

NEW
Low energy
consumption ECM Motors



Air Conditioning
One Way Cassette Fan Coils
Carisma Coanda CCN
Carisma Coanda CCN-ECM



QUALITY MANAGEMENT SYSTEMS
ISO 9001 - Cert. n° 0545/4



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SABIANA
ENVIRONMENTAL COMFORT

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Introduction

Thanks to the particular air handling section, Carisma Coanda cassette units generate an airflow with a “coanda” effect. The unit is suitable for installation in a suspended ceiling. Air intake is from the bottom while the air supply is parallel to the ceiling, through practical and functional intake and outlet grids. The “coanda” effect creates excellent circulation of the air inside the room.

In addition to the traditional AC asynchronous motors are available a innovative electronic motors with extremely low energy consumption, controlled by an inverter board and identified by ECM.

The EC motors allow to decrease electric consumption by more than 50% compared to traditional AC asynchronous motors. They enable to control the air flow continuously and the ambient temperature with precision, with further benefits in terms of very low noise levels thanks to the reduced average working speed.

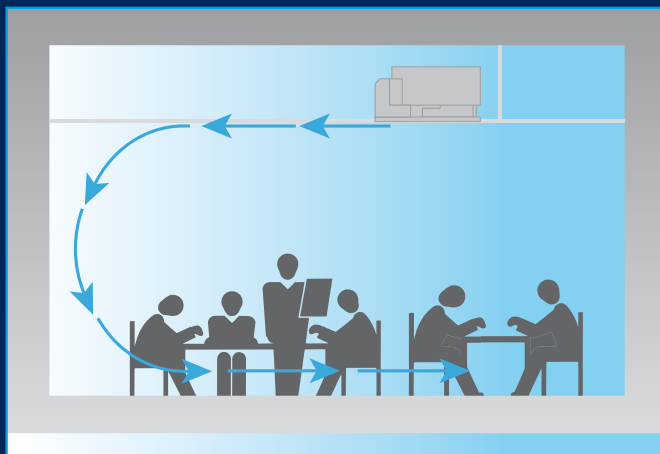
Every unit can be supplied with 1 coil (2 pipe system) and possibly an electric heating element, or with 2 coils (4 pipe system) with one or two rows, for water supply at a low temperature.

Fresh air may be mixed with room air.

A condensate pump may also be supplied as an accessory.

In addition to the conventional temperature and speed control systems, there is also the possibility to control operation of each unit through a single remote control with central supervisor software installed on a PC (Maxinet).

With AC asynchronous motor units it is also possible to use the completely wireless electronic control system based on radio communication, Free Sabiana, with great advantages in terms of installation flexibility and maximum precision in measuring room temperature.



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:

- | | |
|---|--|
| <ul style="list-style-type: none">• Cooling total emission at the following conditions:<ul style="list-style-type: none">- water temperature +7°C E.W.T. +12°C L.W.T.- air temperature +27°C dry bulb +19°C wet bulb• Heating emission (2-pipe units) at the following conditions:<ul style="list-style-type: none">- water temperature +50°C E.W.T.- air temperature +20°C- water flow rate as for the cooling conditions• Fan absorption | <ul style="list-style-type: none">• Cooling sensible emission at the following conditions:<ul style="list-style-type: none">- water temperature +7°C E.W.T. +12°C L.W.T.- air temperature +27°C dry bulb +19°C wet bulb• Heating emission (4-pipe units) at the following conditions:<ul style="list-style-type: none">- water temperature +70°C E.W.T. +60°C L.W.T.- air temperature +20°C• Water pressure drop• Sound power |
|---|--|

Main components

CONSTRUCTIONAL FEATURES OF THE MAIN COMPONENTS

Casing

Made from galvanized steel with closed cell insulation.

Diffuser with intake grille

In prepainted metal sheet in RAL 9003 colour with intake grille that can be opened for inspection and maintenance of the air filter.

Air Filter

Polypropylene cellular fabric regenerating filter.

Fan Assembly

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

Electric motor

The motor is wired for single phase and has 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.

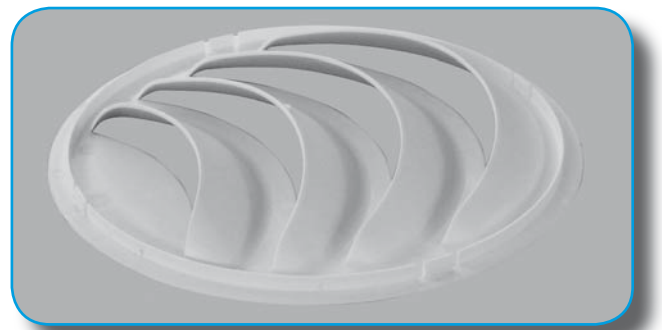
The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion. **The connection side cannot be changed on site.**

Condensate Collection Tray

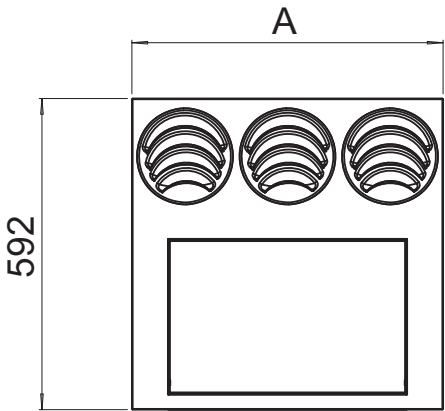
Made from plastic with an "L"-shape fitted on the inner casing.
The outside diameter of the condensate discharge pipe is 15mm.

Round diffuser

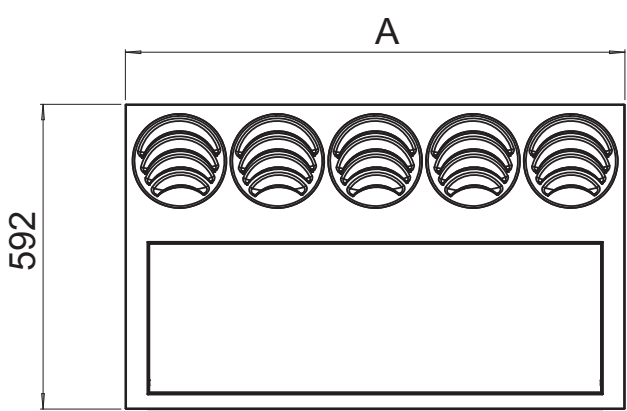
The Carisma Coanda one-way cassette units are supplied with round diffusers suitably designed to generate an airflow with "coanda" effect. The direction of diffuser air flow can be adjusted on site.



