

Made
in
Italy



Air Conditioning
High Wall Fan Coil
Carisma Fly
Carisma Fly-ECM



QUALITY MANAGEMENT SYSTEMS
ISO 9001 - Cert. n° 0545/5



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SABIANA
ENVIRONMENTAL COMFORT

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Introduction

Carisma Fly is the high wall fan coil unit designed and manufactured in Italy by Sabiana, in 4 sizes and many different models.

Fly is easy to install like a standard fan coil: without decreasing the emission and without any extra frame, 2 way or 3 way valves and condensate pump can be mounted into the casing.

The modern and appealing design of the unit in RAL 9003 colour allows the use of Fly in any environment.

Fly is available with standard AC motors or low energy EC motors and in the following versions: with wired wall control, infra-red remote control, MB electronic board for Modbus management and electric heating coil.

The units are for 2 pipe installations only.

All the Fly models perform very low electric consumption and extremely quite sound levels according to the request of today's new projects.



Sabiana take part to the Eurovent program of fan coil performance certification. The official figures are published in the Eurovent web sites www.eurovent-certification.com and www.certiflash.com. The tested performances are:

- | | |
|--|--|
| • Cooling total emission at the following conditions: | • Cooling sensible emission at the following conditions: |
| - water temperature +7°C E.W.T. +12°C L.W.T. | - water temperature +7°C E.W.T. +12°C L.W.T. |
| - air temperature +27°C dry bulb +19°C wet bulb | - air temperature +27°C dry bulb +19°C wet bulb |
| • Heating emission (2-pipe units) at the following conditions: | |
| - water temperature +50°C E.W.T. | |
| - air temperature +20°C | |
| - water flow rate as for the cooling conditions | |
| • Fan absorption | • Water pressure drop |
| | • Sound power |

Versions and Main components

Fly MODELS WITHOUT ELECTRIC HEATER

All versions are available without valves, with 2 way valve or with 3 way valve fitted in the unit.
There are four sizes available in the following versions:

CVP	without infra-red remote control and without valve
CVP-2V	without infra-red remote control with fitted 2 way valve
CVP-3V	without infra-red remote control with fitted 3 way valve
<hr/>	
CVP-T	with infra-red remote control and without valve
CVP-T-2V	with infra-red remote control with fitted 2 way valve
CVP-T-3V	with infra-red remote control with fitted 3 way valve
<hr/>	
CVP-MB	with MB electronic board and without valve
CVP-MB-2V	with MB electronic board with fitted 2 way valve
CVP-MB-3V	with MB electronic board with fitted 3 way valve

CONSTRUCTIONAL FEATURES OF THE MAIN COMPONENTS

Casing

Made of auto-extinguishing ABS UL94 HB plastic with high specifications and great resistance to aging.

Air Filter

Washable-regenerable synthetic filter, readily accessible.

Fan Assembly

Made of plastic tangential fan.

Electric motor

The motor is for single phase supply and has six speeds, three of which are connected, 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. The speeds connected in the factory are indicated by "MIN, MED and MAX" in the following tables.

Heat exchange 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 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain.

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

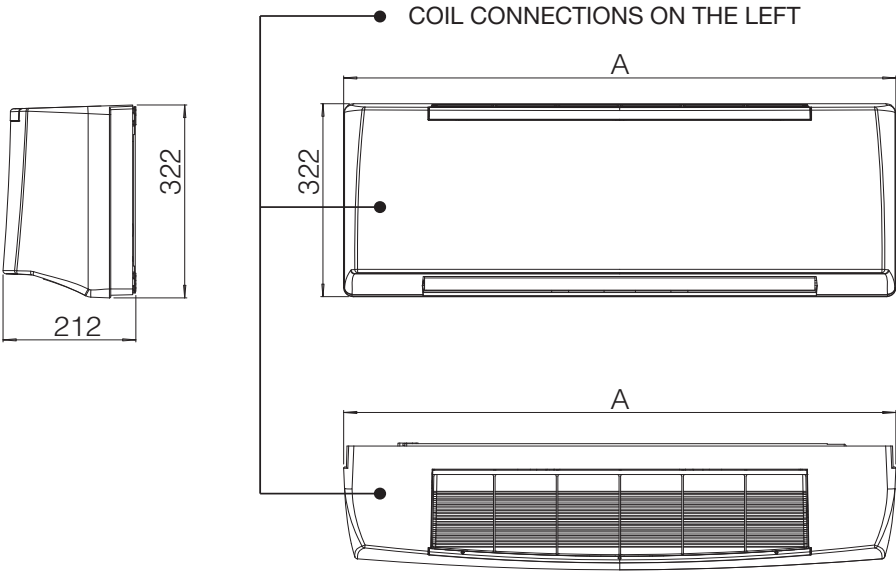
The connections are on the left side facing the unit only.

Condensate Collection Tray

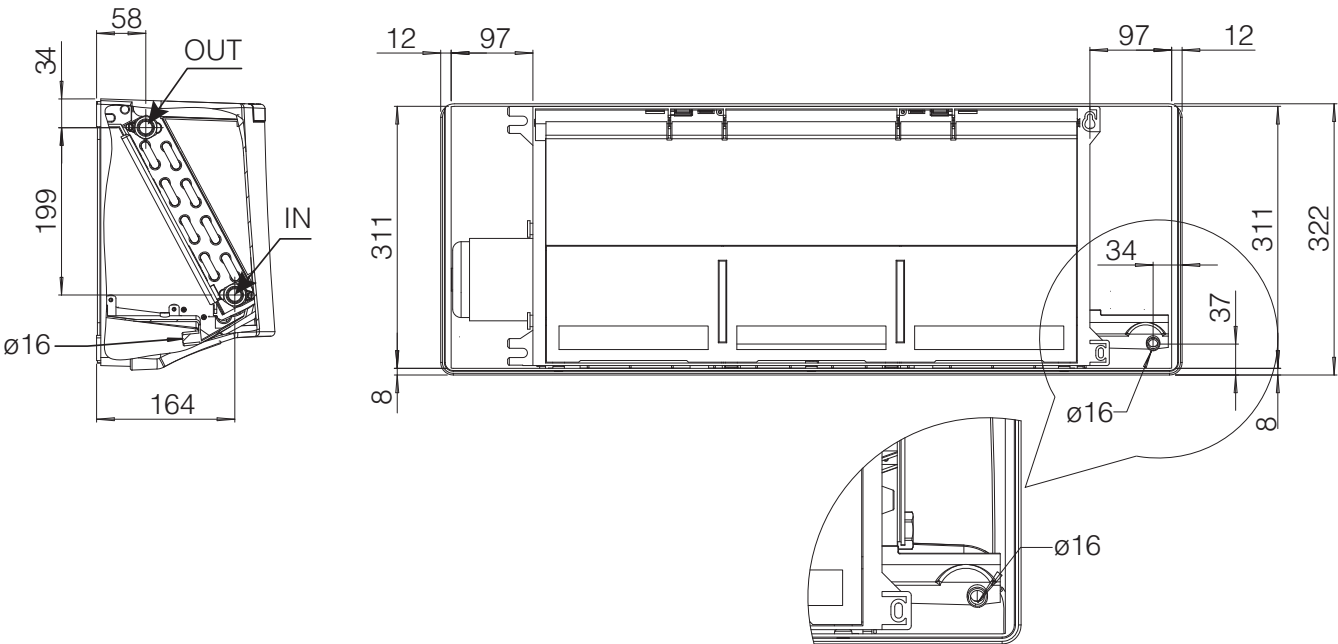
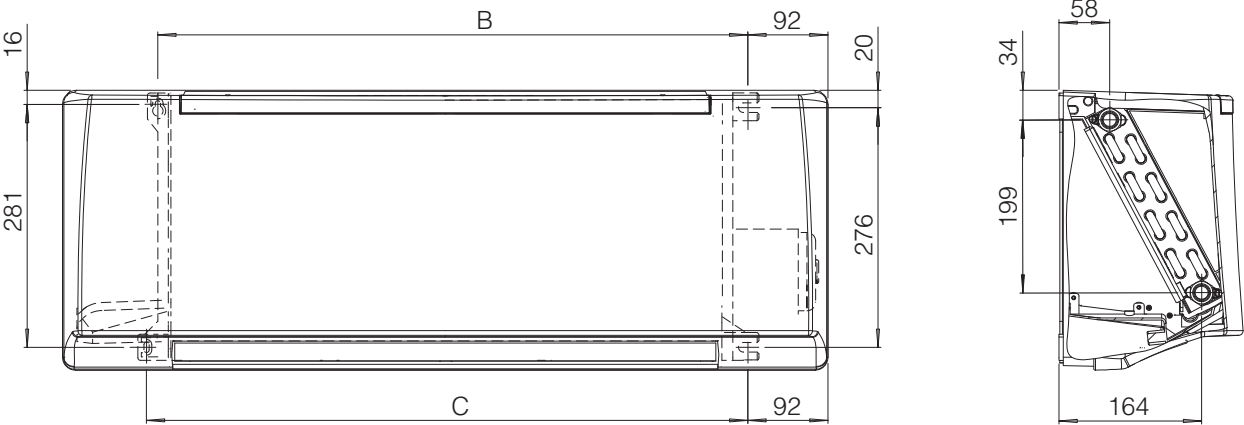
Made from polypropylene; the outside diameter of the condensate discharge pipe is 16mm.

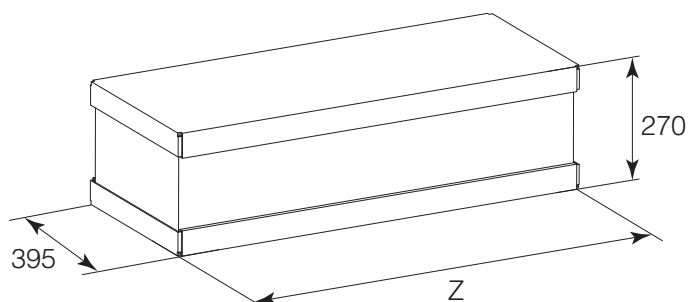
Installation template

A cardboard installation template is supplied with every unit to help the mounting on the wall.



MOUNTING DIMENSIONS





DIMENSIONS (mm)

MODEL	CVP 1	CVP 2	CVP 3	CVP 4
A	880	880	1185	1185
B	678	678	983	983
C	691	691	996	996
Z	950	950	1255	1255

WEIGHT (kg)

MODEL	Weight packed unit				Weight unpacked unit			
	CVP 1	CVP 2	CVP 3	CVP 4	CVP 1	CVP 2	CVP 3	CVP 4
without valve	12	12	16	16	10	10	13	13
with valve	13	13	17	17	11	11	14	14

WATER CONTENT (l)

MODEL	CVP 1	CVP 2	CVP 3	CVP 4
litres	0,85	0,85	1,28	1,28

Technical features

2-pipe units

The following standard rating conditions are used:

COOLING (summer operation)

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 operation)

Entering air temperature: + 20°C

Water temperature: + 50°C E.W.T.

Water flow rate as for the cooling conditions

MODEL		CVP 1						CVP 2					
Speed		1 (E)	2 (E)	3	4 (E)	5	6	1 (E)	2	3 (E)	4	5 (E)	6
		MIN	MED		MAX			MIN		MED		MAX	
Air flow	m ³ /h	205	270	340	375	470	500	250	305	365	400	480	545
Cooling total emission (E)	kW	1,24	1,50	1,76	1,87	2,15	2,23	1,43	1,63	1,84	1,95	2,18	2,35
Cooling sensible emission (E)	kW	0,92	1,14	1,36	1,46	1,72	1,80	1,07	1,25	1,43	1,53	1,75	1,92
Heating (E)	kW	1,60	2,00	2,39	2,58	3,04	3,17	1,88	2,20	2,39	2,70	3,09	3,38
ΔP Cooling (E)	kPa	4,8	6,8	9,0	10,1	13,0	13,9	6,2	7,9	9,8	10,9	13,3	15,2
ΔP Heating (E)	kPa	3,7	5,5	7,2	8,3	10,6	10,8	4,8	6,4	7,2	8,5	10,9	12,5
Fan (E)	W	12	14	17	18	24	30	12	14	18	20	24	32
Sound power (E)	Lw	35	41	46	48	52	53	39	43	47	49	53	55
Sound pressure (*)	Lp	26	32	37	39	43	44	30	34	38	40	44	46

MODEL		CVP 3						CVP 4					
Speed		1 (E)	2 (E)	3	4 (E)	5	6	1	2 (E)	3	4 (E)	5	6 (E)
		MIN	MED		MAX				MIN		MED		MAX
Air flow	m ³ /h	280	375	480	545	730	780	300	440	500	610	675	790
Cooling total emission (E)	kW	1,89	2,32	2,78	3,03	3,63	3,78	1,99	2,62	2,86	3,26	3,46	3,81
Cooling sensible emission (E)	kW	1,35	1,69	2,06	2,27	2,81	2,95	1,43	1,93	2,12	2,47	2,66	2,98
Heating (E)	kW	2,26	2,84	3,49	3,86	4,79	5,03	2,40	3,26	3,61	4,20	4,53	5,07
ΔP Cooling (E)	kPa	11,2	16,2	22,5	26,2	36,4	39,1	12,3	20,2	23,6	29,9	33,4	39,7
ΔP Heating (E)	kPa	8,7	12,6	17,7	21,2	29,3	31,9	9,7	15,9	19,1	23,7	27,2	31,5
Fan (E)	W	16	21	26	29	38	46	17	23	27	32	35	48
Sound power (E)	Lw	35	40	45	48	55	57	36	43	46	51	54	57
Sound pressure (*)	Lp	26	31	36	39	46	48	27	34	37	42	45	48

(E) = Eurovent certified performance.

