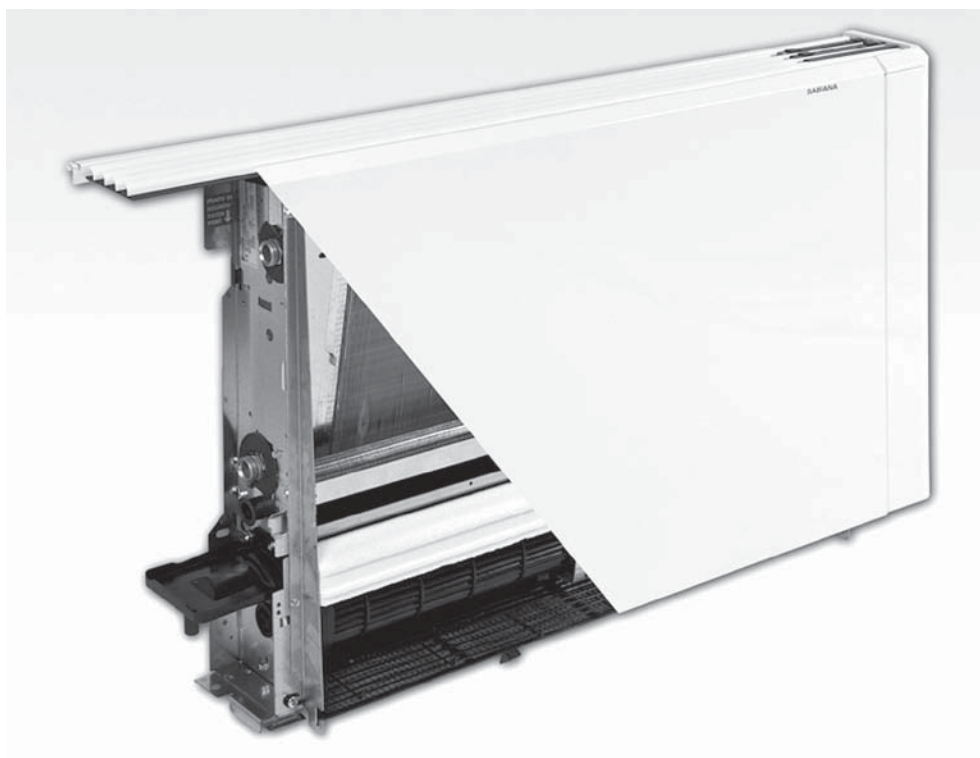
Slave on board kit for remote control of MV and IV-IO models (*must be coupled to control WM-T*).

IDENTIFICATION	CODE
S0459	9075005



Extension kit which must be used when moving water connections with consequent repositioning of control on the opposite side of the motor.

Carisma CFR with coil



Carisma CFR with coil and radiant element



Construction features and main components

Carisma CFR-ECM fan coils are available in two models:

- with coil for **MV** models;
- with coil coupled to a radiant element for **MVR** models.

MV model, aided by the water coil only, meet all the typical requirements of a fan coil with especially reduced size. **MVR** model, in addition to the water coil, includes an integrated radiant element which enhances the efficiency of the unit, providing in winter both a convective and radiant static thermal exchange.

Frontal panel and removable lateral corners (to inspect the compartment, electric or hydraulic connections) in galvanised steel painted with oven-dried epoxy powders RAL 9010.

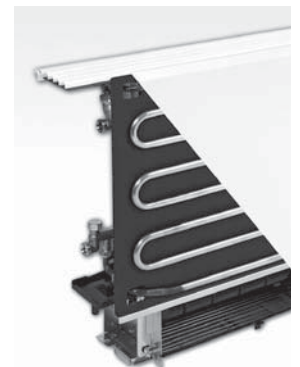
Casing in high resistance galvanised steel.