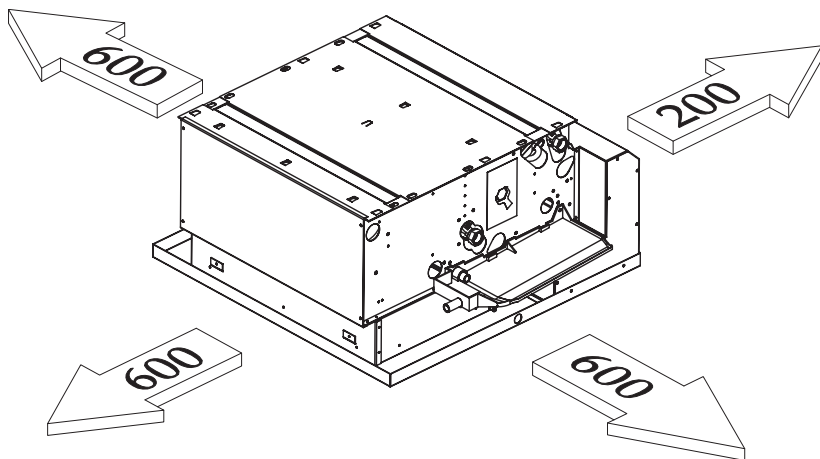
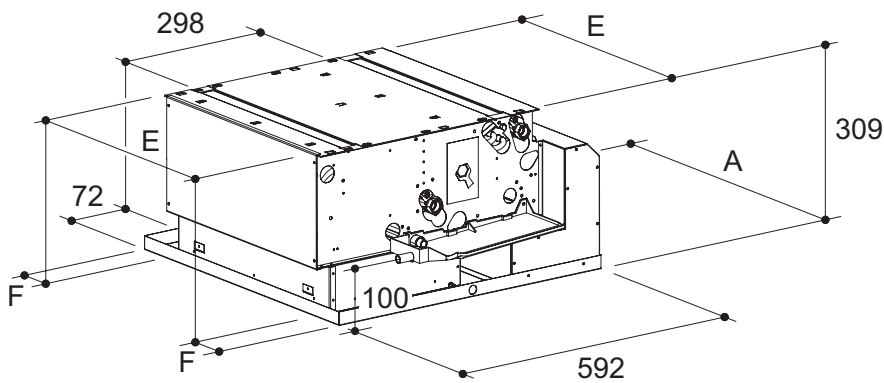
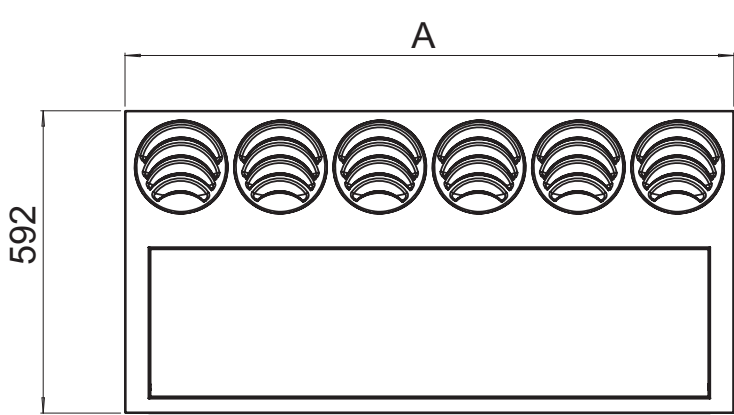
Carisma Coanda Gr 1 - 3 diffusers

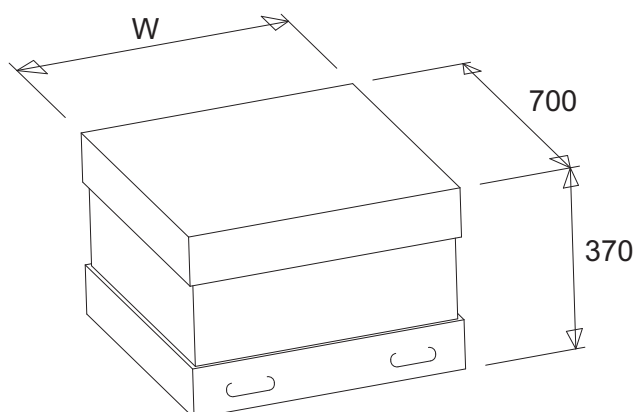


Carisma Coanda Gr 2 - 5 diffusers



Carisma Coanda Gr 3 - 6 diffusers





DIMENSIONS (mm)

MODEL	1	2	3
A	592	970	1192
E	454	884	1099
F	78	43	46,5
W	750	1130	1350

WEIGHT (kg)

		Weight packed unit			Weight unpacked unit		
MODEL		1	2	3	1	2	3
Rows	3	18	34	44	16	33	42
	3+1	20	40	51	19	38	48
	3+2	23	46	58	22	43	54
	4	20	37	48	18	35	45
	4+1	23	42	54	21	40	51

WATER CONTENT (l)

MODEL		1	2	3
Rows	3	0,6	1,3	1,7
	4	0,8	1,7	2,4
	+1	0,2	0,4	0,5
	+2	0,4	0,8	1,0

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		CCN 13						CCN 23						CCN 33					
Speed		1 (E)	2 (E)	3	4	5 (E)	6	1 (E)	2 (E)	3	4 (E)	5	6	1 (E)	2	3 (E)	4 (E)	5	6
		MIN	MED			MAX		MIN	MED		MAX			MIN		MED	MAX		
Air flow	m ³ /h	140	180	220	245	280	305	200	240	305	380	470	560	290	360	440	540	620	680
Cooling total emission (E)	kW	0,88	1,06	1,26	1,35	1,50	1,60	1,37	1,62	1,97	2,37	2,81	3,23	1,97	2,37	2,84	3,34	3,75	4,05
Cooling sensible emission (E)	kW	0,66	0,81	0,98	1,06	1,18	1,27	1,00	1,19	1,47	1,77	2,13	2,47	1,44	1,74	2,11	2,51	2,83	3,07
Heating (E)	kW	1,08	1,33	1,59	1,73	1,93	2,08	1,60	1,91	2,35	2,86	3,43	3,95	2,30	2,79	3,37	4,02	4,53	4,88
ΔP Cooling (E)	kPa	2,4	3,3	4,5	5,1	6,1	6,8	2,9	3,9	5,5	7,6	10,3	13,1	6,4	8,8	12,1	16,2	19,8	22,7
ΔP Heating (E)	kPa	1,8	2,6	3,5	4,0	4,9	5,6	2,3	3,1	4,5	6,3	8,4	10,8	5,2	7,3	9,8	13,4	16,3	18,6
Fan (E)	W	16	22	32	38	49	66	24	27	34	44	57	71	27	33	42	59	72	84
Sound power (E)	Lw dB(A)	35	41	46	49	52	55	33	36	42	48	54	57	35	41	46	52	55	57
Sound pressure (*)	Lp dB(A)	26	32	37	40	43	46	24	27	33	39	45	48	26	32	37	43	46	48

MODEL		CCN 14						CCN 24						CCN 34					
Speed		1 (E)	2 (E)	3	4	5 (E)	6	1 (E)	2 (E)	3	4 (E)	5	6	1	2 (E)	3	4 (E)	5 (E)	6
		MIN	MED			MAX		MIN	MED		MAX			MIN		MED	MAX		
Air flow	m ³ /h	140	180	220	245	280	305	200	240	305	380	470	560	290	360	440	540	620	680
Cooling total emission (E)	kW	0,97	1,19	1,44	1,55	1,74	1,87	1,44	1,72	2,12	2,57	3,09	3,58	2,05	2,49	3,00	3,56	4,02	4,36
Cooling sensible emission (E)	kW	0,71	0,88	1,07	1,17	1,31	1,42	1,04	1,24	1,54	1,88	2,28	2,67	1,48	1,81	2,20	2,63	2,98	3,25
Heating (E)	kW	1,14	1,42	1,72	1,88	2,10	2,27	1,69	2,03	2,54	3,12	3,79	4,44	2,38	2,90	3,51	4,20	4,77	5,20
ΔP Cooling (E)	kPa	4,7	6,7	9,2	10,6	12,9	14,6	4,4	6,0	8,6	12,1	16,8	21,7	4,7	6,7	9,3	12,6	15,5	17,9
ΔP Heating (E)	kPa	3,7	5,4	7,6	8,8	10,7	12,3	3,5	4,8	7,1	10,2	13,6	17,9	3,9	5,5	7,3	10,0	12,6	14,6
Fan (E)	W	16	22	32	38	49	66	24	27	34	44	57	71	27	33	42	59	72	84
Sound power (E)	Lw dB(A)	35	41	46	49	52	55	33	36	42	48	54	57	35	41	46	52	55	57
Sound pressure (*)	Lp dB(A)	26	32	37	40	43	46	24	27	33	39	45	48	26	32	37	43	46	48

4-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: + 70°C E.W.T. / + 60°C L.W.T.