MIN-MED-MAX = Standard connected speeds.

(*) = 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.

Working conditions and Air throw

WORKING CONDITIONS

Max. entering water temperature..... + 70 °C

MIn. entering water temperature..... + 6 °C

for entering water temperatures below + 6°C, contact "SABIANA" technical department

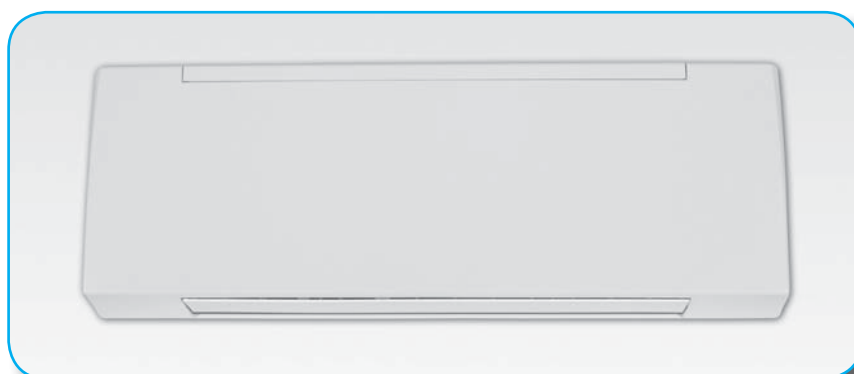
Max. rated pressure 1000 kPa (10 bars)

Installation height (m)

MODEL	CVP 1 ÷ 4
Minimum	2
Maximum	3

Motor electrical data (max. absorption)

MODEL		CVP 1	CVP 2	CVP 3	CVP 4
230/1 50Hz	W	30	32	46	48
	A	0,16	0,16	0,23	0,23



Cooling emission

Entering air temperature: +27°C - Relative Humidity: 50%

Model	Speed	WT: 7/12 °C					WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
		Qv m³/h	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
CVP 1	VI	500	2,40	1,76	413	15,8	2,15	1,68	370	12,9	1,69	1,59	291	8,3	1,31	1,31	224	5,2
	V	470	2,32	1,69	399	14,8	2,08	1,61	357	12,1	1,63	1,51	281	7,8	1,25	1,25	216	4,8
	IV MAX	375	2,02	1,44	347	11,6	1,81	1,36	311	9,5	1,41	1,27	243	6,0	1,08	1,08	185	3,6
	III	340	1,89	1,34	326	10,3	1,70	1,27	292	8,4	1,32	1,17	228	5,3	1,00	1,00	173	3,2
	II MED	270	1,62	1,13	279	7,8	1,46	1,06	250	6,4	1,13	0,97	194	4,0	0,85	0,85	146	2,4
	I MIN	205	1,33	0,91	229	5,5	1,20	0,86	207	4,5	0,93	0,78	160	2,8	0,70	0,70	120	1,7
CVP 2	VI	545	2,53	1,86	434	17,3	2,26	1,79	390	14,2	1,78	1,70	307	9,1	1,38	1,38	237	5,7
	V MAX	480	2,35	1,71	404	15,2	2,10	1,63	361	12,4	1,65	1,54	284	7,9	1,27	1,27	219	4,9
	IV	400	2,10	1,51	362	12,5	1,88	1,43	324	10,2	1,47	1,33	253	6,5	1,13	1,13	194	3,9
	III MED	365	1,98	1,41	341	11,2	1,78	1,34	306	9,1	1,39	1,24	239	5,8	1,06	1,06	182	3,5
	II	305	1,76	1,24	303	9,0	1,58	1,17	272	7,4	1,23	1,07	211	4,7	0,93	0,93	160	2,8
	I MIN	250	1,54	1,06	264	7,1	1,38	1,00	238	5,8	1,07	0,91	184	3,6	0,80	0,80	138	2,2
CVP 3	VI	780	4,06	2,91	698	44,5	3,66	2,75	629	36,6	2,88	2,58	495	23,6	2,21	2,21	381	14,6
	V	730	3,90	2,78	671	41,4	3,51	2,63	604	34,1	2,76	2,45	475	21,9	2,12	2,12	365	13,5
	IV MAX	545	3,24	2,25	558	29,7	2,93	2,13	504	24,6	2,29	1,95	393	15,6	1,74	1,74	299	9,4
	III	480	2,97	2,05	512	25,4	2,69	1,93	463	21,1	2,10	1,76	360	13,3	1,59	1,59	273	8,0
	II MED	375	2,48	1,68	427	18,3	2,24	1,58	386	15,2	1,75	1,42	300	9,6	1,31	1,29	225	5,7
	I MIN	280	2,02	1,35	347	12,6	1,83	1,27	315	10,6	1,43	1,13	245	6,7	1,06	1,02	183	3,9
CVP 4	VI MAX	790	4,09	2,93	704	45,1	3,68	2,78	633	37,2	2,90	2,60	499	23,9	2,23	2,23	384	14,8
	V	675	3,72	2,63	640	38,0	3,35	2,48	576	31,4	2,63	2,31	452	20,1	2,01	2,01	346	12,3
	IV MED	610	3,50	2,45	601	34,0	3,15	2,31	542	28,1	2,47	2,13	424	17,9	1,88	1,88	324	10,9
	III	500	3,06	2,12	527	26,8	2,77	1,99	476	22,2	2,16	1,82	371	14,1	1,63	1,63	281	8,4
	II MIN	440	2,80	1,92	482	22,8	2,53	1,81	436	18,9	1,98	1,64	340	12,0	1,49	1,49	256	7,1
	I	300	2,12	1,43	365	13,9	1,93	1,34	332	11,6	1,50	1,20	258	7,3	1,12	1,08	193	4,3

Entering air temperature: +26°C - Relative Humidity: 50%

Model	Speed	WT: 7/12 °C					WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
		Qv m³/h	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
CVP 1	VI	500	2,14	1,68	368	12,9	1,91	1,63	329	10,4	1,49	1,49	256	6,6	1,14	1,14	196	4,1
	V	470	2,06	1,61	355	12,0	1,84	1,56	316	9,7	1,43	1,43	246	6,1	1,09	1,09	188	3,8
	IV MAX	375	1,80	1,37	310	9,4	1,60	1,31	275	7,6	1,24	1,22	213	4,7	0,94	0,94	161	2,8
	III	340	1,69	1,27	291	8,4	1,50	1,22	258	6,7	1,16	1,13	199	4,2	0,87	0,87	150	2,5
	II MED	270	1,45	1,07	249	6,4	1,28	1,02	221	5,1	0,98	0,93	169	3,1	0,74	0,74	127	1,8
	I MIN	205	1,19	0,86	205	4,5	1,06	0,82	182	3,6	0,81	0,74	139	2,2	0,60	0,60	103	1,3
CVP 2	VI	545	2,25	1,79	387	14,1	2,01	1,74	345	11,4	1,57	1,57	270	7,3	1,21	1,21	208	4,5
	V MAX	480	2,09	1,63	360	12,3	1,86	1,58	320	10,0	1,45	1,45	250	6,3	1,11	1,11	191	3,9
	IV	400	1,88	1,43	323	10,1	1,67	1,38	287	8,2	1,29	1,29	222	5,1	0,98	0,98	169	3,1
	III MED	365	1,77	1,34	304	9,1	1,57	1,29	270	7,3	1,21	1,19	209	4,6	0,92	0,92	158	2,7
	II	305	1,57	1,17	270	7,4	1,39	1,12	240	5,9	1,07	1,03	184	3,6	0,81	0,81	139	2,2
	I MIN	250	1,37	1,00	236	5,8	1,22	0,96	209	4,6	0,93	0,87	160	2,8	0,70	0,70	120	1,7
CVP 3	VI	780	3,64	2,76	625	36,5	3,24	2,66	558	29,6	2,53	2,49	435	18,8	1,94	1,94	333	11,5
	V	730	3,50	2,63	601	34,0	3,12	2,53	536	27,5	2,43	2,36	417	17,4	1,85	1,85	318	10,6
	IV MAX	545	2,91	2,13	501	24,5	2,59	2,03	446	19,7	2,00	1,87	344	12,3	1,51	1,51	259	7,3
	III	480	2,67	1,94	460	21,0	2,38	1,84	409	16,9	1,83	1,68	315	10,4	1,37	1,37	236	6,2
	II MED	375	2,23	1,59	384	15,1	1,98	1,50	341	12,2	1,52	1,35	261	7,5	1,13	1,13	194	4,4
	I MIN	280	1,82	1,27	313	10,5	1,62	1,20	279	8,5	1,24	1,07	213	5,2	0,91	0,91	157	3,0
CVP 4	VI MAX	790	3,67	2,78	630	37,0	3,27	2,69	562	30,0	2,55	2,52	439	19,1	1,95	1,95	336	11,6
	V	675	3,34	2,49	574	31,3	2,97	2,39	511	25,2	2,31	2,22	397	15,8	1,75	1,75	302	9,6
	IV MED	610	3,14	2,32	539	27,9	2,79	2,22	480	22,6	2,16	2,05	372	14,1	1,64	1,64	282	8,5
	III	500	2,75	2,00	473	22,1	2,44	1,90	420	17,8	1,88	1,74	324	11,0	1,41	1,41	243	6,5
	II MIN	440	2,52	1,81	433	18,8	2,24	1,72	385	15,2	1,72	1,56	296	9,3	1,29	1,29	221	5,5
	I	300	1,91	1,35	329	11,5	1,71	1,27	293	9,3	1,30	1,13	224	5,7	0,96	0,96	166	3,3

Correction factors for different R.H.

U.R.	WT:	7/12°C	8/13°C	10/15°C	12/17°C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

Legend

WT	= Water temperature	Speed	= Fan speed
Pc	= Cooling Total emission	MAX	= High speed
Ps	= Cooling Sensible emission	MED	= Medium speed
Qw	= Water flow	MIN	= Low speed
Dp(c)	= Water side pressure drop	Qv	= Air flow

Emissions

Carisma Fly

SABIANA

Cooling emission

Entering air temperature: +25°C - Relative Humidity: 50%

Model	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
CVP 1	VI	500	1,90	1,63	328	10,4	1,69	1,58	290	8,3	1,31	1,31	225	6,9	1,09	1,09	188	3,7
	V	470	1,83	1,55	315	9,7	1,62	1,50	279	7,8	1,26	1,26	216	6,4	1,03	1,03	177	3,4
	IV MAX	375	1,59	1,31	274	7,6	1,41	1,26	242	6,0	1,08	1,08	186	4,9	0,83	0,83	143	2,3
	III	340	1,49	1,22	257	6,7	1,32	1,17	227	5,3	1,01	1,01	173	4,3	0,76	0,76	130	1,9
	II MED	270	1,28	1,02	220	5,1	1,12	0,97	193	4,0	0,86	0,86	147	3,2	0,64	0,64	109	1,4
	I MIN	205	1,05	0,82	181	3,6	0,92	0,77	159	2,8	0,70	0,70	120	2,2	0,51	0,51	89	1,0
CVP 2	VI	545	2,00	1,73	345	11,4	1,78	1,68	306	9,2	1,39	1,39	238	7,7	1,17	1,17	201	4,2
	V MAX	480	1,86	1,58	319	9,9	1,64	1,53	283	8,0	1,27	1,27	219	6,6	1,05	1,05	181	3,5
	IV	400	1,66	1,38	286	8,1	1,47	1,33	253	6,5	1,13	1,13	194	5,3	0,88	0,88	152	2,5
	III MED	365	1,56	1,29	269	7,3	1,38	1,24	238	5,8	1,06	1,06	182	4,7	0,81	0,81	139	2,2
	II	305	1,39	1,12	239	5,9	1,22	1,07	210	4,7	0,93	0,93	160	3,8	0,70	0,70	120	1,7
	I MIN	250	1,21	0,96	208	4,6	1,06	0,91	183	3,6	0,81	0,81	139	2,9	0,60	0,60	103	1,3
CVP 3	VI	780	3,23	2,66	556	29,5	2,87	2,57	493	23,7	2,22	2,22	382	17,8	1,69	1,69	290	9,0
	V	730	3,10	2,53	534	27,4	2,75	2,44	474	22,0	2,13	2,13	366	16,5	1,61	1,61	277	8,2
	IV MAX	545	2,58	2,04	444	19,7	2,28	1,95	392	15,7	1,74	1,74	300	11,5	1,31	1,31	225	5,6
	III	480	2,37	1,84	407	16,9	2,09	1,76	359	13,4	1,59	1,59	274	9,8	1,19	1,19	204	4,8
	II MED	375	1,98	1,50	340	12,2	1,74	1,43	299	9,6	1,32	1,29	226	6,9	0,97	0,97	167	3,3
	I MIN	280	1,61	1,20	277	8,4	1,42	1,13	244	6,7	1,07	1,01	183	4,8	0,78	0,78	135	2,2
CVP 4	VI MAX	790	3,26	2,68	560	29,9	2,89	2,59	497	24,0	2,24	2,24	385	18,1	1,70	1,70	293	9,1
	V	675	2,96	2,39	509	25,1	2,62	2,30	450	20,1	2,02	2,02	347	15,0	1,52	1,52	262	7,5
	IV MED	610	2,78	2,22	478	22,5	2,46	2,13	423	18,0	1,89	1,89	325	13,3	1,42	1,42	244	6,6
	III	500	2,44	1,90	419	17,7	2,15	1,82	370	14,1	1,64	1,64	282	10,3	1,22	1,22	211	5,0
	II MIN	440	2,23	1,72	384	15,2	1,97	1,64	338	12,0	1,49	1,49	257	8,7	1,11	1,11	191	4,2
	I	300	1,70	1,27	292	9,3	1,49	1,20	257	7,3	1,12	1,07	193	5,2	0,83	0,83	142	2,5