Coil:

- **Coil** in copper pipes and aluminium fins with high efficiency turbulence. Eurokonus 3/4" threaded fittings, comply with the new requirements of EU standards; the headers are equipped with air vent and water drains. The coil is equipped with a sensor to detect water temperature. The standard position of the hydraulic connections is on the left side looking at the unit from the front. However the coils are reversible: the side of the connections can therefore be inverted on site. Right side connections are possible on demand. The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.



- **Radiant element (MVR models only)** connected in parallel to the coil and equipped with a thermostatic valve which opens when the water reaches a temperature of 29°C.



Fan assembly including tangential fan in synthetic material with offset fins (extremely silent) mounted on EPDM anti-vibration supports. Statically and dynamically balanced rotor, coupled directly on the motor shaft.

High efficiency EC **electric motor** BLDC for speed continuous control, with resin pack mounted on EPDM anti-vibration supports.

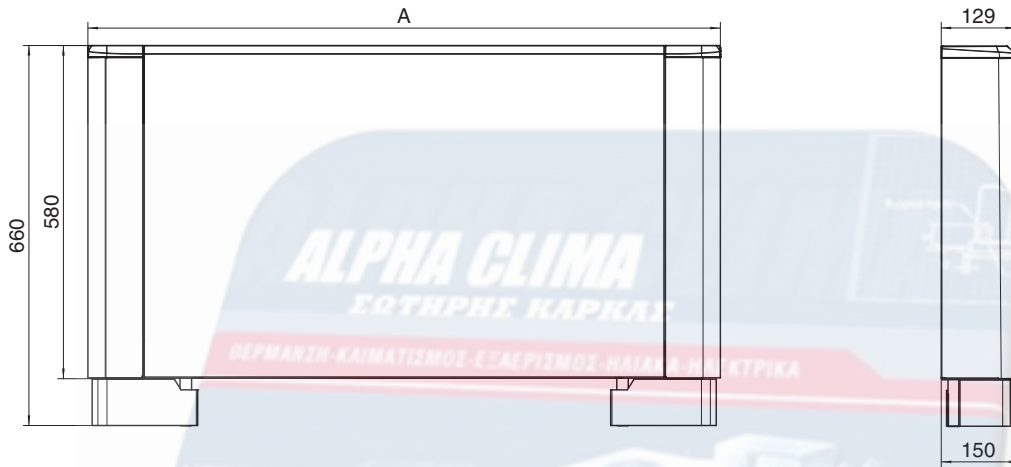
Reversible **supply air grid** in galvanised steel painted with oven-dried epoxy powders RAL 9010. Large size with high mechanical resistance.

Condensate collection tray in shockproof PVC, easily removable for periodical cleaning. Condensate collection tray in shockproof ABS for horizontal installation (optional).

Anti-condensation **structural back casing**.

Dimensions, Weight, Water content

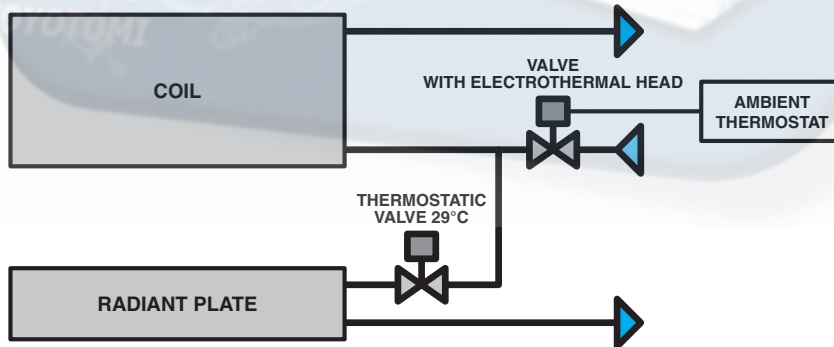
MV-MVR



Operating principle of the radiant element (MVR model)