MODEL		CCN 13 + 1						CCN 23 + 1						CCN 33 + 1					
Speed		1 (E)	2 (E)	3	4	5 (E)	6	1 (E)	2 (E)	3	4 (E)	5	6	1 (E)	2	3 (E)	4 (E)	5	6
		MIN	MED			MAX		MIN	MED		MAX			MIN		MED	MAX		
Air flow	m ³ /h	140	180	220	245	280	305	200	240	305	380	470	560	290	360	440	540	620	680
Cooling total emission (E)	kW	0,88	1,06	1,26	1,35	1,50	1,60	1,37	1,62	1,97	2,37	2,81	3,23	1,97	2,37	2,84	3,34	3,75	4,05
Cooling sensible emission (E)	kW	0,66	0,81	0,98	1,06	1,18	1,27	1,00	1,19	1,47	1,77	2,13	2,47	1,44	1,74	2,11	2,51	2,83	3,07
Heating (E)	kW	0,92	1,08	1,25	1,34	1,47	1,56	1,49	1,71	2,02	2,35	2,73	3,07	2,12	2,47	2,87	3,30	3,64	3,89
ΔP Cooling (E)	kPa	2,4	3,3	4,5	5,1	6,1	6,8	2,9	3,9	5,5	7,6	10,3	13,1	6,4	8,8	12,1	16,2	19,8	22,7
ΔP Heating (E)	kPa	1,6	2,1	2,7	3,1	3,6	4,0	0,9	1,2	1,6	2,0	2,6	3,2	2,0	2,6	3,4	4,3	5,1	5,8
Fan (E)	W	16	22	32	38	49	66	24	27	34	44	57	71	27	33	42	59	72	84
Sound power (E)	Lw dB(A)	35	41	46	49	52	55	33	36	42	48	54	57	35	41	46	52	55	57
Sound pressure (*)	Lp dB(A)	26	32	37	40	43	46	24	27	33	39	45	48	26	32	37	43	46	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..... + 80 °C

MIn. entering water temperature..... + 5 °C

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

Max. rated pressure 1000 kPa (10 bars)

Installation height (m)

MODEL	1	2	3
Minimum	2,6	2,6	2,6
Maximum	3,2	3,2	3,5

Water flow limits for main coil (l/h)

MODEL	3 rows			4 rows		
	13	23	33	14	24	34
Minimum	100	150	150	100	150	200
Maximum	500	1000	1500	750	1000	2000

Water flow limits for additional coil (l/h)

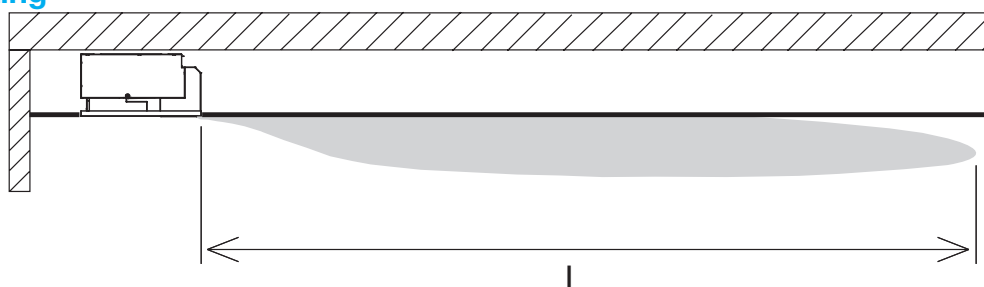
MODEL	1 row			2 rows		
	1	2	3	1	2	3
Minimum	50	100	100	50	100	100
Maximum	250	450	650	250	450	650

Motor electrical data (max. absorption)

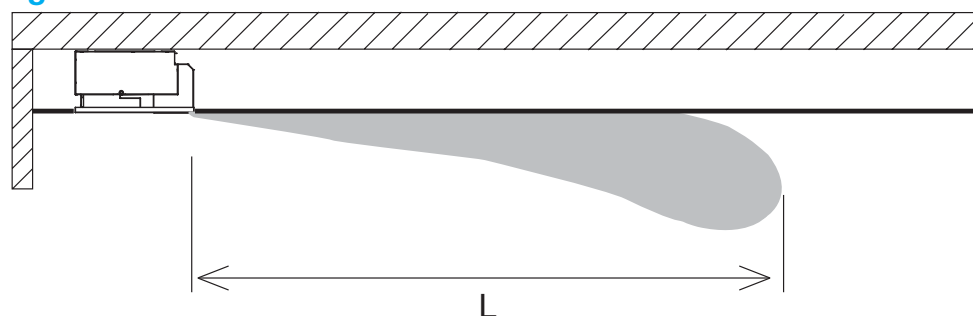
MODEL		1	2	3
230/1 50Hz	W	66	71	84
	A	0,30	0,32	0,38

AIR THROW

C1 - Heating



C2 - Cooling



		Carisma Coanda CCN 1						Carisma Coanda CCN 2						Carisma Coanda CCN 3					
MODEL		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Air throw L (m)	C1	3,8	4,5	5,8	6,3	6,8	7,2	4	5	6,1	7	8	9	4,5	5,2	6,3	7,5	8,8	9,5
	C2	3	3,6	4,6	5	5,4	5,7	3,2	4	4,8	5,6	6,4	7,2	3,6	4,1	5	6	7	7,6

Cooling emission of 3 row coil

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	Speed		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			
CCN 13	VI		305	1,73	1,27	298	7,8	1,54	1,19	265	6,3	1,14	1,04	196	3,7	0,91	0,91	157	2,5			
	V	MAX	280	1,62	1,18	279	7,0	1,44	1,11	248	5,6	1,07	0,97	184	3,3	0,85	0,85	146	2,2			
	IV		245	1,46	1,06	251	5,8	1,30	0,99	224	4,7	0,97	0,86	167	2,8	0,76	0,76	131	1,8			
	III		220	1,36	0,97	234	5,1	1,21	0,92	208	4,2	0,91	0,80	157	2,5	0,70	0,70	120	1,5			
	II	MED	180	1,14	0,81	196	3,8	1,02	0,76	175	3,1	0,77	0,66	132	1,8	0,59	0,59	101	1,1			
	I	MIN	140	0,95	0,66	163	2,7	0,85	0,62	146	2,2	0,64	0,54	110	1,3	0,48	0,48	83	0,8			
CCN 23	VI		560	3,47	2,46	597	14,9	3,12	2,32	537	12,2	2,36	2,02	406	7,4	1,78	1,78	306	4,4			
	V		470	3,03	2,13	521	11,7	2,72	2,00	468	9,6	2,06	1,74	354	5,8	1,54	1,54	265	3,4			
	IV	MAX	380	2,54	1,77	437	8,6	2,29	1,66	394	7,1	1,74	1,45	299	4,3	1,28	1,28	220	2,5			
	III		305	2,12	1,46	365	6,3	1,91	1,37	329	5,2	1,46	1,19	251	3,2	1,06	1,06	182	1,8			
	II	MED	240	1,74	1,19	299	4,4	1,57	1,12	270	3,6	1,20	0,97	206	2,2	0,86	0,86	148	1,2			
	I	MIN	200	1,47	1,00	253	3,3	1,32	0,94	227	2,7	1,02	0,81	175	1,7	0,72	0,72	124	0,9			
CCN 33	VI		680	4,36	3,06	750	25,8	3,91	2,88	673	21,2	2,98	2,51	513	13,0	2,22	2,22	382	7,6			
	V		620	4,03	2,82	693	22,5	3,63	2,65	624	18,6	2,77	2,31	476	11,4	2,04	2,04	351	6,6			
	IV	MAX	540	3,59	2,50	617	18,4	3,23	2,35	556	15,2	2,47	2,05	425	9,3	1,81	1,81	311	5,3			
	III	MED	440	3,05	2,10	525	13,8	2,75	1,98	473	11,4	2,11	1,72	363	7,0	1,52	1,52	261	3,9			
	II		360	2,55	1,74	439	10,0	2,30	1,64	396	8,3	1,77	1,42	304	5,2	1,26	1,26	217	2,8			
	I	MIN	290	2,11	1,44	363	7,2	1,91	1,35	329	6,0	1,47	1,17	253	3,7	1,04	1,04	179	2,0			