Heating emission

Entering air temperature: +20°C

Model	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)
		m³/h	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa
CVP 1	VI	500	5,46	470	15,0	4,22	363	9,7	2,96	254	5,3	3,32	286	22,6	2,71	233	15,9
	V	470	5,22	449	13,8	4,03	346	9,0	2,83	244	4,9	3,17	273	20,8	2,58	222	14,7
	IV MAX	375	4,40	378	10,1	3,40	293	6,6	2,40	206	3,6	2,67	230	15,3	2,18	187	10,8
	III	340	4,07	350	8,8	3,16	271	5,8	2,23	191	3,2	2,48	213	13,3	2,02	174	9,4
	II MED	270	3,39	292	6,4	2,63	226	4,2	1,86	160	2,3	2,06	177	9,6	1,68	145	6,8
	I MIN	205	2,71	233	4,2	2,11	181	2,8	1,50	129	1,6	1,64	141	6,4	1,34	116	4,5
CVP 2	VI	545	5,82	514	16,8	4,49	397	10,9	3,15	278	6,0	3,54	313	25,4	2,88	255	17,8
	V MAX	480	5,30	468	14,2	4,09	361	9,2	2,87	254	5,0	3,22	284	21,4	2,62	232	15,1
	IV	400	4,62	408	11,1	3,57	315	7,2	2,52	222	4,0	2,81	248	16,7	2,29	202	11,8
	III MED	365	4,31	380	9,8	3,33	294	6,4	2,35	207	3,5	2,62	231	14,7	2,13	188	10,4
	II	305	3,74	329	7,6	2,90	255	4,9	2,05	180	2,7	2,27	200	11,4	1,85	163	8,1
	I MIN	250	3,19	280	5,7	2,47	218	3,7	1,75	155	2,1	1,93	170	8,5	1,58	139	6,1
CVP 3	VI	780	8,54	754	36,7	6,61	585	24,0	4,68	414	13,4	5,19	458	55,5	4,24	374	39,2
	V	730	8,13	717	33,6	6,31	556	22,0	4,46	394	12,3	4,94	436	50,8	4,04	356	35,9
	IV MAX	545	6,51	573	22,5	5,06	446	14,8	3,59	317	8,3	3,95	348	34,0	3,23	285	24,1
	III	480	5,89	518	18,8	4,58	403	12,4	3,26	288	7,0	3,57	315	28,4	2,93	257	20,1
	II MED	375	4,78	420	12,9	3,72	327	8,5	2,66	234	4,8	2,90	254	19,4	2,37	209	13,8
	I MIN	280	3,79	332	8,5	2,96	260	5,7	2,13	187	3,2	2,30	201	12,8	1,89	165	9,1
CVP 4	VI MAX	790	8,62	761	37,4	6,68	590	24,4	4,72	418	13,6	5,24	463	56,5	4,28	378	39,9
	V	675	7,66	676	30,2	5,95	525	19,8	4,21	373	11,0	4,66	411	45,7	3,80	336	32,3
	IV MED	610	7,11	627	26,4	5,52	487	17,3	3,92	346	9,7	4,32	380	39,8	3,53	311	28,2
	III	500	6,08	535	19,9	4,73	417	13,1	3,37	297	7,4	3,69	325	30,0	3,02	266	21,3
	II MIN	440	5,49	483	16,6	4,28	376	10,9	3,05	269	6,2	3,34	293	25,0	2,73	240	17,8
	I	300	4,02	352	9,5	3,14	275	6,3	2,25	198	3,6	2,43	213	14,2	2,00	175	10,1

Legend

WT	= Water temperature	Speed	= Fan speed
Ph	= Emission	MAX	= High speed
Pc	= Cooling Total emission	MED	= Medium speed
Ps	= Cooling Sensible emission	MIN	= Low speed
Qw	= Water flow	Qv	= Air flow
Dp(c)	= Water side pressure drop		

Fly MODELS WITH ELECTRIC HEATER

All versions are available without valves, with 2 way valve or with 3 way valve fitted in the unit.
There are four sizes available in the following versions:

CVP-E without infra-red remote control and without valve
CVP-E-2V without infra-red remote control with fitted 2 way valve
CVP-E-3V without infra-red remote control with fitted 3 way valve

CVP-E-T with infra-red remote control and without valve
CVP-E-T-2V with infra-red remote control with fitted 2 way valve
CVP-E-T-3V with infra-red remote control with fitted 3 way valve

CVP-E-MB with MB electronic board and without valve
CVP-E-MB-2V with MB electronic board with fitted 2 way valve
CVP-E-MB-3V with MB electronic board with fitted 3 way valve

According to the control provided, the electrical heater can be used as an alternative or as a supplement to the hot water; in the first case controls such as TMO-T can be chosen, in the second case controls such as TMO-T-IAQ.

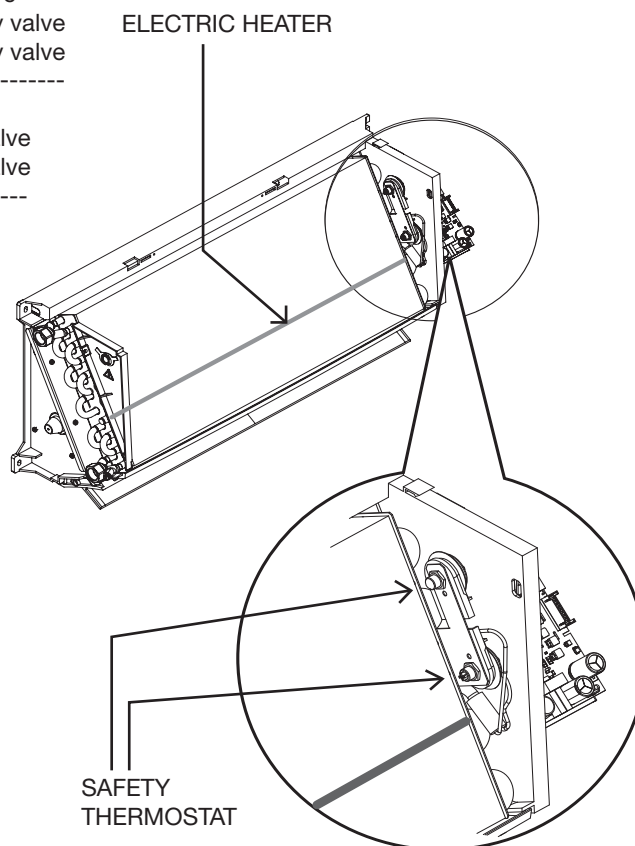
The heater is hermetically sealed and supplied inside the battery pipes and therefore can be only factory mounted.

The electric heaters of the **Fly** units are single phase 230V supply.

The electric heater is fitted with a overheat protection.

The unit is fitted with two safety thermostats:

- one thermostat with manual reset;
- one thermostat with automatic reset.



Main technical characteristics

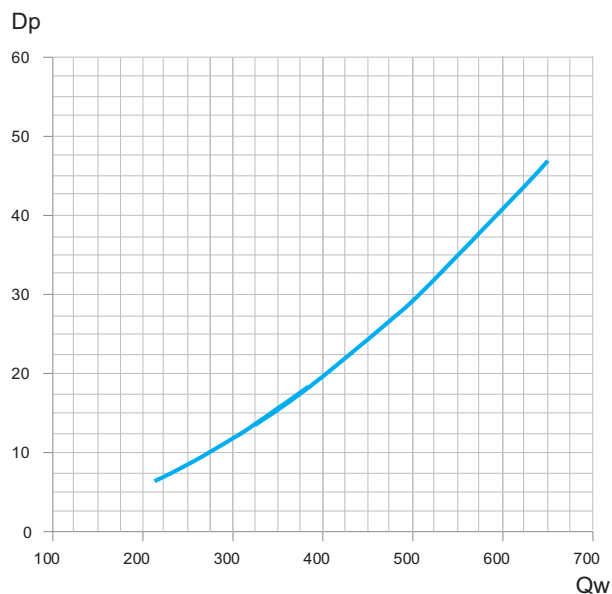
Model	CVP 1	CVP 2	CVP 3	CVP 4
Nominal installed power	1000 Watt	1000 Watt	1500 Watt	1500 Watt
Nominal power voltage	230V ~	230V ~	230V ~	230V ~
Number and section of connecting wires	3 x 1,5mm ²	3 x 1,5mm ²	3 x 1,5mm ²	3 x 1,5mm ²
Current input	4,5 A	4,5 A	7 A	7 A
Recommended fuse (Type gG) for overload protection	6 A	6 A	8 A	8 A

Fly operating limits with electric heater

Max. ambient temperature for **Fly** with electric coil in heating mode: 25°C.

Water side pressure drop

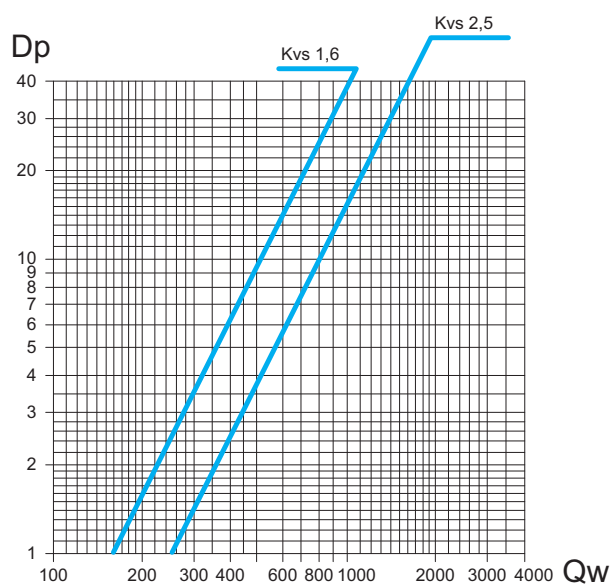
Coil pressure drop



Pressure drop for mean water temperature of 10°C; for different temperatures multiply the pressure drop figure by the K correction factors in the table.

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

Valves pressure drop



Legend

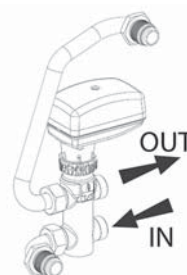
Qw = water flow (l/h)

Dp = pressure drop (kPa)

Accessories

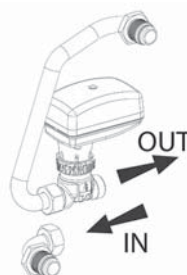
FV3S 3 way valve

mod.	Valve			Code
	DN	(Ø)	Kvs	Not Fitted
1 - 2	15	1/2"	1,6	9025321H
3 - 4	20	3/4"	2,5	9025323H



FV2S 2 way valve

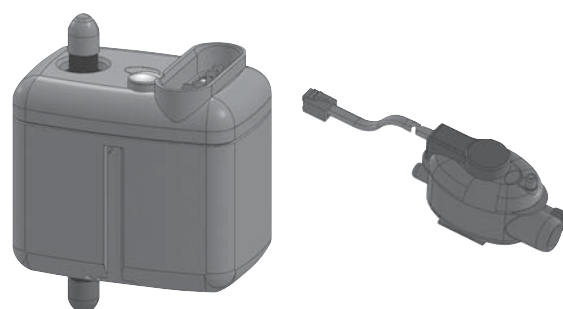
mod.	Valve			Code
	DN	(Ø)	Kvs	Not Fitted
1 - 2	15	1/2"	1,6	9025311H
3 - 4	20	3/4"	2,5	9025313H



PCF condensate drain pump

	Fitted on the unit	Not fitted on the unit
ID	PCF-M	PCF-S
Code	9025319	9025309

Height for vertical flow (m)	Water flow (l/h) depending on the length of horizontal flow	
	5m	10 m
1	7,6	7,2
2	5,6	5,2
3	4,0	3,7
4	3,2	2,9



Control operations

Electrical diagrams are shown on the installation, use and maintenance manual

CONTROL OPERATIONS	CONTROL IDENTIFICATION	MO-3V	CR-T	TMO-T	TMO-T-AU	TMO-503-SV2	T2T	MO-3V-IAQ	TMO-T-IAQ	TMO-T-AU-IAQ
ON-OFF switch		●	●	●	●	●	●	●	●	●
Manual 3 speed switch		●	●	●	●	●	●	●	●	●
Manual/Automatic 3 speed selection					●	●				●
Summer/Winter switch			●	●	●	●	●			●
Remote centralized Summer/Winter switch or by an automatic change-over fitted on the water pipe				●	●				●	●
Room thermostat for fan control (ON-OFF)			●	●	●		●		●	●
Room thermostat for 1 valve control			●	●	●	●	●		●	●
Simultaneous thermostatic control of the valves and fan					●	●	●			●
Room thermostat for chilled water valve (SUMMER) and electric heater (WINTER) control (in winter only the heater is working)			●	●	●				●	●
Installation of electronic low temperature CUT-OUT thermostat (TME)				●	●	●			●	●
Installation of bimetallic low temperature CUT-OUT thermostat (TMM)		●	●					●		
CONTROL CODES		9060160	9066330	9060161	9060164	9060173	9060174	9063020	9063021	9063023

ID	Code
MO-3V	9060160



Dimensions: 133x93x37 mm

- ON-OFF switch and speed switch, without thermostatic control.
- It allows to control the low temperature cut-out thermostat (TMM).

ID	Code
CR-T	9066330



Dimensions: 133x93x37 mm

- Manual speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve control (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TMM).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (CVP-E versions) only in case that hot water is not used in winter (otherwise please use TMO-T-IAQ control with on/off switch for the electric heater).