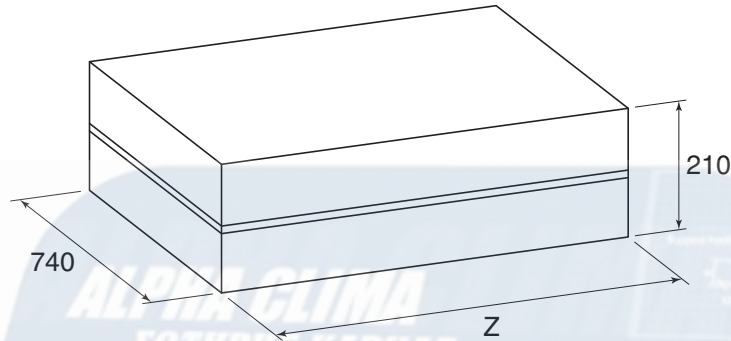
It is connected in parallel to the coil and equipped with a thermostatic valve which opens when the water reaches a temperature of 29°C.

In the "night time" cycle, the thermostat always keeps the fan off and, when required, opens the valve on the main coil. In the winter cycle, the radiant element valve opens when water temperature exceeds 29°C.



Dimensions, Weight, Water content

PACKED UNIT



Dimension (mm)

MODEL	1	2	3	4
A	698	898	1098	1298
B	525	725	925	1125
Z	800	1000	1200	1400

Weight (kg)

MODEL	Weight with packaging				Weight without packaging			
	1	2	3	4	1	2	3	4
MV	15,0	17,0	20,0	23,0	12,5	14,0	16,5	19,5
MVR	17,0	19,5	24,0	27,5	14,5	16,5	20,5	23,5

Water content (litres)

MODEL	Coil				Radiant element			
	1	2	3	4	1	2	3	4
MV	0,47	0,8	1,13	1,46	–	–	–	–
MVR	0,47	0,8	1,13	1,46	0,3	0,5	0,7	0,9

The following standard rating conditions are used:

COOLING

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

HEATING

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

Water flow rate as for the cooling conditions

MODEL		CFR-ECM 1			CFR-ECM 2			CFR-ECM 3			CFR-ECM 4		
		MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX
Speed													
Air flow	m ³ /h	100	125	160	170	230	320	180	270	460	370	450	575
Cooling total emission (E)	kW	0,38	0,72	0,83	0,92	1,36	1,76	1,51	2,11	2,56	1,99	2,70	3,31
Cooling sensible emission (E)	kW	0,26	0,51	0,65	0,66	1,04	1,27	1,11	1,57	1,96	1,55	2,10	2,56
Heating (E)	kW	0,64	0,84	1,05	1,25	1,65	2,31	1,75	2,56	3,12	2,21	3,10	4,10
Dp Cooling (E)	kPa	3,8	10,6	13,1	2,4	5,5	8,2	7,5	14,2	19,0	7,3	13,8	18,7
Dp Heating (E)	kPa	3,2	8,8	10,9	2,0	4,6	6,8	6,2	11,8	15,8	6,1	11,5	15,5
Fan (E)	W	5	7	11	6	9	19	7	11	20	8	12	24
Sound power (E)	Lw dB(A)	38	45	52	39	46	53	41	47	53	39	45	53
Sound pressure (*)	Lp dB(A)	29	36	43	30	37	44	32	38	44	30	36	44

(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.