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	Speed	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	
CCN 13	VI		305	1,53	1,19	263	6,3	1,34	1,12	230	5,0	0,99	0,99	170	2,9	0,83	0,83	143	2,1
	V	MAX	280	1,43	1,11	246	5,6	1,26	1,04	217	4,4	0,92	0,92	158	2,5	0,77	0,77	132	1,8
	IV		245	1,30	0,99	224	4,7	1,14	0,93	196	3,7	0,80	0,80	138	2,0	0,69	0,69	119	1,5
	III		220	1,21	0,92	208	4,1	1,06	0,86	182	3,3	0,75	0,74	129	1,7	0,64	0,64	110	1,3
	II	MED	180	1,02	0,76	175	3,1	0,90	0,71	155	2,4	0,63	0,61	108	1,3	0,54	0,54	93	1,0
	I	MIN	140	0,84	0,62	144	2,2	0,74	0,58	127	1,8	0,53	0,50	91	1,0	0,44	0,44	76	0,7
CCN 23	VI		560	3,10	2,32	533	12,2	2,74	2,17	471	9,7	1,96	1,87	337	5,3	1,63	1,63	280	3,8
	V		470	2,70	2,00	464	9,5	2,39	1,87	411	7,6	1,72	1,61	296	4,2	1,40	1,40	241	2,9
	IV	MAX	380	2,27	1,67	390	7,1	2,01	1,56	346	5,7	1,46	1,34	251	3,2	1,18	1,18	203	2,1
	III		305	1,90	1,38	327	5,1	1,68	1,29	289	4,1	1,23	1,11	212	2,3	0,97	0,97	167	1,5
	II	MED	240	1,55	1,12	267	3,6	1,38	1,05	237	2,9	1,01	0,90	174	1,7	0,79	0,79	136	1,0
	I	MIN	200	1,31	0,94	225	2,7	1,17	0,88	201	2,2	0,86	0,75	148	1,2	0,66	0,66	114	0,8
CCN 33	VI		680	3,89	2,89	669	21,2	3,45	2,70	593	17,0	2,50	2,33	430	9,5	2,03	2,03	349	6,5
	V		620	3,60	2,66	619	18,5	3,20	2,49	550	14,9	2,32	2,15	399	8,4	1,87	1,87	322	5,6
	IV	MAX	540	3,21	2,36	552	15,1	2,85	2,21	490	12,2	2,08	1,90	358	6,9	1,65	1,65	284	4,5
	III	MED	440	2,73	1,98	470	11,3	2,42	1,85	416	9,1	1,78	1,60	306	5,2	1,40	1,40	241	3,4
	II		360	2,28	1,64	392	8,3	2,03	1,54	349	6,7	1,49	1,32	256	3,8	1,15	1,15	198	2,4
	I	MIN	290	1,89	1,36	325	6,0	1,69	1,27	291	4,8	1,24	1,09	213	2,8	0,95	0,95	163	1,7

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	Speed	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		
CCN 13	VI		305	1,34	1,12	230	5,0	1,15	1,04	198	3,8	0,91	0,91	157	2,5	0,75	0,75	129	1,7	
	V	MAX	280	1,26	1,04	217	4,5	1,08	0,97	186	3,4	0,85	0,85	146	2,2	0,70	0,70	120	1,5	
	IV		245	1,14	0,93	196	3,7	0,98	0,87	169	2,9	0,76	0,76	131	1,8	0,63	0,63	108	1,3	
	III		220	1,06	0,86	182	3,3	0,91	0,80	157	2,5	0,70	0,70	120	1,6	0,58	0,58	100	1,1	
	II	MED	180	0,89	0,71	153	2,4	0,77	0,66	132	1,9	0,59	0,59	101	1,1	0,48	0,48	83	0,8	
	I	MIN	140	0,74	0,58	127	1,8	0,64	0,54	110	1,4	0,48	0,48	83	0,8	0,40	0,40	69	0,6	
CCN 23	VI		560	2,73	2,18	470	9,7	2,37	2,03	408	7,5	1,79	1,79	308	4,5	1,48	1,48	255	3,2	
	V		470	2,38	1,88	409	7,7	2,07	1,75	356	5,9	1,54	1,54	265	3,5	1,27	1,27	218	2,5	
	IV	MAX	380	2,01	1,56	346	5,7	1,75	1,46	301	4,4	1,29	1,29	222	2,5	1,07	1,07	184	1,8	
	III		305	1,68	1,29	289	4,1	1,46	1,20	251	3,2	1,06	1,06	182	1,8	0,88	0,88	151	1,3	
	II	MED	240	1,38	1,05	237	2,9	1,20	0,98	206	2,3	0,86	0,86	148	1,2	0,71	0,71	122	0,9	
	I	MIN	200	1,16	0,88	200	2,2	1,02	0,82	175	1,7	0,69	0,69	119	0,9	0,60	0,60	103	0,7	
CCN 33	VI		680	3,44	2,71	592	17,0	2,99	2,53	514	13,2	2,22	2,22	382	7,7	1,84	1,84	316	5,5	
	V		620	3,19	2,50	549	14,9	2,78	2,33	478	11,6	2,05	2,05	353	6,7	1,70	1,70	292	4,7	
	IV	MAX	540	2,84	2,21	488	12,2	2,48	2,06	427	9,5	1,81	1,81	311	5,4	1,50	1,50	258	3,8	
	III	MED	440	2,41	1,86	415	9,1	2,11	1,73	363	7,1	1,53	1,53	263	4,0	1,27	1,27	218	2,8	
	II		360	2,02	1,54	347	6,7	1,77	1,43	304	5,2	1,26	1,26	217	2,9	1,05	1,05	181	2,0	
	I	MIN	290	1,68	1,27	289	4,8	1,47	1,18	253	3,8	1,01	1,00	174	1,9	0,86	0,86	148	1,4	

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	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