ID	Code
TMO-T	9060161



Dimensions: 133x93x37 mm

- Manual speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve control (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (CVP-E versions) only in case that hot water is not used in winter (otherwise please use TMO-T-IAQ control with on/off switch for the electric heater).
- It allows to install the Summer/Winter switch centralized and remote, or to control it with an automatic change-over fitted on the water pipe. The latter case needs the adjustment of the jumper on the control board.

ID	Code
TMO-T-AU	9060164



Dimensions: 133x93x37 mm

- Manual or automatic speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve control (ON-OFF).
- Simultaneous thermostatic control on the valves and fan (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (CVP-E versions) only in case that hot water is not used in winter (otherwise please use TMO-T-AU-IAQ control with on/off switch for the electric heater).
- It allows to install the Summer/Winter switch centralized and remote, or to control it with an automatic change-over fitted on the water pipe. The latter case needs the adjustment of the jumper on the control board.

ID	Code
TMO-503-SV2	9060173



Dimensions: 118x87x8 mm

The TMO-503-SV2 control for fan coils with valves, is designed to be installed in a DIN 503 wall box. The control is supplied integral with the external frame, but it is possible to use frames of the most known brand on the market (BTicino, Vimar, AVE, Gewiss).

- Manual or automatic speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for valve(s) control (ON-OFF).
- Simultaneous thermostatic control on the valves and fan (ON-OFF)..
- It allows to control the low temperature cut-out thermostat (included with the control).

ID	Code
T2T	9060174



Dimensions: 128x75x25 mm

- ON-OFF switch.
- 3 speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for fan control.
- Thermostatic control on the valve and continuous fan operation.
- Simultaneous thermostatic control on the valves and fan.
- Cannot be used with SEL-CVP speed switch (master-slave).

Speed switches - CVP version

ID	Code
SEL-CVP	9025302

- Speed switch (slave).
- It allows to control up to 8 units with only one centralized thermostat using one speed switch for each unit.
- For controls: CR-T, TMO-T, TMO-T-AU and TMO-503-SV2.



Wall electronic controls for units with electric heater (in case it is used as integration of hot water heating)

ID	Code
MO-3V-IAQ	9063020



Dimensions: 133x93x37 mm

- Manual 3 speed switch, without thermostatic control.
- Electric heater switch
- It allows to control the low temperature cut-out thermostat (TMM).

ID	Code
TMO-T-IAQ	9063021



Dimensions 133x93x37 mm

- Manual 3 speed switch.
- Manual Summer/Winter switch.
- Electric heater switch
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve control (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater with the electronic switch.
- It allows to install the Summer/Winter switch centralized and remote, or to control it with an automatic change-over fitted on the water pipe. The latter case needs the adjustment of the jumper on the control board (see the instruction leaflet supplied with the control).

ID	Code
TMO-T-AU-IAQ	9063023



Dimensions: 133x93x37 mm

- Manual or automatic 3 speed switch.
- Manual Summer/Winter switch.
- Electric heater switch
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve control (ON-OFF).
- Simultaneous thermostatic control on the valves and fan (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater with the electronic switch.
- It allows to install the Summer/Winter switch centralized and remote, or to control it with an automatic change-over fitted on the water pipe. The latter case needs the adjustment of the jumper on the control board (see the instruction leaflet supplied with the control).

Electronic control accessories

TME low temperature cut-out thermostat

ID	Code
TME	3021091



To be fitted between the coil fins.

When connecting the control, the TME probe cable must be separated from the power supply wires.

To be used with the following controls:

TMO-T, TMO-T-AU, TMO-T-IAQ, TMO-T-AU-IAQ.

It stops the fan when the water temperature is lower than 38°C and it starts the fan when is higher than 42°C.

TMM low temperature cut-out thermostat

ID	Code
TMM	9053048

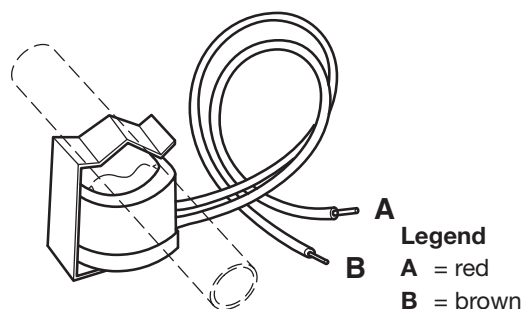
To be installed in contact with the hot water circuit.

To be used with the following controls only:

MO-3V, CR-T, MO-3V-IAQ.

For units working on heating only.

It stops the fan when the water temperature is lower than 30°C and it starts the fan when is higher than 38°C.



Change-Over CH 15-25

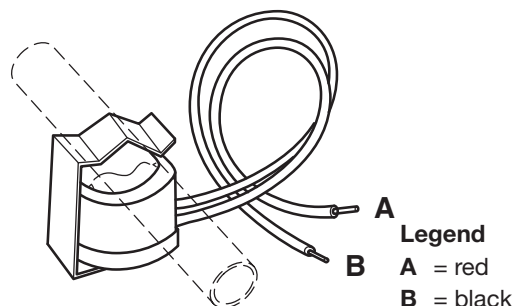
ID	Code
CH 15 -25	9053049

Automatic summer/winter switch to be installed in contact with the water circuit.

Not to be used with 2 way valve.

To be used with the following controls only:

TMO-T, TMO-T-AU, TMO-T-IAQ, TMO-T-AU-IAQ.



All the **CVP** units can be supplied in **T version** and in **MB version**.

- The **T version** includes the infra-red remote control that allows the management of a single unit (the units can not be controlled in a network).
- The **MB version** includes a wide range of controls, including the **infra-red remote control** (optional extra), which allows to manage one single unit or several units by using the Modbus RTU - RS 485 communication protocol.
Units can be managed according to the Master/Slave logic (up to 20 units) or by supervisory controls.
The system consists in a **MB power board** (mounted on models CVP-MB) and a series of controls, such as the **T-MB** wall mounted control, the **RT03** infra-red remote control, the **PSM-DI** multifunction control and the **Sabianet** supervisory program.



T-MB WALL CONTROL



PSM-DI MULTIFUNCTION CONTROL



RT03 INFRA-RED REMOTE CONTROL

PC

Sabianet SCREENSHOT



Sabianet SOFTWARE

All the controls for the ECM version and their functions are described in detail from page 28.

Versions and Main components

Fly-ECM MODELS WITHOUT ELECTRIC HEATER

All versions are available without valves, with 2 way valve or with 3 way valve fitted in the unit.
There are four sizes available in the following versions:

CVP-ECM	without infra-red remote control and without valve
CVP-ECM-2V	without infra-red remote control with fitted 2 way valve
CVP-ECM-3V	without infra-red remote control with fitted 3 way valve
<hr/>	
CVP-ECM-T	with infra-red remote control and without valve
CVP-ECM-T-2V	with infra-red remote control with fitted 2 way valve
CVP-ECM-T-3V	with infra-red remote control with fitted 3 way valve
<hr/>	
CVP-ECM-MB	with MB electronic board and without valve
CVP-ECM-MB-2V	with MB electronic board with fitted 2 way valve
CVP-ECM-MB-3V	with MB electronic board with fitted 3 way valve

CONSTRUCTIONAL FEATURES OF THE MAIN COMPONENTS

Casing

Made of auto-extinguishing ABS UL94 HB plastic with high specifications and great resistance to aging.

Air Filter

Washable-regenerable synthetic filter, readily accessible.

Fan Assembly

Made of plastic tangential fan.

Electronic motor

Electronic motor with three phase permanent magnet brushless electronic motor that is controlled with reconstructed current 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 230-240V and frequency of 50-60Hz.

Heat exchange 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 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain.

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

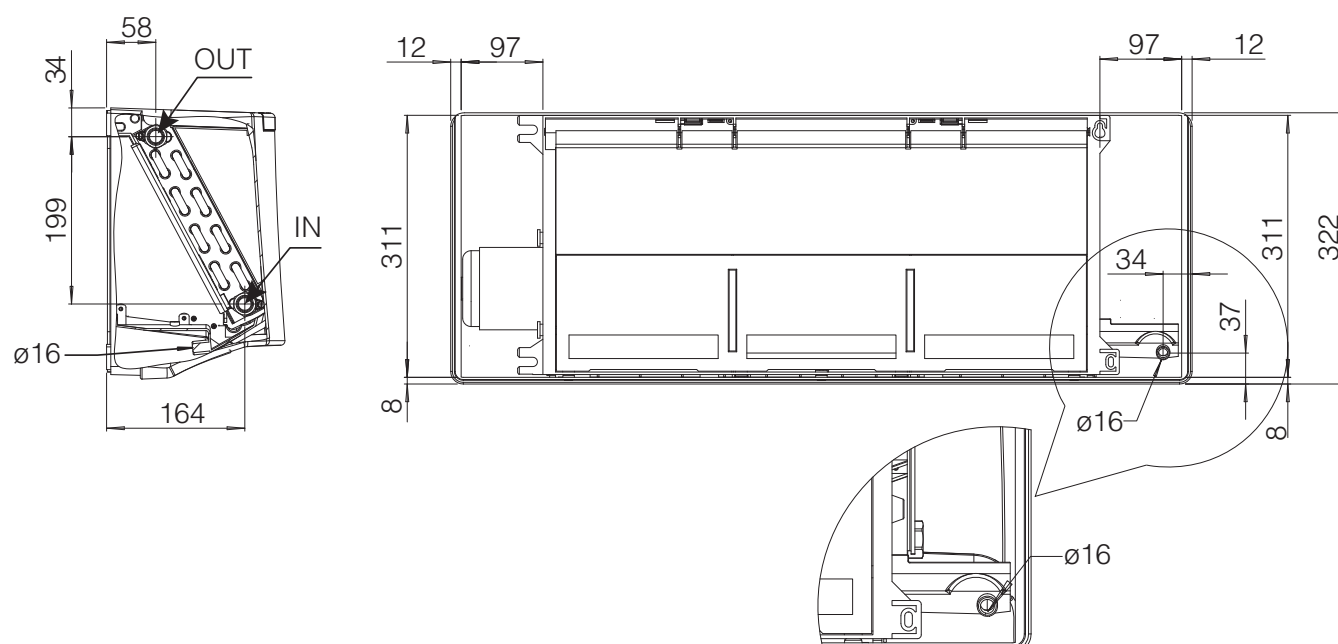
The connections are on the left side facing the unit only.

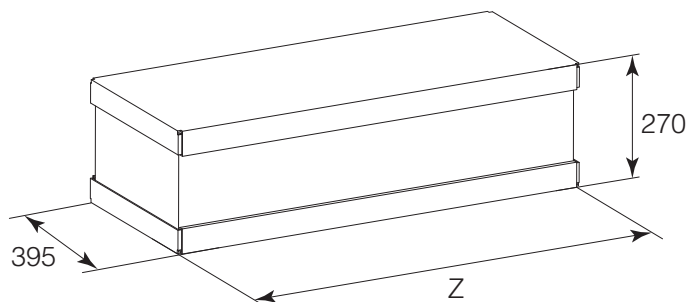
Condensate Collection Tray

Made from polypropylene; the outside diameter of the condensate discharge pipe is 16mm.

Installation template

A cardboard installation template is supplied with every unit to help the mounting on the wall.





DIMENSIONS (mm)

MODEL	CVP-ECM 1	CVP-ECM 2	CVP-ECM 3	CVP-ECM 4
A	880	880	1185	1185
B	678	678	983	983
C	691	691	996	996
Z	950	950	1255	1255

WEIGHT (kg)

MODEL	Weight packed unit				Weight unpacked unit			
	CVP-ECM	CVP-ECM	CVP-ECM	CVP-ECM	CVP-ECM	CVP-ECM	CVP-ECM	CVP-ECM
	1	2	3	4	1	2	3	4
without valve	12	12	16	16	10	10	13	13
with valve	13	13	17	17	11	11	14	14

WATER CONTENT (l)

MODEL	CVP-ECM 1	CVP-ECM 2	CVP-ECM 3	CVP-ECM 4
litres	0,85	0,85	1,28	1,28

Technical features

2-pipe units

The following standard rating conditions are used:

COOLING (summer operation)

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 operation)

Entering air temperature: + 20°C

Water temperature: + 50°C E.W.T.

Water flow rate as for the cooling conditions

MODEL		CVP-ECM 1					CVP-ECM 2				
Inverter power		1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)
		MIN		MED		MAX	MIN		MED		MAX
Air flow	m ³ /h	190	240	290	355	415	260	315	375	440	510
Cooling total emission (E)	kW	1,17	1,39	1,58	1,81	2,00	1,47	1,67	1,87	2,07	2,26
Cooling sensible emission (E)	kW	0,86	1,04	1,20	1,40	1,57	1,10	1,28	1,46	1,64	1,83
Heating (E)	kW	1,50	1,82	2,12	2,48	2,78	1,94	2,25	2,58	2,90	3,23
ΔP Cooling (E)	kPa	5,0	6,3	7,7	9,5	11,2	6,9	8,4	10,1	11,8	13,7
ΔP Heating (E)	kPa	4,2	5,4	6,5	8,2	9,3	5,6	6,9	8,5	9,7	11,6
Fan (E)	W	6	7	9	11	15	7	9	12	16	21
Sound power (E)	Lw	35	41	46	48	52	39	43	47	49	53
Sound pressure (*)	Lp	26	32	37	39	43	30	34	38	40	44

MODEL		CVP-ECM 3					CVP-ECM 4				
Inverter power		1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)
		MIN		MED		MAX	MIN		MED		MAX
Air flow	m ³ /h	270	345	420	520	620	375	465	550	665	770
Cooling total emission (E)	kW	1,83	2,20	2,53	2,93	3,29	2,34	2,72	3,05	3,43	3,75
Cooling sensible emission (E)	kW	1,31	1,60	1,86	2,19	2,50	1,70	2,01	2,29	2,63	2,92
Heating (E)	kW	2,20	2,69	3,15	3,72	4,25	2,87	3,41	3,88	4,48	4,99
ΔP Cooling (E)	kPa	10,7	14,8	19,0	24,8	30,4	16,5	21,6	26,6	32,9	38,7
ΔP Heating (E)	kPa	8,5	11,7	15,1	19,9	24,2	12,6	17,2	21,2	26,6	31,4
Fan (E)	W	6	8	11	15	20	9	12	16	22	30
Sound power (E)	Lw	35	40	45	48	55	36	43	46	51	54
Sound pressure (*)	Lp	26	31	36	39	46	27	34	37	42	45

(E) = Eurovent certified performance. **MIN-MED-MAX** = Standard connected speeds.