Operation limits

Highest water inlet temperature..... + 80 °C

Lowest water inlet temperature..... + 5 °C

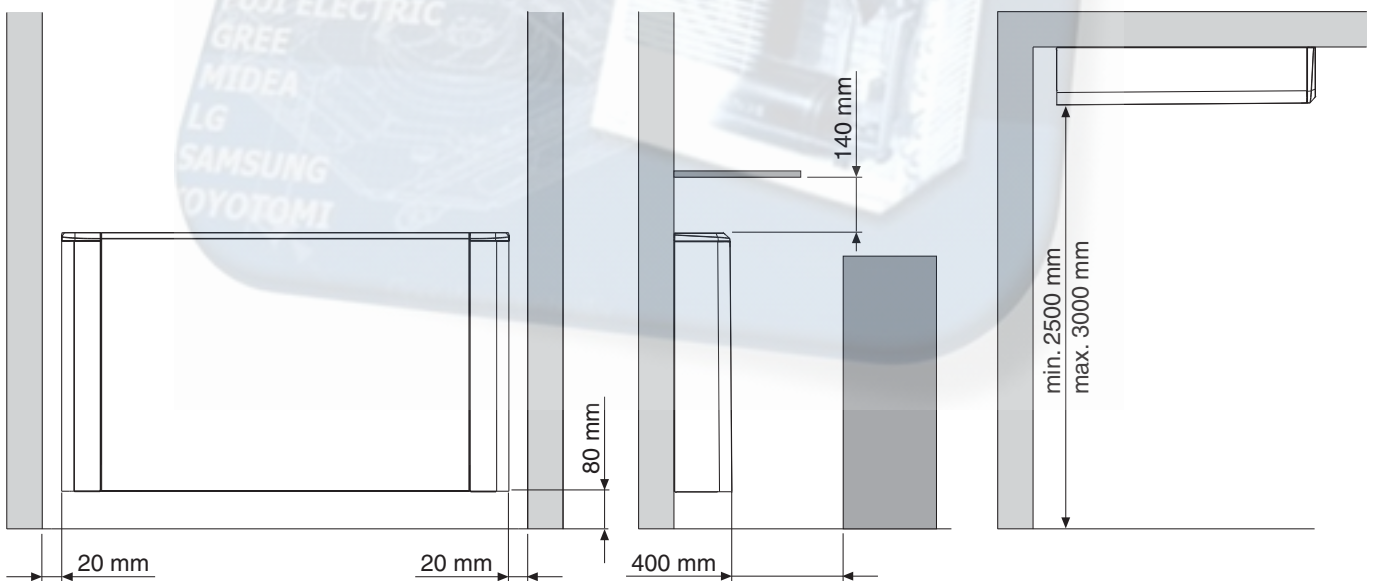
for entering water temperatures below + 5°C, contact “SABIANA” technical department

Highest working pressure..... 1000 kPa (10 bars)

Motor electrical data (max. absorption)

MODEL		CFR-ECM 1	CFR-ECM 2	CFR-ECM 3	CFR-ECM 4
230/1	W	11	19	20	24
50Hz	A	0,1	0,1	0,15	0,22

Positioning the unit



Cooling emission tables

Entering air temperature: 27°C – Relative Humidity: 50%

MOD.	SPEED	WT: 7/12 °C					WT: 8/13 °C					WT: 10/15 °C				WT: 12/17 °C			
		Qv	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	
		m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	
MV MVR 1	MAX	160	0,90	0,67	155	14,5	0,78	0,58	134	11,8	0,61	0,45	105	8,0	0,46	0,34	79	4,8	
	MED *	125	0,77	0,51	132	11,6	0,67	0,44	115	9,4	0,52	0,35	90	6,1	0,39	0,26	68	3,3	
	MIN	100	0,41	0,27	71	3,8	0,36	0,23	61	2,5	0,28	0,18	48	0,8	0,21	0,14	36	0,4	
MV MVR 2	MAX	320	1,91	1,28	328	8,9	1,66	1,11	286	7,2	1,29	0,86	222	4,8	0,97	0,65	167	2,7	
	MED *	230	1,49	1,05	256	6,1	1,29	0,91	223	4,8	1,01	0,71	173	2,9	0,76	0,53	130	1,3	
	MIN	170	1,01	0,67	173	3,0	0,88	0,48	151	2,1	0,68	0,45	117	0,8	0,51	0,34	88	0,3	
MV MVR 3	MAX	460	2,76	1,96	474	20,1	2,42	1,72	416	16,5	1,92	1,36	330	11,3	1,38	0,98	237	5,7	
	MED *	270	2,28	1,56	392	15,2	2,00	1,37	344	12,2	1,59	1,09	273	7,9	1,14	0,78	196	3,3	
	MIN	180	1,63	1,11	280	8,4	1,43	0,77	246	6,3	1,13	0,77	195	3,2	0,82	0,56	140	0,3	
MV MVR 4	MAX	575	3,33	2,65	572	15,6	2,88	2,29	495	12,3	2,22	1,77	382	7,4	1,56	1,24	268	2,6	
	MED *	450	2,70	2,33	531	13,8	2,37	2,02	408	8,6	1,83	1,55	314	4,6	1,28	1,09	221	0,7	
	MIN	370	1,99	1,55	342	5,8	1,72	0,45	296	3,8	1,33	1,03	228	1,0	0,93	0,73	160	0,4	