Cooling emission of 4 row coil

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
CCN 14	VI	305	2,01	1,42	346	16,7	1,80	1,33	310	13,7	1,36	1,16	234	8,2	1,02	1,02	175	4,9
	V MAX	280	1,87	1,31	322	14,6	1,68	1,23	289	12,0	1,27	1,07	218	7,3	0,95	0,95	163	4,3
	IV	245	1,67	1,16	287	12,1	1,50	1,09	258	9,9	1,14	0,95	196	6,0	0,84	0,84	144	3,5
	III	220	1,54	1,07	265	10,5	1,39	1,00	239	8,6	1,06	0,87	182	5,3	0,77	0,77	132	3,0
	II MED	180	1,28	0,88	220	7,6	1,15	0,83	198	6,2	0,88	0,72	151	3,8	0,64	0,64	110	2,1
	I MIN	140	1,05	0,71	181	5,3	0,94	0,67	162	4,4	0,72	0,58	124	2,7	0,52	0,52	89	1,5
CCN 24	VI	560	3,85	2,66	662	24,7	3,47	2,50	597	20,4	2,65	2,18	456	12,6	1,93	1,93	332	7,0
	V	470	3,32	2,28	571	19,0	2,99	2,14	514	15,7	2,30	1,86	396	9,7	1,65	1,65	284	5,4
	IV MAX	380	2,76	1,88	475	13,7	2,49	1,77	428	11,4	1,92	1,54	330	7,1	1,36	1,36	234	3,8
	III	305	2,28	1,54	392	9,8	2,06	1,45	354	8,1	1,59	1,26	273	5,1	1,11	1,11	191	2,7
	II MED	240	1,84	1,24	316	6,8	1,67	1,17	287	5,6	1,29	1,01	222	3,5	0,85	0,85	146	1,7
	I MIN	200	1,54	1,04	265	4,9	1,40	0,97	241	4,1	1,09	0,85	187	2,6	0,72	0,71	124	1,2
CCN 34	VI	680	4,69	3,24	807	20,3	4,22	3,05	726	16,8	3,23	2,65	556	10,4	2,34	2,34	402	5,8
	V MAX	620	4,32	2,98	743	17,6	3,89	2,80	669	14,6	2,98	2,44	513	9,0	2,15	2,15	370	5,0
	IV MED	540	3,83	2,62	659	14,2	3,45	2,47	593	11,8	2,65	2,15	456	7,3	1,90	1,90	327	4,0
	III	440	3,22	2,19	554	10,5	2,91	2,06	501	8,7	2,24	1,79	385	5,4	1,59	1,59	273	2,9
	II	360	2,67	1,81	459	7,5	2,41	1,70	415	6,3	1,86	1,48	320	3,9	1,30	1,30	224	2,1
	I	290	2,20	1,48	378	5,4	1,99	1,39	342	4,5	1,54	1,21	265	2,8	1,01	1,01	174	1,3

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
CCN 14	VI	305	1,79	1,33	308	13,6	1,58	1,25	272	10,9	1,14	1,07	196	6,0	0,94	0,94	162	4,2
	V MAX	280	1,67	1,23	287	12,0	1,47	1,15	253	9,6	1,06	0,99	182	5,3	0,87	0,87	150	3,7
	IV	245	1,49	1,10	256	9,9	1,32	1,03	227	7,9	0,96	0,88	165	4,4	0,77	0,77	132	3,0
	III	220	1,38	1,01	237	8,6	1,22	0,94	210	6,9	0,89	0,81	153	3,9	0,71	0,71	122	2,6
	II MED	180	1,15	0,83	198	6,2	1,02	0,78	175	5,0	0,74	0,67	127	2,8	0,58	0,58	100	1,8
	I MIN	140	0,94	0,67	162	4,3	0,83	0,63	143	3,5	0,61	0,54	105	2,0	0,47	0,47	81	1,3
CCN 24	VI	560	3,44	2,51	592	20,3	3,06	2,35	526	16,3	2,24	2,02	385	9,3	1,76	1,76	303	6,0
	V	470	2,97	2,15	511	15,6	2,64	2,01	454	12,6	1,94	1,73	334	7,2	1,51	1,51	260	4,6
	IV MAX	380	2,47	1,77	425	11,3	2,20	1,66	378	9,2	1,62	1,43	279	5,3	1,25	1,25	215	3,3
	III	305	2,04	1,45	351	8,1	1,82	1,36	313	6,6	1,35	1,17	232	3,8	1,02	1,02	175	2,3
	II MED	240	1,65	1,17	284	5,6	1,48	1,10	255	4,5	1,10	0,94	189	2,6	0,82	0,82	141	1,6
	I MIN	200	1,39	0,98	239	4,1	1,24	0,91	213	3,3	0,92	0,78	158	2,0	0,68	0,68	117	1,1
CCN 34	VI	680	4,19	3,06	721	16,7	3,72	2,86	640	13,5	2,72	2,46	468	7,7	2,15	2,15	370	5,0
	V MAX	620	3,87	2,81	666	14,5	3,43	2,63	590	11,7	2,52	2,26	433	6,7	1,97	1,97	339	4,3
	IV MED	540	3,43	2,47	590	11,7	3,05	2,31	525	9,5	2,24	1,99	385	5,4	1,74	1,74	299	3,5
	III	440	2,88	2,07	495	8,7	2,57	1,93	442	7,0	1,89	1,66	325	4,0	1,45	1,45	249	2,5
	II	360	2,39	1,70	411	6,2	2,13	1,59	366	5,1	1,58	1,37	272	2,9	1,19	1,19	205	1,8
	I	290	1,97	1,40	339	4,4	1,76	1,31	303	3,6	1,31	1,12	225	2,1	0,98	0,98	169	1,3

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 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
CCN 14	VI	305	1,58	1,25	272	10,9	1,37	1,16	236	8,4	1,03	1,03	177	5,0	0,85	0,85	146	3,5
	V MAX	280	1,47	1,16	253	9,6	1,27	1,08	218	7,4	0,95	0,95	163	4,4	0,78	0,78	134	3,1
	IV	245	1,32	1,03	227	7,9	1,14	0,96	196	6,1	0,84	0,84	144	3,5	0,70	0,70	120	2,5
	III	220	1,22	0,94	210	6,9	1,06	0,88	182	5,4	0,78	0,78	134	3,1	0,64	0,64	110	2,2
	II MED	180	1,01	0,78	174	5,0	0,88	0,72	151	3,9	0,64	0,64	110	2,2	0,53	0,53	91	1,5
	I MIN	140	0,83	0,63	143	3,5	0,72	0,58	124	2,7	0,52	0,52	89	1,5	0,43	0,43	74	1,1
CCN 24	VI	560	3,05	2,36	525	16,4	2,66	2,19	458	12,8	1,93	1,93	332	7,2	1,60	1,60	275	5,1
	V	470	2,63	2,02	452	12,6	2,30	1,88	396	9,9	1,65	1,65	284	5,5	1,37	1,37	236	3,9
	IV MAX	380	2,19	1,66	377	9,2	1,92	1,55	330	7,2	1,31	1,31	225	3,6	1,14	1,14	196	2,8
	III	305	1,81	1,36	311	6,6	1,59	1,27	273	5,2	1,09	1,07	187	2,6	0,93	0,93	160	2,0
	II MED	240	1,47	1,10	253	4,5	1,29	1,02	222	3,6	0,90	0,86	155	1,9	0,75	0,75	129	1,3
	I MIN	200	1,23	0,92	212	3,3	1,08	0,85	186	2,6	0,76	0,72	131	1,4	0,62	0,62	107	1,0
CCN 34	VI	680	3,71	2,87	638	13,5	3,24	2,67	557	10,5	2,35	2,35	404	5,9	1,95	1,95	335	4,2
	V MAX	620	3,42	2,63	588	11,7	2,99	2,45	514	9,2	2,16	2,16	372	5,1	1,79	1,79	308	3,6
	IV MED	540	3,03	2,32	521	9,5	2,65	2,16	456	7,4	1,91	1,91	329	4,1	1,58	1,58	272	2,9
	III	440	2,56	1,94	440	7,0	2,24	1,80	385	5,5	1,53	1,52	263	2,8	1,32	1,32	227	2,1
	II	360	2,12	1,60	365	5,0	1,86	1,49	320	4,0	1,28	1,25	220	2,0	1,09	1,09	187	1,5
	I	290	1,75	1,31	301	3,6	1,54	1,22	265	2,8	1,07	1,03	184	1,5	0,89	0,89	153	1,1