(*) = 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.

Working conditions and Air throw

WORKING CONDITIONS

Max. entering water temperature..... + 70 °C

MIn. entering water temperature..... + 6 °C

for entering water temperatures below + 6°C, contact "SABIANA" technical department

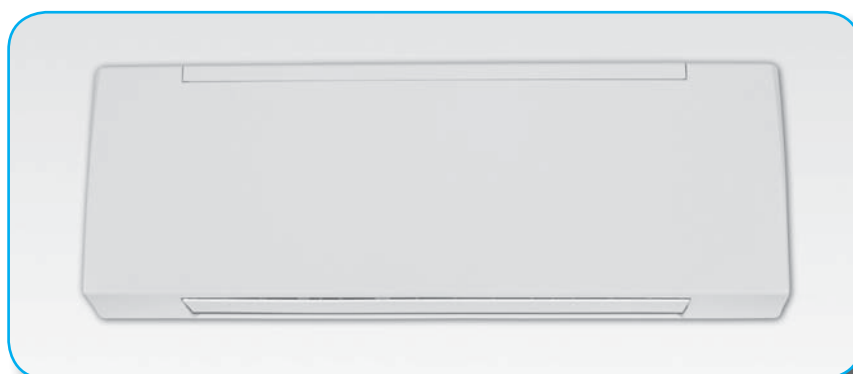
Max. rated pressure 1000 kPa (10 bars)

Installation height (m)

MODEL	CVP-ECM 1 ÷ 4
Minimum	2
Maximum	3

Motor electrical data (max. absorption)

MODEL		CVP-ECM 1	CVP-ECM 2	CVP-ECM 3	CVP-ECM 4
230/1 50Hz	W	15	22	20	30
	A	0,14	0,20	0,18	0,26



Cooling emission

Entering air temperature: +27°C - Relative Humidity: 50%

			WT: 7/12 °C					WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
Model	Vdc		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
CVP-ECM 1	10	MAX	415	2,15	1,55	370	12,9	1,93	1,47	331	10,5	1,51	1,37	259	6,7	1,15	1,15	198	4,1
	7,5		355	1,95	1,38	335	10,8	1,75	1,31	300	8,8	1,36	1,21	234	5,6	1,04	1,04	178	3,4
	5	MED	290	1,70	1,19	293	8,5	1,53	1,12	263	7,0	1,19	1,03	204	4,4	0,90	0,90	154	2,6
	3		240	1,49	1,03	257	6,7	1,34	0,97	231	5,5	1,04	0,88	179	3,4	0,78	0,78	134	2,0
CVP-ECM 2	1	MIN	190	1,26	0,86	217	4,9	1,14	0,81	196	4,1	0,88	0,73	151	2,5	0,66	0,66	113	1,5
	10	MAX	510	2,43	1,78	418	16,1	2,18	1,71	375	13,2	1,71	1,61	295	8,5	1,32	1,32	227	5,3
	7,5		440	2,23	1,61	383	13,8	2,00	1,53	343	11,2	1,57	1,44	269	7,2	1,20	1,20	206	4,4
	5	MED	375	2,02	1,44	347	11,5	1,81	1,36	311	9,4	1,41	1,27	243	6,0	1,08	1,08	185	3,6
	3		315	1,80	1,27	309	9,4	1,61	1,20	278	7,7	1,26	1,10	216	4,8	0,95	0,95	164	2,9
CVP-ECM 3	1	MIN	260	1,58	1,10	271	7,4	1,42	1,03	244	6,1	1,10	0,94	189	3,8	0,83	0,83	142	2,3
	10	MAX	620	3,53	2,48	607	34,6	3,18	2,34	547	28,6	2,49	2,16	428	18,2	1,90	1,90	327	11,1
	7,5		520	3,14	2,18	541	28,1	2,84	2,05	489	23,3	2,22	1,88	381	14,8	1,68	1,68	289	8,9
	5	MED	420	2,71	1,85	467	21,5	2,45	1,75	422	17,9	1,91	1,58	329	11,3	1,44	1,44	247	6,7
	3		345	2,36	1,59	405	16,7	2,14	1,50	367	13,9	1,66	1,34	286	8,8	1,24	1,22	214	5,2
CVP-ECM 4	1	MIN	270	1,96	1,31	338	12,0	1,78	1,23	307	10,1	1,39	1,10	239	6,4	1,03	0,98	178	3,7
	10	MAX	770	4,03	2,88	693	44,0	3,63	2,73	624	36,2	2,86	2,56	491	23,3	2,20	2,20	378	14,4
	7,5		665	3,69	2,60	634	37,5	3,32	2,46	571	30,9	2,61	2,28	448	19,8	1,99	1,99	343	12,1
	5	MED	550	3,26	2,27	562	30,1	2,95	2,14	507	24,9	2,30	1,96	396	15,8	1,75	1,75	301	9,6
	3		465	2,91	2,00	501	24,5	2,63	1,89	453	20,3	2,05	1,72	353	12,8	1,55	1,55	267	7,7
	1	MIN	375	2,50	1,70	431	18,7	2,27	1,60	390	15,5	1,76	1,44	303	9,8	1,32	1,31	228	5,8

Entering air temperature: +26°C - Relative Humidity: 50%

			WT: 7/12 °C					WT: 8/13 °C					WT: 10/15 °C					WT: 12/17 °C				
Model	Vdc		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			
CVP-ECM 1	10	MAX	415	1,92	1,47	330	10,5	1,70	1,42	293	8,5	1,32	1,32	227	5,3	1,01	1,01	173	3,2			
	7,5		355	1,74	1,31	299	8,8	1,54	1,26	265	7,1	1,19	1,17	205	4,4	0,90	0,90	155	2,6			
	5	MED	290	1,52	1,13	261	6,9	1,35	1,08	232	5,5	1,03	0,99	178	3,4	0,78	0,78	134	2,0			
	3		240	1,33	0,97	230	5,5	1,18	0,93	203	4,4	0,90	0,84	155	2,7	0,67	0,67	116	1,6			
CVP-ECM 2	1	MIN	190	1,13	0,81	194	4,1	1,00	0,77	172	3,2	0,76	0,69	131	2,0	0,56	0,56	97	1,1			
	10	MAX	510	2,17	1,71	373	13,1	1,93	1,66	333	10,6	1,51	1,51	260	6,7	1,16	1,16	199	4,1			
	7,5		440	1,99	1,53	342	11,2	1,77	1,48	304	9,0	1,37	1,37	236	5,7	1,05	1,05	180	3,5			
	5	MED	375	1,80	1,37	310	9,4	1,60	1,31	275	7,5	1,24	1,22	213	4,7	0,94	0,94	161	2,8			
	3		315	1,61	1,20	276	7,6	1,42	1,15	245	6,1	1,10	1,06	188	3,8	0,83	0,83	142	2,3			
CVP-ECM 3	1	MIN	260	1,41	1,04	243	6,1	1,25	0,99	215	4,8	0,96	0,90	165	3,0	0,72	0,72	123	1,7			
	10	MAX	620	3,17	2,34	545	28,5	3,29	2,50	565	30,4	2,18	2,07	375	14,4	1,85	1,85	318	26,6			
	7,5		520	2,82	2,06	486	23,2	2,93	2,19	504	24,8	1,93	1,80	333	11,6	1,64	1,64	282	21,4			
	5	MED	420	2,44	1,75	420	17,8	2,53	1,86	436	19,0	1,66	1,50	286	8,8	1,41	1,41	242	16,2			
	3		345	2,12	1,50	365	13,8	2,20	1,60	379	14,8	1,44	1,28	248	6,8	1,22	1,20	209	12,5			
CVP-ECM 4	1	MIN	270	1,77	1,24	304	10,0	1,83	1,31	316	10,7	1,20	1,04	207	4,9	1,01	0,97	174	9,0			
	10	MAX	770	3,61	2,73	621	36,0	3,22	2,64	554	29,2	2,51	2,46	432	18,5	1,92	1,92	330	11,3			
	7,5		665	3,30	2,46	568	30,7	2,94	2,37	506	24,8	2,28	2,19	393	15,6	1,73	1,73	298	9,4			
	5	MED	550	2,93	2,15	504	24,8	2,61	2,05	449	20,0	2,01	1,88	346	12,4	1,52	1,52	261	7,4			
	3		465	2,62	1,89	450	20,2	2,33	1,80	400	16,3	1,79	1,64	308	10,0	1,34	1,34	231	5,9			
	1	MIN	375	2,25	1,61	387	15,4	2,00	1,52	345	12,4	1,53	1,37	264	7,6	1,14	1,14	196	4,4			

Correction factors for different R.H.

U.R.	WT:	7/12°C	8/13°C	10/15°C	12/17°C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

Legend

WT	= Water temperature	Vdc	= Inverter power
Pc	= Cooling Total emission	MAX	= High speed
Ps	= Cooling Sensible emission	MED	= Medium speed
Qw	= Water flow	MIN	= Low speed
Dp(c)	= Water side pressure drop	Qv	= Air flow

Emissions

Carisma Fly

Cooling emission

Entering air temperature: +25°C - Relative Humidity: 50%

			WT: 7/12 °C					WT: 8/13 °C					WT: 10/15 °C					WT: 12/17 °C				
Model	Vdc		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			
CVP-ECM 1	10	MAX	415	1,70	1,42	292	8,5	1,50	1,37	258	6,7	1,16	1,16	199	4,2	0,91	0,91	157	2,7			
	7,5		355	1,54	1,26	264	7,1	1,36	1,21	233	5,6	1,04	1,04	179	3,4	0,79	0,79	135	2,1			
	5	MED	290	1,34	1,08	231	5,5	1,18	1,03	203	4,4	0,90	0,90	155	2,7	0,67	0,67	116	1,6			
	3		240	1,18	0,93	202	4,4	1,03	0,88	178	3,4	0,78	0,78	135	2,1	0,58	0,58	100	1,2			
	1	MIN	190	1,00	0,77	171	3,2	0,87	0,73	150	2,5	0,66	0,66	113	1,5	0,49	0,49	83	0,9			
CVP-ECM 2	10	MAX	510	1,93	1,65	331	10,6	1,71	1,60	294	8,5	1,33	1,33	228	5,3	1,11	1,11	191	3,9			
	7,5		440	1,76	1,48	303	9,0	1,56	1,43	268	7,2	1,20	1,20	207	4,5	0,97	0,97	166	3,0			
	5	MED	375	1,59	1,31	274	7,5	1,41	1,26	242	6,0	1,08	1,08	186	3,7	0,83	0,83	143	2,3			
	3		315	1,42	1,15	244	6,1	1,25	1,10	215	4,9	0,95	0,95	164	3,0	0,72	0,72	123	1,7			
	1	MIN	260	1,24	0,99	214	4,8	1,10	0,94	188	3,8	0,83	0,83	143	2,3	0,62	0,62	106	1,3			
CVP-ECM 3	10	MAX	620	2,81	2,25	483	22,9	2,48	2,15	427	18,3	1,91	1,91	328	11,3	1,44	1,44	247	6,7			
	7,5		520	2,50	1,96	430	18,6	2,21	1,88	380	14,8	1,69	1,69	290	9,0	1,26	1,26	217	5,3			
	5	MED	420	2,16	1,66	371	14,3	1,90	1,58	328	11,3	1,44	1,43	248	6,8	1,07	1,07	185	4,0			
	3		345	1,88	1,42	323	11,1	1,65	1,35	284	8,8	1,25	1,21	215	5,3	0,92	0,92	159	3,0			
	1	MIN	270	1,57	1,17	270	8,1	1,38	1,10	237	6,4	1,04	0,98	178	3,8	0,76	0,76	131	2,1			
CVP-ECM 4	10	MAX	770	3,21	2,63	551	29,1	2,85	2,54	490	23,4	2,20	2,20	379	14,6	1,67	1,67	288	8,8			
	7,5		665	2,93	2,37	504	24,8	2,59	2,27	446	19,8	2,00	2,00	344	12,3	1,51	1,51	259	7,3			
	5	MED	550	2,60	2,05	447	19,9	2,29	1,96	395	15,9	1,76	1,76	302	9,7	1,32	1,32	226	5,7			
	3		465	2,32	1,80	399	16,2	2,04	1,71	351	12,9	1,56	1,56	268	7,8	1,16	1,16	199	4,6			
	1	MIN	375	2,00	1,52	343	12,4	1,76	1,44	302	9,8	1,33	1,30	229	5,9	0,98	0,98	169	3,4			

Fly-ECM MODELS WITH ELECTRIC HEATER

All versions are available without valves, with 2 way valve or with 3 way valve fitted in the unit.
There are four sizes available in the following versions:

CVP-ECM-E without infra-red remote control and without valve
CVP-ECM-E-2V without infra-red remote control with fitted 2 way valve
CVP-ECM-E-3V without infra-red remote control with fitted 3 way valve