Entering air temperature: 26°C – Relative Humidity: 50%

MOD.	SPEED	WT: 7/12 °C					WT: 8/13 °C					WT: 10/15 °C				WT: 12/17 °C			
		Qv	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	
		m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	
MV MVR 1	MAX	160	0,79	0,63	136	12,1	0,67	0,53	115	9,4	0,50	0,50	86	5,7	0,41	0,29	71	3,7	
	MED *	125	0,68	0,47	117	9,7	0,58	0,40	99	7,4	0,43	0,37	74	4,2	0,35	0,22	61	2,5	
	MIN	100	0,36	0,25	62	2,7	0,31	0,21	53	1,5	0,23	0,20	39	0,2	0,19	0,12	32	0,3	
MV MVR 2	MAX	320	1,67	1,18	287	7,3	1,41	1,11	243	5,6	1,06	0,76	182	3,3	0,88	0,56	151	2,1	
	MED *	230	1,28	0,96	220	4,8	1,08	0,91	186	3,4	0,81	0,62	140	1,7	0,67	0,46	116	0,8	
	MIN	170	0,86	0,61	148	2,0	0,73	0,58	125	1,1	0,55	0,40	94	0,0	0,45	0,29	78	0,2	
MV MVR 3	MAX	460	2,45	1,83	421	16,9	2,09	1,59	359	13,1	1,58	1,20	272	7,8	1,25	0,85	215	4,4	
	MED *	270	2,00	1,45	344	12,3	1,71	1,26	293	9,2	1,29	0,95	222	4,8	1,02	0,67	176	2,1	
	MIN	180	1,44	1,03	248	6,5	1,23	0,89	211	4,2	0,93	0,68	160	1,1	0,73	0,48	126	0,2	
MV MVR 4	MAX	575	2,91	2,48	501	12,5	2,45	2,11	421	9,1	1,76	1,76	303	4,1	1,39	1,07	239	1,4	
	MED *	450	2,36	2,18	406	8,5	1,99	1,86	342	5,8	1,43	1,55	246	1,7	1,13	0,94	194	0,2	
	MIN	370	1,74	1,45	299	4,0	1,46	1,23	252	2,0	1,05	1,03	181	0,5	0,83	0,63	143	0,3	