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

Pc = Cooling Total emission

Ps = Cooling Sensible emission

Qw = Water flow

Dp(c) = Water side
pressure drop

Speed = Fan speed

MAX = High speed

MED = Medium speed

MIN = Low speed

Qv = Air flow

Heating emission of 3 row coil

Entering air temperature: +20°C

Model	Speed	WT: 70/60°C				WT: 60/50°C			WT: 50/40°			WT: 50/45°			WT: 45/40°		
		Qv m³/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
CCN 13	VI	305	3,54	304	6,3	2,71	233	4,1	1,87	161	2,2	2,16	372	9,5	1,75	301	6,7
	V MAX	280	3,29	283	5,6	2,51	216	3,6	1,74	150	1,9	2,01	346	8,4	1,62	279	5,9
	IV	245	2,94	253	4,6	2,25	194	2,9	1,56	134	1,6	1,80	310	6,9	1,45	249	4,8
	III	220	2,71	233	4,0	2,07	178	2,5	1,44	124	1,4	1,66	286	6,0	1,34	230	4,2
	II MED	180	2,26	194	2,9	1,73	149	1,9	1,20	103	1,0	1,38	237	4,3	1,12	193	3,0
	I MIN	140	1,84	158	2,0	1,41	121	1,3	0,98	84	0,7	1,12	193	3,0	0,91	157	2,1
CCN 23	VI	560	6,64	571	10,7	5,10	439	6,9	3,55	305	3,8	4,06	698	16,1	3,29	566	11,3
	V	470	5,77	496	8,3	4,43	381	5,4	3,09	266	3,0	3,52	605	12,5	2,86	492	8,8
	IV MAX	380	4,79	412	6,0	3,68	316	3,9	2,57	221	2,1	2,93	504	9,0	2,38	409	6,4
	III	305	3,95	340	4,3	3,03	261	2,8	2,12	182	1,5	2,41	415	6,4	1,96	337	4,5
	II MED	240	3,20	275	2,9	2,46	212	1,9	1,72	148	1,1	1,95	335	4,4	1,59	273	3,1
	I MIN	200	2,68	230	2,2	2,07	178	1,4	1,45	125	0,8	1,64	282	3,3	1,33	229	2,3
CCN 33	VI	680	8,20	705	18,0	6,30	542	11,7	4,40	378	6,4	5,01	862	27,1	4,07	700	19,1
	V	620	7,61	654	15,8	5,85	503	10,3	4,09	352	5,6	4,65	800	23,8	3,77	648	16,8
	IV MAX	540	6,73	579	12,7	5,18	445	8,3	3,62	311	4,6	4,11	707	19,2	3,34	574	13,5
	III MED	440	5,65	486	9,4	4,35	374	6,1	3,04	261	3,4	3,45	593	14,1	2,80	482	9,9
	II	360	4,67	402	6,7	3,60	310	4,4	2,52	217	2,4	2,85	490	10,1	2,32	399	7,1
	I MIN	290	3,85	331	4,8	2,96	255	3,1	2,08	179	1,7	2,35	404	7,2	1,91	329	5,1

Heating emission of 4 row coil

Entering air temperature: +20°C

Model	Speed	WT: 70/60°C				WT: 60/50°C			WT: 50/40°			WT: 50/45°			WT: 45/40°		
		Qv m³/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
CCN 14	VI	305	3,80	327	11,7	2,92	251	7,6	2,03	175	4,2	2,32	399	17,7	1,88	323	12,4
	V MAX	280	3,52	303	10,2	2,70	232	6,6	1,88	162	3,6	2,15	370	15,4	1,74	299	10,8
	IV	245	3,14	270	8,4	2,42	208	5,5	1,69	145	3,0	1,92	330	12,7	1,56	268	8,9
	III	220	2,89	249	7,2	2,22	191	4,7	1,55	133	2,6	1,77	304	10,9	1,43	246	7,7
	II MED	180	2,37	204	5,1	1,83	157	3,3	1,28	110	1,8	1,45	249	7,7	1,18	203	5,4
	I MIN	140	1,92	165	3,5	1,48	127	2,3	1,03	89	1,3	1,17	201	5,3	0,95	163	3,7
CCN 24	VI	560	7,46	642	18,2	5,75	495	11,8	4,04	347	6,6	4,56	784	27,3	3,71	638	19,4
	V	470	6,37	548	13,8	4,92	423	9,0	3,46	298	5,0	3,90	671	20,7	3,17	545	14,7
	IV MAX	380	5,22	449	9,7	4,03	347	6,3	2,84	244	3,5	3,19	549	14,6	2,60	447	10,4
	III	305	4,25	366	6,7	3,28	282	4,4	2,31	199	2,5	2,60	447	10,1	2,12	365	7,2
	II MED	240	3,40	292	4,5	2,63	226	3,0	1,85	159	1,7	2,08	358	6,9	1,69	291	4,9
	I MIN	200	2,82	243	3,3	2,18	187	2,2	1,54	132	1,2	1,73	298	4,9	1,41	243	3,5
CCN 34	VI	680	8,72	750	13,9	6,71	577	9,1	4,70	404	5,0	5,33	917	20,9	4,33	745	14,8
	V MAX	620	8,00	688	12,0	6,16	530	7,8	4,31	371	4,3	4,89	841	18,0	3,97	683	12,7
	IV MED	540	7,04	605	9,6	5,42	466	6,2	3,80	327	3,4	4,30	740	14,4	3,40	585	10,2
	III	440	5,87	505	6,9	4,52	389	4,5	3,18	273	2,5	3,59	617	10,4	2,92	502	7,4
	II MIN	360	4,83	415	4,9	3,72	320	3,2	2,62	225	1,8	2,95	507	7,4	2,40	413	5,3
	I	290	3,96	341	3,5	3,06	263	2,3	2,15	185	1,3	2,42	416	5,2	1,97	339	3,7