CVP-ECM-E-T with infra-red remote control and without valve
CVP-ECM-E-T-2V with infra-red remote control with fitted 2 way valve
CVP-ECM-E-T-3V with infra-red remote control with fitted 3 way valve

CVP-ECM-E-MB with MB electronic board and without valve
CVP-ECM-E-MB-2V with MB electronic board with fitted 2 way valve
CVP-ECM-E-MB-3V with MB electronic board with fitted 3 way valve

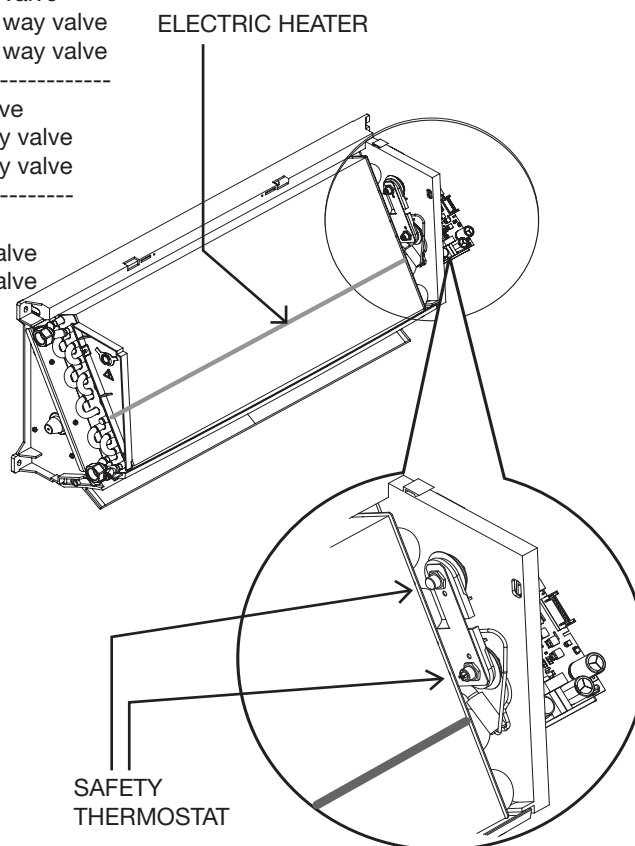
The heater is hermetically sealed and supplied inside the battery pipes and therefore can be only factory mounted.

The electric heaters of the **Fly-ECM** units are single phase 230V supply.

The electric heater is fitted with a overheat protection.

The unit is fitted with two safety thermostats:

- one thermostat with manual reset;
- one thermostat with automatic reset.



Main technical characteristics

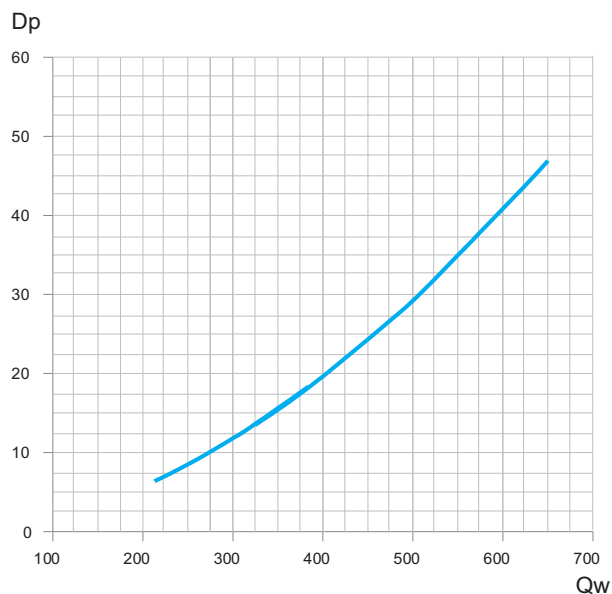
Model	CVP-ECM 1	CVP-ECM 2	CVP-ECM 3	CVP-ECM 4
Nominal installed power	1000 Watt	1000 Watt	1500 Watt	1500 Watt
Nominal power voltage	230V ~	230V ~	230V ~	230V ~
Number and section of connecting wires	3 x 1,5mm ²	3 x 1,5mm ²	3 x 1,5mm ²	3 x 1,5mm ²
Current input	4,5 A	4,5 A	7 A	7 A
Recommended fuse (Type gG) for overload protection	6 A	6 A	8 A	8 A

Fly-ECM operating limits with electric heater

Max. ambient temperature for **Fly-ECM** with electric coil in heating mode: 25°C.

Water side pressure drop

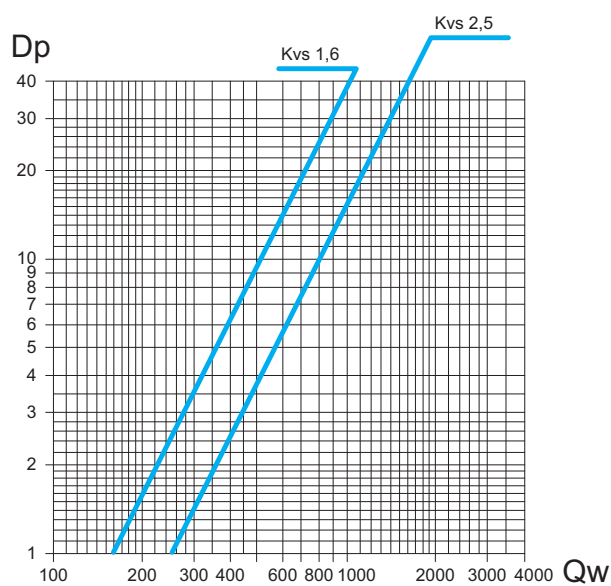
Coil pressure drop



Pressure drop for mean water temperature of 10°C; for different temperatures multiply the pressure drop figure by the K correction factors in the table.

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

Valves pressure drop



Legend

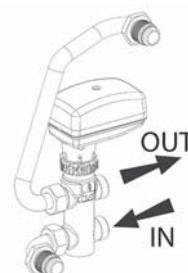
Qw = water flow (l/h)

Dp = pressure drop (kPa)

Accessories

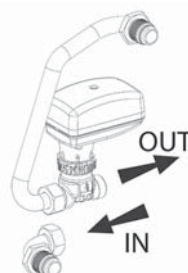
FV3S 3 way valve

mod.	Valve			Code
	DN	(Ø)	Kvs	Not Fitted
1 - 2	15	1/2"	1,6	9025321H
3 - 4	20	3/4"	2,5	9025323H



FV2S 2 way valve

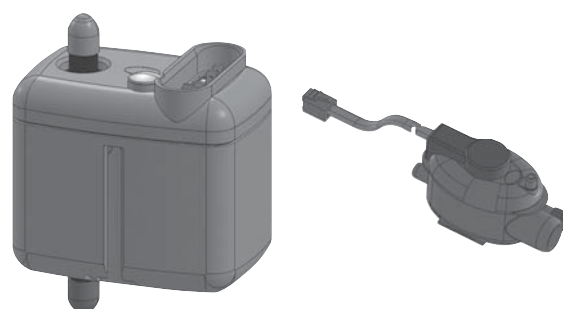
mod.	Valve			Code
	DN	(Ø)	Kvs	Not Fitted
1 - 2	15	1/2"	1,6	9025311H
3 - 4	20	3/4"	2,5	9025313H



PCF condensate drain pump

	Fitted on the unit	Not fitted on the unit
ID	PCF-M	PCF-S
Code	9025319	9025309

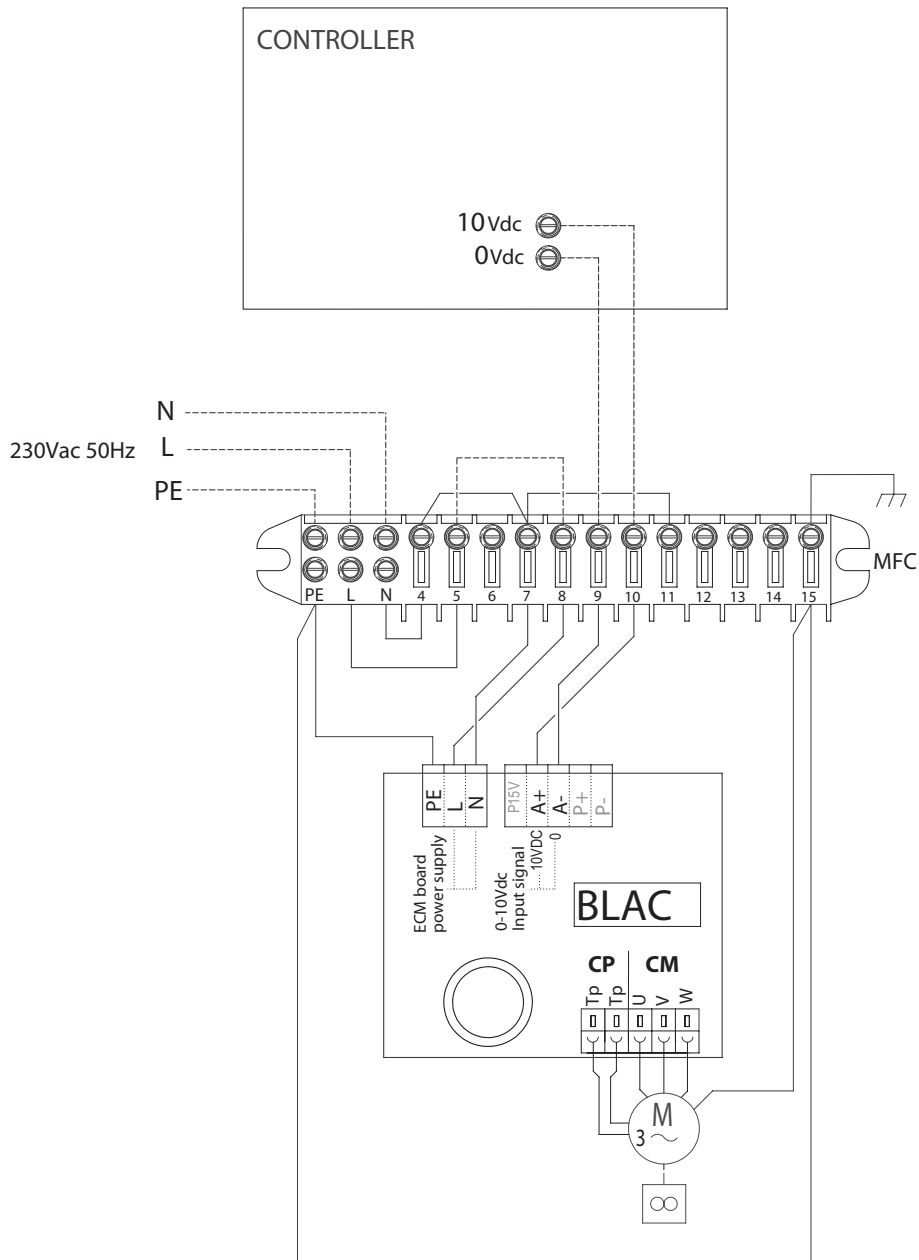
Height for vertical flow (m)	Water flow (l/h) depending on the length of horizontal flow	
	5m	10 m
1	7,6	7,2
2	5,6	5,2
3	4,0	3,7
4	3,2	2,9



For this fan coil configuration, the 1-10 Vdc signal, which controls the inverter, must be supplied by a controller with the following signal specifications:

- Impedance < 100 Ohm;
- Maximum speed 10 Vdc;
- Fan OFF with V < 1 Vdc;
- Signal 1 - 10 Vdc.

Fly-ECM electric wiring diagram



Legend

CONTROLLER

BLAC

M

CM

CP

= Controller

= Inverter circuit board

= Brushless electronic motor

= Motor fan connection

= Motor fan thermal protection connection

All the **CVP-ECM** units can be supplied in **T version** and in **MB version**.

- The **T version** includes the infra-red remote control that allows the management of a single unit (the units can not be controlled in a network).
- The **MB version** includes a wide range of controls, including the **infra-red remote control** (optional extra), which allows to manage one single unit or several units by using the Modbus RTU - RS 485 communication protocol.

Units can be managed according to the Master/Slave logic (up to 20 units) or by supervisory controls.

The system consists in a **MB** power board (mounted on models CVP-ECM-MB) and a series of controls, such as the **T-MB** wall mounted control, the **RT03** infra-red remote control, the **PSM-DI** multifunction control and the **Sabianet** supervisory program.