LEGEND

SPEED = Fan speed

Qv = Air flow

Qw = Water flow

MIN = Low speed

WT = Water temperature

Dp(c) = Water pressure drop

MED = Medium speed

Pc = Cooling total emission

MAX = High speed

Ps = Cooling sensible emission

Cooling emission tables

Entering air temperature: 25°C – Relative Humidity: 50%

MOD.	SPEED	WT: 7/12 °C					WT: 8/13 °C					WT: 10/15 °C				WT: 12/17 °C			
		Qv	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	
		m ³ /h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	
MV MVR 1	MAX	160	0,67	0,60	115	9,5	0,54	0,48	93	6,6	0,45	0,45	77	4,6	0,36	0,24	62	2,6	
	MED *	125	0,58	0,43	100	7,5	0,47	0,34	80	5,0	0,39	0,32	67	3,3	0,31	0,17	54	1,6	
	MIN	100	0,34	0,24	58	2,2	0,27	0,19	47	0,8	0,23	0,18	39	0,2	0,18	0,10	31	0,2	
MV MVR 2	MAX	320	1,43	1,18	246	5,8	1,14	0,99	196	3,8	0,96	0,96	165	2,6	0,77	0,45	132	1,4	
	MED *	230	1,07	0,87	184	3,4	0,85	0,73	147	2,0	0,72	0,71	124	1,1	0,58	0,33	99	0,3	
	MIN	170	0,67	0,52	115	0,8	0,53	0,44	92	0,5	0,45	0,42	77	0,3	0,36	0,20	62	0,2	
MV MVR 3	MAX	460	2,12	1,70	365	13,5	1,76	1,58	303	9,7	1,37	1,37	236	5,6	1,12	0,72	193	3,1	
	MED *	270	1,73	1,34	298	9,5	1,44	1,24	247	6,4	1,12	1,08	192	3,1	0,91	0,57	157	0,4	
	MIN	180	1,25	0,95	215	4,5	1,04	0,88	178	2,3	0,81	0,77	139	0,3	0,66	0,40	114	0,2	
MV MVR 4	MAX	575	2,48	2,30	427	9,4	2,00	2,00	344	5,9	1,55	1,55	267	2,6	1,22	0,90	210	1,0	
	MED *	450	1,97	2,01	339	5,7	1,59	1,75	273	2,9	1,23	1,35	212	0,3	0,97	0,79	167	0,8	
	MIN	370	1,47	1,34	253	2,0	1,19	1,17	204	0,9	0,92	0,90	158	0,4	0,72	0,53	124	0,2	

Heating emission table – Ventilation

Entering air temperature: 20°C

MOD.	SPEED	WT: 70/60 °C				WT: 60/50 °C			WT: 50/40 °C			WT: 50/45 °C			WT: 45/40 °C		
		Qv	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)
		m ³ /h	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa
MV MVR 1	MAX	160	1,77	152	10,9	1,37	118	8,01	0,98	84	4,72	1,08	186	15,58	0,88	152	12,23
	MED *	125	1,41	121	7,9	1,09	94	5,51	0,78	67	2,85	0,86	148	11,52	0,70	121	8,83
	MIN	100	1,08	93	5,1	0,84	72	3,23	0,60	52	1,14	0,66	113	7,79	0,54	93	5,70
MV MVR 2	MAX	320	3,88	334	7,0	3,02	259	5,10	2,15	185	2,94	2,37	408	10,06	1,94	334	7,86
	MED *	230	2,79	240	4,3	2,17	186	2,83	1,55	133	1,24	1,70	293	6,37	1,39	240	4,77
	MIN	170	2,13	183	2,6	1,65	142	1,46	1,18	102	0,21	1,30	224	4,14	1,06	183	2,90
MV MVR 3	MAX	460	5,21	448	14,3	4,05	348	10,20	2,89	249	5,57	3,18	548	20,72	2,60	448	16,03
	MED *	270	4,27	368	10,6	3,32	286	7,13	2,37	204	3,27	2,61	449	15,72	2,14	368	11,83
	MIN	180	2,93	252	5,2	2,28	196	2,70	1,63	140	0,40	1,79	308	8,50	1,46	252	5,79
MV MVR 4	MAX	575	6,88	592	12,7	5,35	460	8,82	3,82	329	4,49	4,21	724	18,59	3,44	592	14,21
	MED *	450	5,20	447	7,9	4,04	348	4,92	2,89	248	1,57	3,18	546	12,22	2,60	447	8,87
	MIN	370	3,70	318	3,7	2,88	247	1,46	2,05	177	0,40	2,26	389	6,58	1,85	318	4,14

LEGEND

SPEED = Fan speed
MIN = Low speed
MED = Medium speed
MAX = High speed

Qv = Air flow
WT = Water temperature
Pc = Cooling total emission
Ps = Cooling sensible emission