Legend

WT = Water temperature

Ph = Emission

Qw = Water flow

Dp(c) = Water side pressure drop

Speed = Fan speed

MAX = High speed

MED = Medium speed

MIN = Low speed

Qv = Air flow

Emissions

Heating emission of 1 row additional coil

Entering air temperature: +20°C

Model	Speed	Qv m³/h	WT: 80/70°C				WT: 75/65°				WT: 70/60°				WT: 65/55°				WT: 60/50°				WT: 55/45°			
			Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)
CCN 13+1 14+1	VI		305	1,95	168	5,8	1,75	151	4,9	1,56	134	4,0	1,36	117	3,2	1,17	101	2,5	0,97	83	1,8					
	V	MAX	280	1,83	157	5,2	1,65	142	4,4	1,47	126	3,6	1,28	110	2,9	1,10	95	2,2	0,92	79	1,6					
	IV		245	1,67	144	4,4	1,51	130	3,7	1,34	115	3,1	1,17	101	2,5	1,00	86	1,9	0,84	72	1,4					
	III		220	1,57	135	3,9	1,41	121	3,3	1,25	108	2,7	1,10	95	2,2	0,94	81	1,7	0,78	67	1,3					
	II	MED	180	1,35	116	3,0	1,22	105	2,5	1,08	93	2,1	0,95	82	1,7	0,81	70	1,3	0,68	58	1,0					
	I	MIN	140	1,15	99	2,3	1,03	89	1,9	0,92	79	1,6	0,81	70	1,3	0,69	59	1,0	0,58	50	0,7					
CCN 23+1 24+1	VI		560	3,84	330	4,7	3,46	298	3,9	3,07	264	3,2	2,37	204	1,0	2,31	199	2,0	1,93	166	1,5					
	V		470	3,41	293	3,8	3,07	264	3,2	2,73	235	2,6	2,10	181	0,8	2,05	176	1,6	1,71	147	1,2					
	IV	MAX	380	2,94	253	2,9	2,65	228	2,5	2,35	202	2,0	1,82	157	0,6	1,77	152	1,3	1,48	127	0,9					
	III		305	2,52	217	2,2	2,27	195	1,9	2,02	174	1,6	1,57	135	0,5	1,52	131	1,0	1,27	109	0,7					
	II	MED	240	2,14	184	1,7	1,93	166	1,4	1,71	147	1,2	1,33	114	0,4	1,29	111	0,7	1,08	93	0,5					
	I	MIN	200	1,86	160	1,3	1,68	144	1,1	1,49	128	0,9	1,16	100	0,3	1,13	97	0,6	0,94	81	0,4					
CCN 33+1	VI		680	4,84	416	8,2	4,36	375	7,0	3,89	335	5,8	3,41	293	4,7	2,94	253	3,6	2,46	212	2,7					
	V		620	4,53	390	7,3	4,08	351	6,2	3,64	313	5,1	3,19	274	4,1	2,75	237	3,2	2,31	199	2,4					
	IV	MAX	540	4,10	353	6,2	3,70	318	5,2	3,30	284	4,3	2,89	249	3,5	2,49	214	2,7	2,09	180	2,0					
	III	MED	440	3,57	307	4,8	3,22	277	4,1	2,87	247	3,4	2,52	217	2,7	2,17	187	2,1	1,82	157	1,6					
	II		360	3,07	264	3,7	2,77	238	3,1	2,47	212	2,6	2,17	187	2,1	1,87	161	1,6	1,57	135	1,2					
	I	MIN	290	2,64	227	2,8	2,38	205	2,4	2,12	182	2,0	1,86	160	1,6	1,61	138	1,3	1,35	116	0,9					
CCN 34+1	VI		680	4,84	416	8,2	4,36	375	7,0	3,89	335	5,8	3,41	293	4,7	2,94	253	3,6	2,46	212	2,7					
	V	MAX	620	4,53	390	7,3	4,08	351	6,2	3,64	313	5,1	3,19	274	4,1	2,75	237	3,2	2,31	199	2,4					
	IV	MED	540	4,10	353	6,2	3,70	318	5,2	3,30	284	4,3	2,89	249	3,5	2,49	214	2,7	2,09	180	2,0					
	III		440	3,57	307	4,8	3,22	277	4,1	2,87	247	3,4	2,52	217	2,7	2,17	187	2,1	1,82	157	1,6					
	II		360	3,07	264	3,7	2,77	238	3,1	2,47	212	2,6	2,17	187	2,1	1,87	161	1,6	1,57	135	1,2					
	I	MIN	290	2,64	227	2,8	2,38	205	2,4	2,12	182	2,0	1,86	160	1,6	1,61	138	1,3	1,35	116	0,9					

Heating emission of 2 row additional coil

Entering air temperature: +20°C

Model	Speed	Qv m³/h	WT: 65/55°C				WT: 60/50°				WT: 55/45°				WT: 50/40°				WT: 45/40°				WT: 45/35°			
			Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)
CCN 13+2	VI		305	2,38	205	15,5	2,05	176	12,2	1,73	149	9,2	1,41	121	6,5	1,33	229	20,0	1,09	94	4,2					
	V	MAX	280	2,23	192	13,8	1,92	165	10,8	1,62	139	8,2	1,32	114	5,8	1,25	215	17,8	1,02	88	3,7					
	IV		245	2,02	174	11,6	1,75	151	9,1	1,47	126	6,9	1,20	103	4,9	1,13	194	15,0	0,92	79	3,1					
	III		220	1,88	162	10,3	1,63	140	8,1	1,37	118	6,1	1,12	96	4,3	1,05	181	13,3	0,86	74	2,8					
	II	MED	180	1,60	138	7,7	1,38	119	6,0	1,16	100	4,6	0,95	82	3,2	0,89	153	9,9	0,73	63	2,1					
	I	MIN	140	1,35	116	5,7	1,16	100	4,5	0,98	84	3,4	0,80	69	2,4	0,75	129	7,4	0,62	53	1,6					
CCN 23+2	VI		560	4,66	401	12,7	4,03	347	10,0	3,40	292	7,6	2,78	239	5,4	2,61	449	16,5	2,15	185	3,5					
	V		470	4,08	351	10,1	3,53	304	8,0	2,99	257	6,0	2,44	210	4,3	2,29	394	13,1	1,89	163	2,8					
	IV	MAX	380	3,47	298	7,6	3,00	258	6,0	2,54	218	4,5	2,09	180	3,3	1,96	337	10,0	1,62	139	2,1					
	III		305	2,95	254	5,7	2,55	219	4,5	2,16	186	3,4	1,77	152	2,4	1,65	284	7,4	1,37	118	1,6					
	II	MED	240	2,43	209	4,1	2,11	181	3,2	1,78	153	2,4	1,46	126	1,7	1,36	234	5,3	1,14	98	1,1					
	I	MIN	200	2,07	178	3,1	1,79	154	2,4	1,52	131	1,8	1,25	108	1,3	1,16	200	4,0	0,97	83	0,9					
CCN 33+2	VI		680	5,83	501	22,5	5,06	435	17,8	4,28	368	13,5	3,50	301	9,6	3,27	562	29,1	2,73	235	6,3					
	V		620	5,42	466	19,8	4,70	404	15,6	3,98	342	11,8	3,26	280	8,5	3,04	523	25,6	2,54	218	5,6					
	IV	MAX	540	4,86	418	16,3	4,22	363	12,9	3,57	307	9,8	2,92	251	7,0	2,72	468	21,1	2,28	196	4,6					
	III	MED	440	4,20	361	12,6	3,65	314	10,0	3,09	266	7,6	2,53	218	5,4	2,36	406	16,4	1,98	170	3,6					
	II		360	3,54	304	9,3	3,07	264	7,4	2,60	224	5,6	2,14	184	4,0	1,98	341	12,1	1,67	144	2,7					
	I	MIN	290	2,96	255	6,8	2,57	221	5,4	2,18	187	4,1	1,79	154	3,0	1,66	286	8,8	1,40	120	1,9					