T-MB WALL CONTROL



PSM-DI MULTIFUNCTION CONTROL



RT03 INFRA-RED REMOTE CONTROL

PC



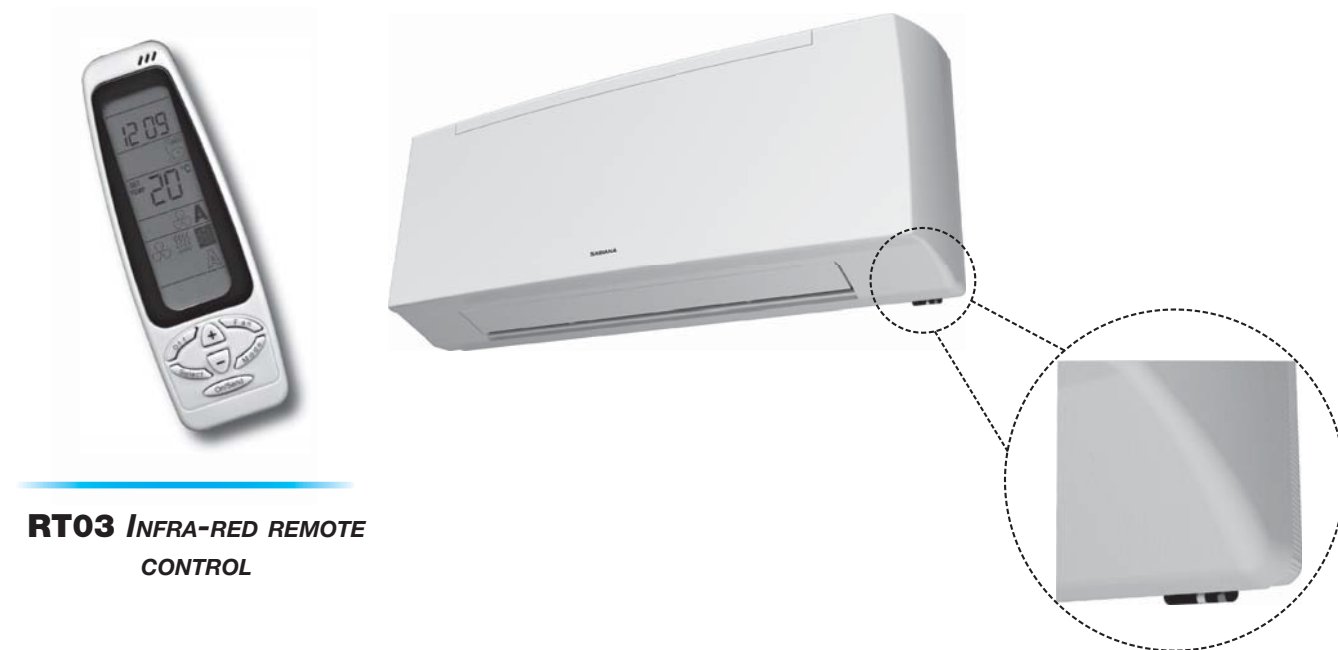
Sabianet SCREENSHOT



Sabianet SOFTWARE

All the controls for the ECM version and their functions are described in detail from page 28.

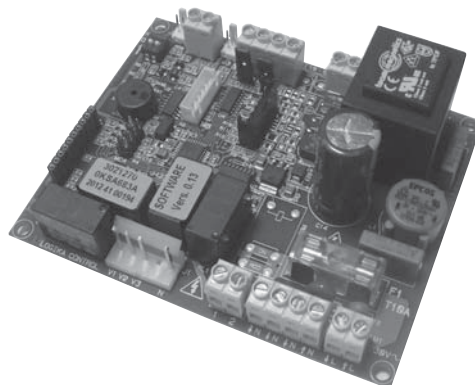
Stand alone units: the infra-red remote control can control one unit only



RT03 *INFRA-RED REMOTE
CONTROL*

The electronic board, mounted as per standard on the **CVP-T** and **CVP-ECM-T**, is set to carry out different functions and adjustment modes, in order to meet the installation requirements. These modes are selected by setting the configuration dip switches on the board.

- Fan ON/OFF thermostatic control.
- Valve ON/OFF thermostatic control and continuous ventilation.
- Valve and simultaneous ventilation ON/OFF thermostatic control.
- Fan operation control depending on the coil temperature (cut-out T3 probe fitted), which can be activated only in heating mode or heating and cooling mode.
- Automatic switch of the operating mode by means of T2 water probe (optional).
- Seasonal switch by means of remote contact.
- ON/OFF of the fan coil by means of the remote contact (window or clock contact).
- Electric heater control



By activating the cut-out T3 probe function, the fan is stopped in winter when the coil temperature is lower than 32°C and started when the temperature reaches 36°C. In summer mode, the fan stops when the temperature inside the coil exceeds 22°C and starts when it drops below 18°C.

The infra-red remote control allows setting by a remote position the fan coil operation parameters.

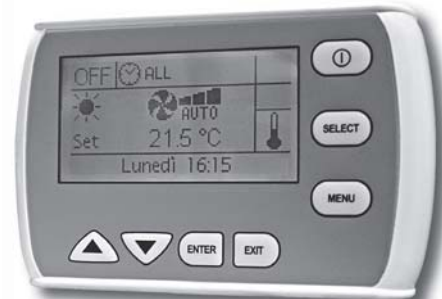
The **RT03** infra-red remote control features the following functions:

- Switch the appliance ON and OFF.
- Temperature set.
- Set the fan speed (low, medium, high or autofan).
- Set the operation mode (fan only, cooling, heating).
- Time setting.
- 24 hours ON/OFF program.

These units can be controlled with RT03 infrared control and with T-MB or PSM-DI wall controls and they can be managed by a supervising control system



T-MB WALL CONTROL

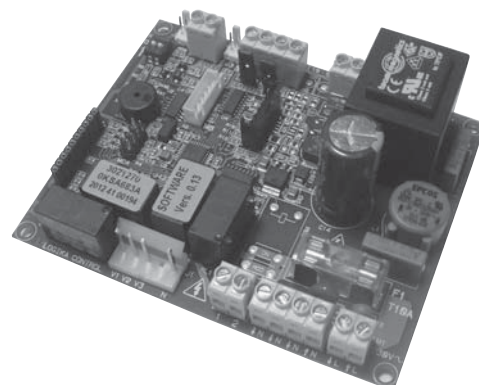


PSM-DI MULTIFUNCTION CONTROL

RT03 INFRA-RED REMOTE CONTROL

The **MB** electronic board, mounted as per standard on the **CVP-MB** and **CVP-ECM-MB**, is set to carry out different functions and adjustment modes, in order to meet the installation requirements. These modes are selected by setting the configuration dip switches on the board.

- Fan ON/OFF thermostatic control.
- Valve ON/OFF thermostatic control and continuous ventilation.
- Valve and simultaneous ventilation ON/OFF thermostatic control.
- Fan operation control depending on the coil temperature (cut-out T3 probe fitted), which can be activated only in heating mode or heating and cooling mode.
- Automatic switch of the operating mode by means of T2 water probe (optional).
- Seasonal switch by means of remote contact.
- ON/OFF of the fan coil by means of the remote contact (window or clock contact).
- Electric heater control



By activating the cut-out T3 probe function, the fan is stopped in winter when the coil temperature is lower than 32°C and started when the temperature reaches 36°C. In summer mode, the fan stops when the temperature inside the coil exceeds 22°C and starts when it drops below 18°C.

The following connections are located on the power board:

- Receiver for infra-red remote control.
- **T-MB** wall control.
- RS 485 serial connection to manage several fan coils in Master/Slave configuration or to create a supervision network.

T-MB wall control

Description	ID	Code
Wall control (to be used with MB board only)	T-MB	9066331E

Wall control with display that allows controlling one or more units in Master/Slave mode. The control is equipped with internal sensor to detect the room temperature, which can be defined as a priority compared to the return air sensor on the fan coil.



The **T-MB** control features the following functions:

- Switch the appliance ON and OFF.
- Temperature set.
- Modify the set point (when used as a +/- 3° variation of the set point configured from Sabianet supervisory program).
- Set the fan speed (low, medium, high or autofan).
- Set the operation mode (fan only, cooling, heating).
- Time setting.
- Weekly ON/OFF program.
- Display and change of the fan coil operation parameters.

RT03 infra-red remote control

Description	ID	Code
RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only)	RS-RT03-F	9025301
RT03 infra-red remote control supplied with separate packaging (to be used with MB board only)	RT03	3021203
Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only)	RS-F	9025300

The infra-red remote control allows setting by a remote position the fan coil operation parameters.

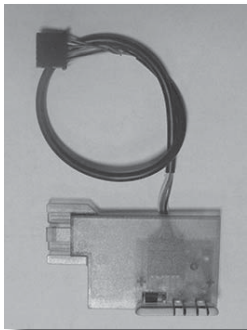
The **RT03** infra-red remote control features the following functions:

- Switch the appliance ON and OFF.
- Temperature set.
- Set the fan speed (low, medium, high or autofan).
- Set the operation mode (fan only, cooling, heating).
- Time setting.
- 24 hours ON/OFF program.

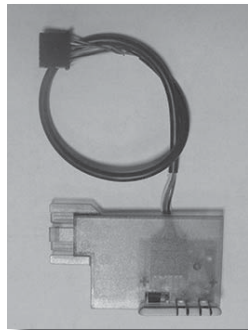


ID	Code
RT03	3021203

INSTALLATION
EXAMPLE WITH
INFRA-RED REMOTE
CONTROL



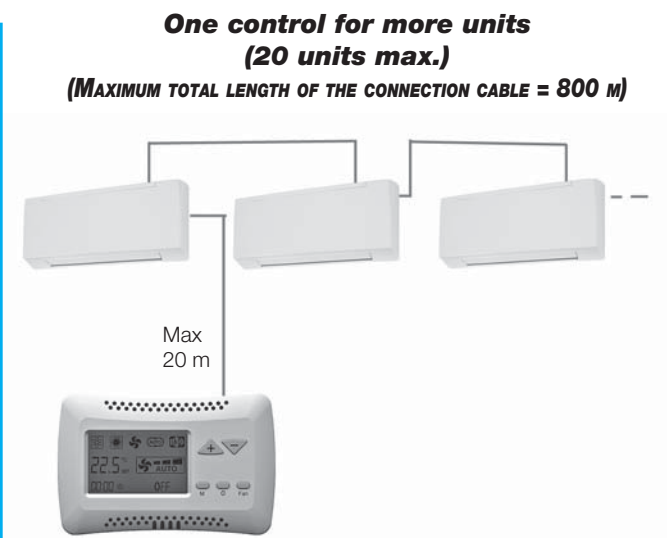
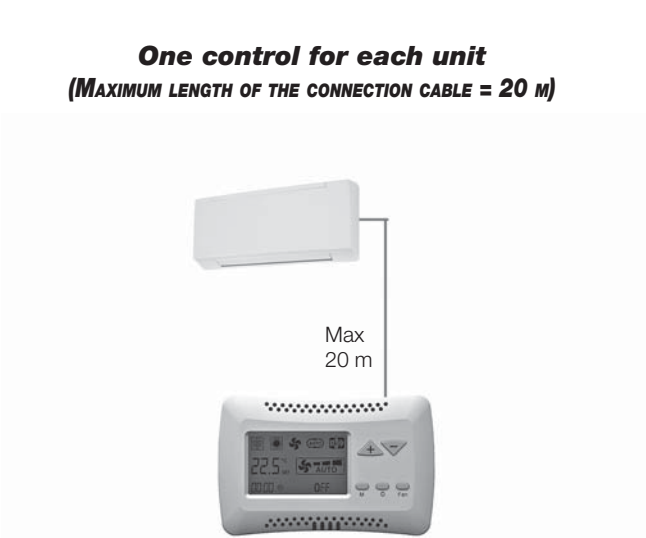
ID	Code
RS-RT03-F	9025301



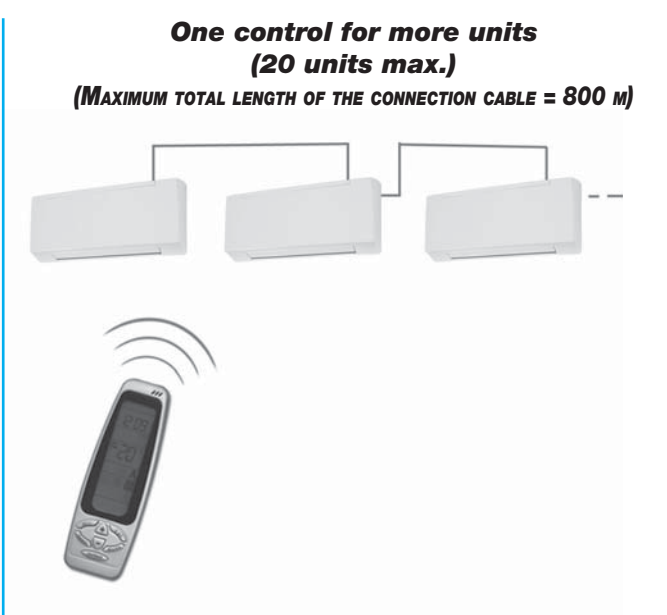
ID	Code
RS-F	9025300

A group of **Carisma Fly** units with **MB** electronic board can be connected via a serial link and can consequently be managed at the same time by just one **T-MB** wall control or **RT03** infra-red remote control. Using the special jumper present on the MB board, one unit must be configured as the master, and all the others as slaves. The remote control must be pointed at the receiver on the master unit. To avoid problems, it is recommended to install and connect the receiver only on the master unit.

With T-MB wall control



With RT03 infra-red remote control



T2 accessory for units with infra-red remote control and/or MB electronic board

ID	Code
T2	9025310



T2 sensor to be placed on the water supply pipe upstream 3 way valves (not to be used with 2 way valve). The **T2** sensor must be used as described below:

- Change-Over for the automatic switch of the operating mode. If water temperature is lower than 20°C, cooling mode is set; on the other hand, if water temperature exceeds 30°C, heating mode is set.
- It can be used on units with electric heater and hot water supply. The **T2** priority probe activates the electric heater or water valve, depending on the water temperature detected. If water temperature exceeds 34°C, the water valve ON-OFF control is activated; on the other hand, if water temperature is lower than 30°C, the electric heater is activated.