Ph = Emission
Qw = Water flow
Dp(c) = Water pressure drop

Heating emission table - Static heating

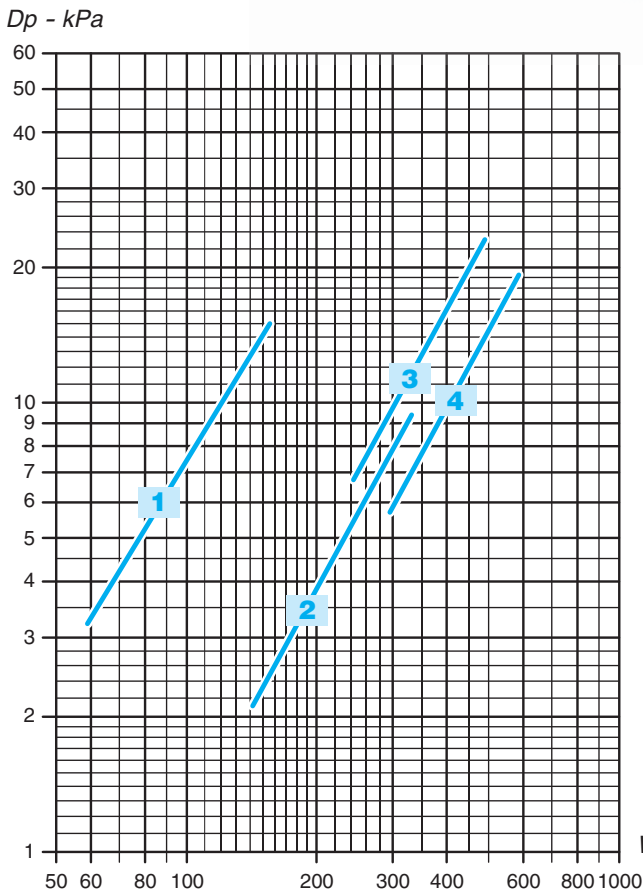
Entering air temperature: 20°C – **MVR model**

MODELLO	Tw_i	Ph	Q_w	Dp(c)
	°C	kW	l/h	kPa
MVR 1	50	0,31	91	2,1
	60	0,45	129	3,1
	70	0,59	166	3,7
MVR 2	50	0,37	189	2,6
	60	0,54	271	4,5
	70	0,71	352	6,4
MVR 3	50	0,45	260	6
	60	0,64	371	10
	70	0,84	481	14,3
MVR 4	50	0,55	334	5,6
	60	0,79	475	10,1
	70	1,03	615	15,3

LEGEND

Tw_i = Entering water temperature **Ph** = Emission **Q_w** = Water flow **Dp(c)** = Water pressure drop

Water pressure drop



The water pressure drop figures refer to a mean water temperature of **10°C**; for different temperatures, multiply the pressure drop figures by the correction factors **K**.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

S0139 2 way valve unit kit with thermoelectric actuator

The kit consists of a 2 way ON/OFF valve with thermoelectric actuator and a lockshield valve.



VERSION	CFR-ECM	CODE
MODEL	MV - MVR	9075020

S0635 3 way valve unit kit with thermoelectric actuator

The kit consists of a 3 way ON/OFF valve with thermoelectric actuator, a lockshield valve and connection fittings.



VERSION	CFR-ECM	CODE
MODEL	MV - MVR	9075022

S0641 3 way valve unit kit with thermoelectric actuator and bypass with overpressure valve

The kit consists of a 3 way ON/OFF valve with thermoelectric actuator, a lockshield valve, connection fittings and a bypass with overpressure valve which keeps the system balanced even without the unit.



VERSION	CFR-ECM	CODE
MODEL	MV - MVR	9075021

S0200/S0201 Adaptor kit

This kit transforms the 3/4" Euroconus connection to a standard gas thread 1/2" or 3/4" connection.