PSM-DI Multifunction control

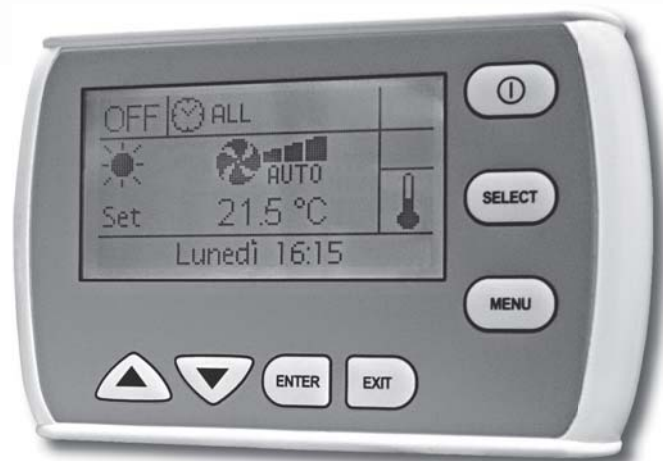
Description	ID	Code
Multifunction control (to be used with MB board only)	PSM-DI	3021293

Another option available for the serial communication between the units is the possibility to connect up to 60 **Carisma Fly** units in series and manage them with just one wall mounted **PSM-DI** controller.

The wall mounted controller can be used to set the operating mode for each individual unit connected, display the operating conditions of each individual unit, and set the ON/OFF time sets for each day of the week (the program can be set for all the units and for a maximum of two groups of units).

If more than 60 units need to be connected, two or more controllers must be used. Each wall mounted controller only manages the units it is connected to.

The **PSM-DI** control is used to manage a series of fan coils, up to a maximum of 60 units (the maximum length of the RS 485 connection cable must not exceed 800 m), from one single control point.



The **PSM-DI** control communicates via a serial line with all the units connected, with the possibility of controlling them all together or individually. In fact, the unique address of each individual fan coil means that all the units can be called at the same time, or the individual unit called, to perform the following functions:

- display the current operating mode, the fan speed, the set point;
- display the room temperature measured on the individual unit;
- turn all the units ON and OFF at the same time or alternatively each unit individually;
- change the operating mode (fan only, heating, cooling, automatic changeover);
- change the set point;
- modify the values and operation parameters of the fan speed.

Each function can then be sent to all the units connected, or alternatively to each individual unit.

Different set points or operating modes can be set for each individual unit.

The **PSM-DI** panel can also be used for the time management of the units over the week. Four ON times and four OFF times can be set on the units for each day of the week. A different Temperature set that will be considered as Operation set for all connected appliances, can be set for each event. If the Temperature set is not entered for the individual event, it must be set during programming for each individual unit or for the entire network.

Units without receiver or with receiver can be connected within the network: the former can receive instructions only from the **PSM-DI** wall mounted panel; while the latter can receive information from both the wall mounted panel (**PSM-DI**) and infra-red remote control. Use the infra-red remote control to force ON mode of the individual unit, if ON/OFF daily time programming has been set. The unit will regain the settings from the **PSM-DI** panel during execution of successive start-up program.

The PSM-DI panel cannot be used together with the Sabianet management program (see next page).

Note: set the configuration Dip Switches of each fan coil as illustrated in the remote control use manual, based on the required solutions.

Note: the RS 485 network's overall length must not exceed 700/800 metres.

Sabianet program for managing a network of Sabiana MB fan coils

Description	ID	Code
Hardware/software supervisory system (to be used with MB board only)	Sabianet	9079118

Sabianet is a centralised control system for networks of Sabiana MB fan coils, based on software that runs on LINUX™. The **Sabianet** software offers a practical and economical solution for managing the units, with the simple click of the mouse.

The main characteristics include simplicity of use, an extremely complete and functional weekly program, and the possibility to access the historical operating data for each individual appliance connected.

The program exploits all the potential of our units with remote controls, representing an addition to the latter.

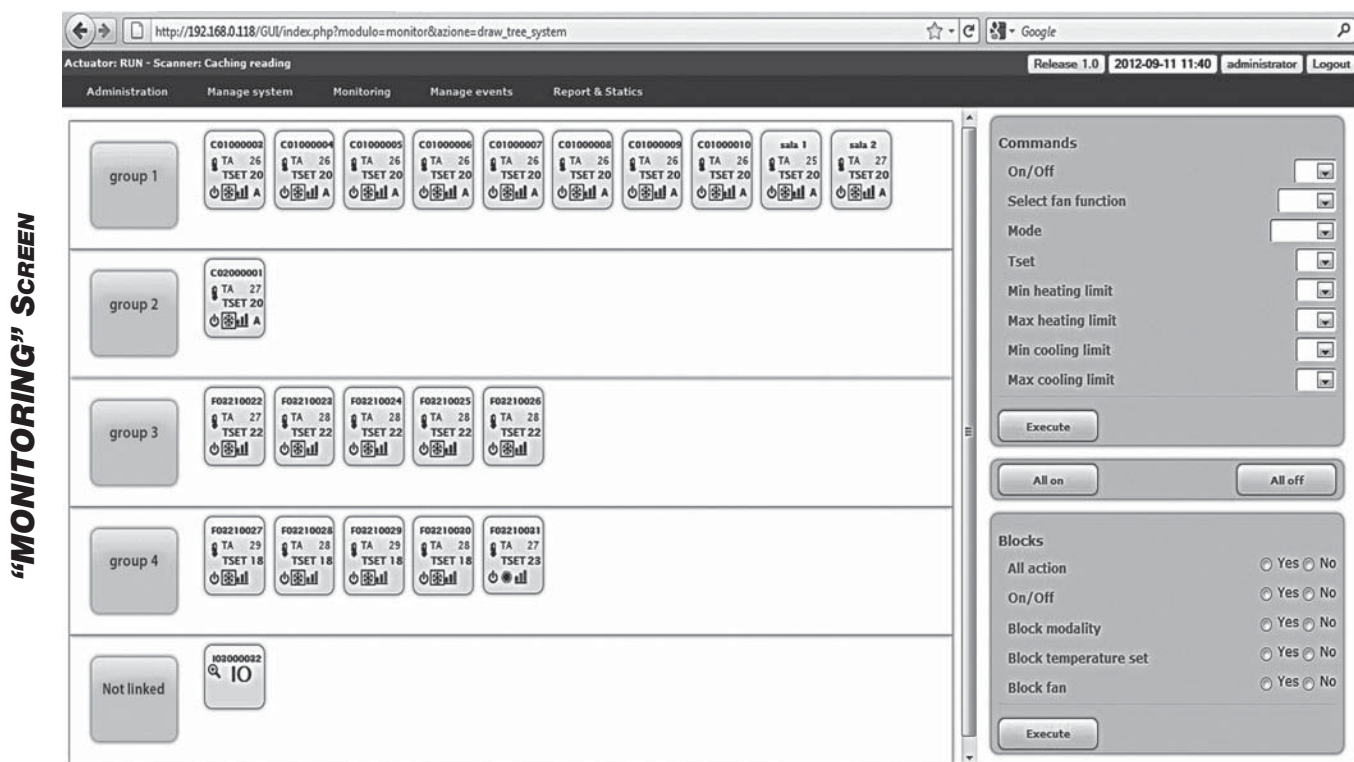
The **Sabianet** program is a control tool that can be used as a replacement for the remote control, or in parallel, however the settings made using **Sabianet** can have priority over those made using the remote control.



The program can be used to:

- Create uniform groups (groups of units on individual floors, in offices or rooms).
- Save weekly programs configured for different types of operation (summer, winter, mid seasons, closing periods etc.); these can then be recalled and activated with a simple click of the mouse.
Weekly on/off cycles can be set for individual units or groups of units.
- Set the operating conditions for each individual unit or groups of units (operating mode, fan speed, temperature setting).
- Set the set point limits for each individual unit or groups of units.
- Switch each individual unit or groups of units ON or OFF.

The main program screen can display and interact with the entire network of units. An individual unit, a group of units or the entire network can be called so as to make modifications to the operating mode and the set point. The user can then check the operating status of each individual unit, read the room temperature, the coil temperature and the operating status of the condensate drain pump or any alarms.

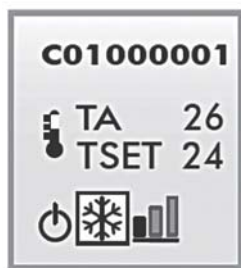


Displaying a unit

The “**MONITORING**” screen shows the units that are connected to the network and scanned by the program.

The icon of the terminal unit provides the following information:

- Unit name (**C01000001**)
- Set temperature (TSET)
- Room temperature (TA)



- Unit status: ON or OFF

- Mode:
 - Summer
 - Winter
 - Auto
 - Fan only
- Fan speed:
 - Low
 - Medium
 - High
 - Autofan



The “Weekly Program” can be used to set the unit operating parameters for each day of the week. Up to 20 different weekly programs can be set.

“EVENT MANAGEMENT” SCREEN

Time bands are available for each day of the week. The time and the type of operation to be performed by the unit can be set for each band. The time and the operating parameters can then be displayed before being sent to the unit and implemented.

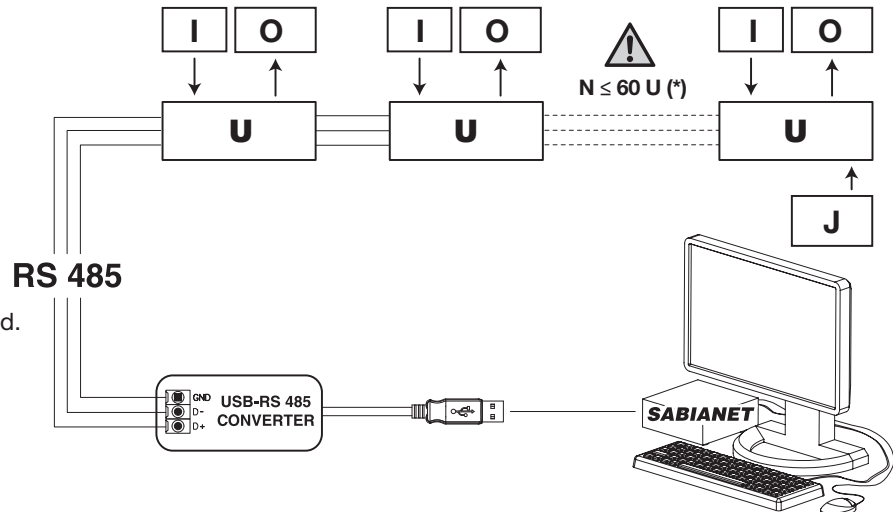
PC Sabianet Software

Connection of a Carisma Fly network MB versions

Legend

- U** = Carisma Fly unit
- I** = Power input
- O** = Outputs for systems
- J** = MC2 jumper to close. Network end.
- N** = 60 units max. (*)

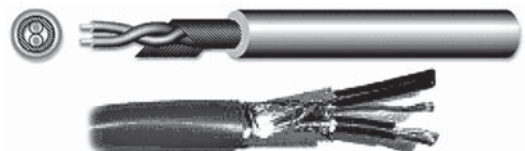
(*) In the event of more than 60 units, add one or more Router-S (see below).



RS 485 serial connection cable

Shielded cable to be used:

Belden 9841, RS-485, 1x2x24 AWG SFTP, 120 Ohm



PSM-DI and Sabianet Accessories

ID	Code
SIOS	3021092

SIOS is a board equipped with 8 relays with potential free contact to control the activation or deactivation of remote electric utilities. Moreover, the board has 8 digital inlets to display the actuators or external consents, such as motor or other. The SIOS boards can be connected:

- inside a network managed by Sabianet;
- to a PSM-DI panel (one SIOS for each PSM-DI panel).



ID	Code
Router-S	3021290

The **Router-S** is an electronic board that:

- allows creating networks with more than 60 units (minimum 2 Router-S are required) or to divide the network (per floor, building, etc.);
- allows creating a Master/Slave sub-network to be controlled as an independent group.

The Router-S can be used only inside a network managed by Sabianet.

The number of Router-S to be used is: -up to 60 units: no Router-S

- from 61 to 120 units: 2 Router-S
- every 60 subsequent units: 1 additional Router-S





THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

CISQ/ICIM

hereby certify that the organization

SABIANA S.p.A.

Head Office and Operative Unit: Via Piave, 53 - I-20011 Corbetta (MI)

Operative Unit: Via Virgilio, 2 - I-20013 Magenta (MI)

for the following field of activities

Design, production and service of heating and air conditioning equipment (unit heaters, radiant panels, fan coil units and air handling units) and chimneys.

has implemented and maintains a

Quality Management System

which fulfills the requirements of the following standard

ISO 9001:2008

Issued on: **2012-04-10**

Validity date: **2015-04-09**

Registration Number: IT-4000



Michael Drechsel

President of IQNET



Gianrenzo Prati

President of CISQ

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CERTIFICATE No. _____

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SABIANA S.p.A.

UNITÀ OPERATIVE
OPERATIVE UNITS

Sede e Unità Operativa
Via Piave, 53 - 20011 Corbetta (MI)
Unità Operativa
Via Virgilio, 2 - 20013 Magenta (MI)
Italia

E' CONFORME ALLA NORMA
IS IN COMPLIANCE WITH THE STANDARD

UNI EN ISO 9001:2008

PER LE SEGUENTI ATTIVITÀ
FOR THE FOLLOWING ACTIVITIES

EA: 18

Progettazione, produzione e assistenza di apparecchiature per il riscaldamento e il condizionamento dell'aria (aerotermi, termostrisce radianti, ventilconvettori e unità trattamento aria) e canne fumarie.

Design, production and service of heating and air conditioning equipment (unit heaters, radiant panels, fan coil units and air handling units) and chimneys.

Riferirsi al Manuale della Qualità per l'applicabilità dei requisiti della norma di riferimento.
Refer to Quality Manual for details of application to reference standard requirements.

Il presente certificato è soggetto al rispetto del regolamento per la certificazione dei sistemi di gestione per la qualità delle aziende.
The use and the validity of this certificate shall satisfy the requirements of the rules for the certification of company quality management systems.

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Air Conditioning
High Wall Fan Coil
Carisma Fly
Carisma Fly-ECM



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