VERSION	CFR-ECM
MODEL	MV - MVR

GAS THREAD SIZE:	IDENTIFICATION	CODE
1/2"	S0200	9075023
3/4"	S0201	9075024

S0203 Euroconus 90° elbow kit

Facilitates the connection of the pipes to the valves coming out of the wall.



VERSION	CFR	CODE
MODEL	MV - MVR - IV - IO	9075025

S0157 Floor feet kit

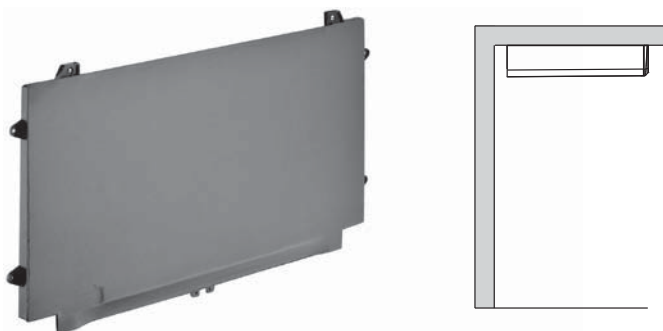
The kit consists of two white feet to set the wall-mounted unit on the ground.



VERSION	CFR-ECM	CODE
MODEL	MV – MVR	9075030

Condensate collection tray kit (for horizontal installations only)

Accessory to collect condensation on the MV model mounted horizontally.



VERSION	CFR-ECM
MODEL	MV – MVR

SIZE	IDENTIFICATION	CODE
CFR 1	S0520	9075031
CFR 2	S0521	9075032
CFR 3	S0522	9075033
CFR 4	S0523	9075034

Available on demand:

- Rear closing panel
- Floor fastening bracket

IDENTIFICATION	CODE
S0686	9075010



On board electronic control with thermostat for MV-ECM and MVR-ECM models.

- Control with adjustable room thermostat 15-30°C, operating mode selection (ventilation, summer, winter, automatic) and installation program (minimum, maximum, night time and automatic), water temperature suitability control.
- Has an inlet for connecting presence sensor and two 230V outlets to control 2 solenoid valves.
- The low temperature cut-out is installed as per standard on the unit.

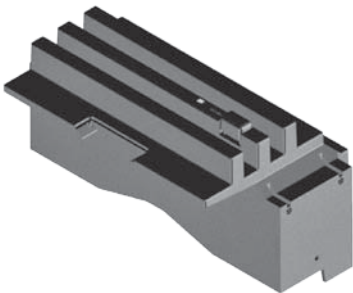
IDENTIFICATION	CODE
S0373	9075004



Wall mounted control (must be coupled to Slave control S0685).

- Wall mounted control to be coupled to board code S0685.
- Possibility of controlling up to 30 units.
- Selection of Max, Auto, Quiet and Night time modes.
- Temperature sensor.
- BUS type communication with the board.
- The control makes it possible to implement a loop up to 1 Km long; the cables must be shielded.
- The control is equipped with a 230/12 V power transformer.
- The low temperature cut-out is installed as per standard on the unit.

IDENTIFICATION	CODE
S0685	9075011



Slave electronic control for remote control of MV-ECM and MVR-ECM models (coupled to Master control: S0373).

- Can be installed on all CFR-ECM 2-pipe versions, the control has an LED indicating operating status and the presence of faults and a key for temporary isolation from the mains.
- The main operating parameters, the set point and the ambient temperature are transmitted by remote control S0373 to all the fan coils connected online, allowing for homogeneous operation.
- It has a 230V outlet for controlling a solenoid valve, two potential-free contacts to control a chiller or a boiler and one presence input.

IDENTIFICATION	CODE
S0633	9075013



Extension kit which must be used when moving water connections with consequent repositioning of control on the opposite side of the motor.



Air Conditioning
Carisma **CFR / CFR-ECM** Fan Coil Units

CARISMA CFR - 05/15
Cod. A4750100 A/05/15

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