Legend

WT = Water temperature

Ph = Emission

Qw = Water flow

Dp(c) = Water side pressure drop

Speed = Fan speed

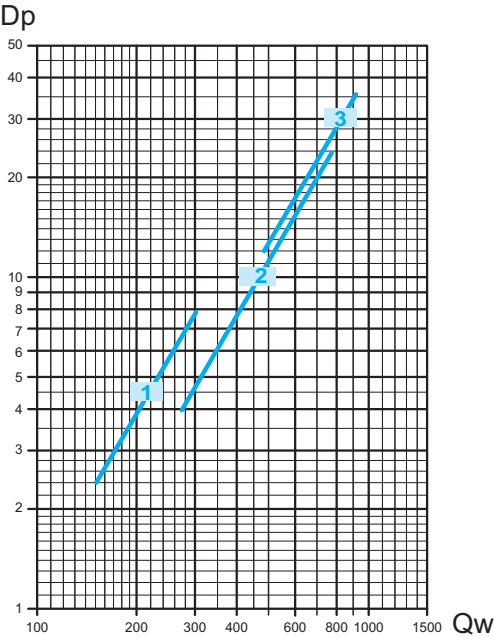
MAX = High speed

MED = Medium speed

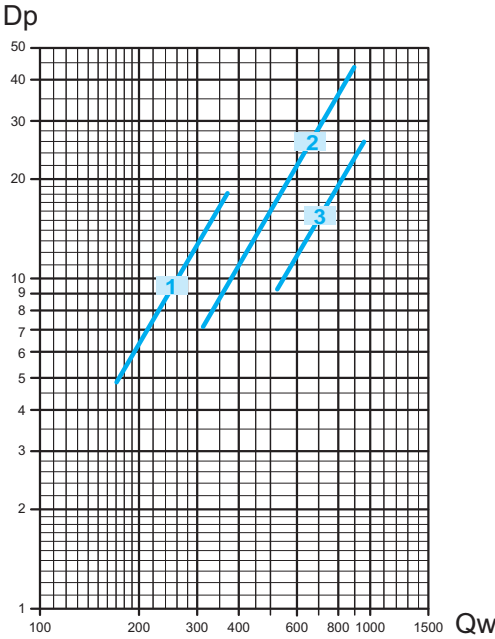
MIN = Low speed

Qv = Air flow

3 row coil



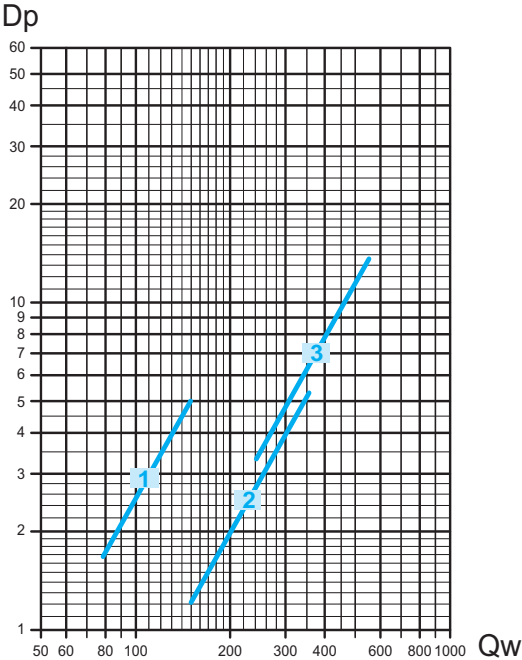
4 row coil



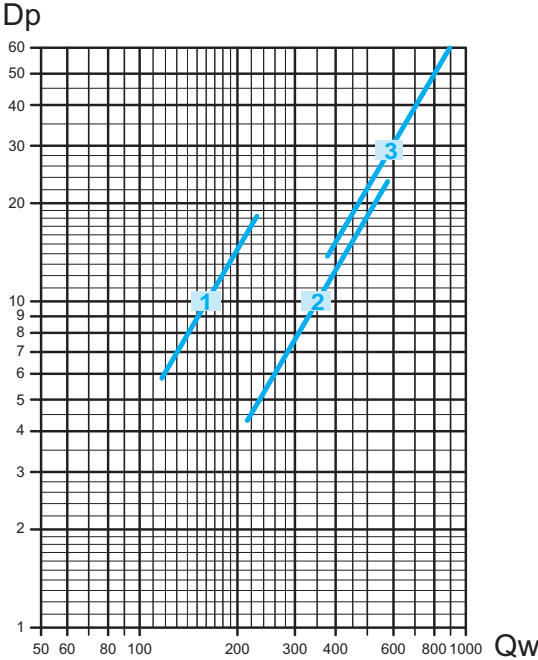
Pressure drop for mean water temperature of 10°C; for different temperatures multiply the pressure drop figure by the K correction factors in the table.

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

1 row additional coil



2 row additional coil



Pressure drop for mean water temperature of 65°C; for different temperatures multiply the pressure drop figure by the K correction factors in the table.

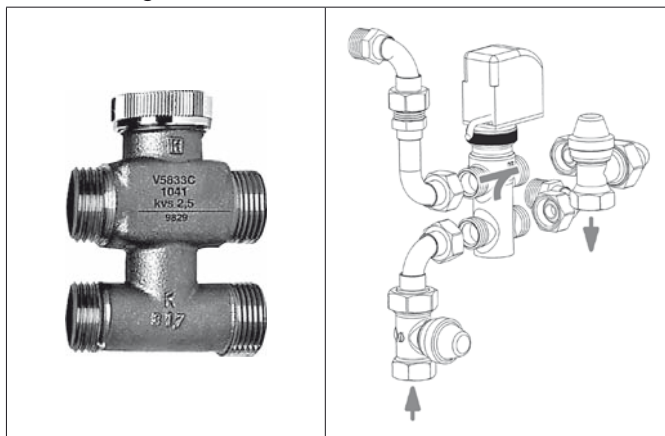
°C	40	50	60	70	80
K	1,14	1,08	1,02	0,96	0,90

Legend
Qw = water flow (l/h)
Dp = pressure drop (kPa)

Accessories

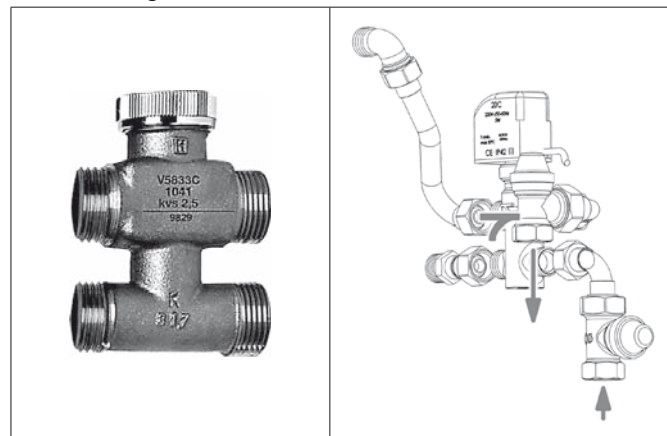
VBP Main coil 3 way valve

Control valve kit: 3 way valve, ON-OFF, with electric motor and mounting kit with micrometric lockshield valve.



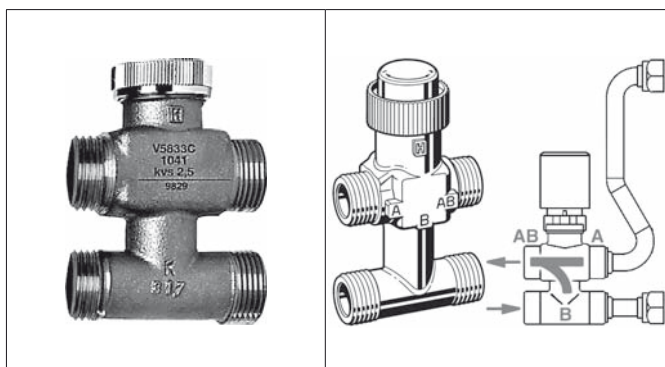
VBA Additional coil 3 way valve

Control valve kit: 3 way valve, ON-OFF, with electric motor and mounting kit with micrometric lockshield valve.



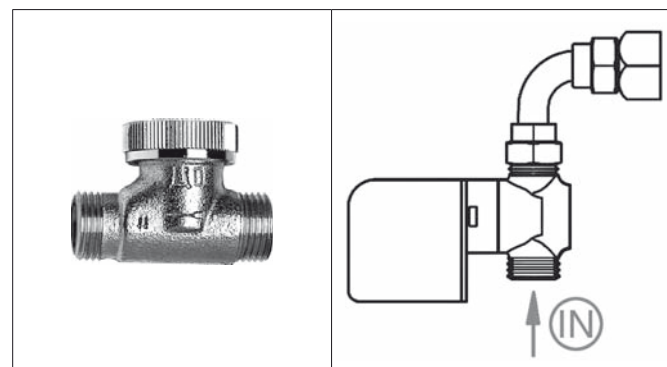
VS Simplified kit for 3 way valve for main and additional coil

3 way valve, (ON-OFF) with electric motor and mounting kit. Valve with flat connection without micrometric lockshield valve.



V2 2 way valve for main and additional coil

Control valve kit: 2 way valve, ON-OFF, with electric motor and mounting kit.



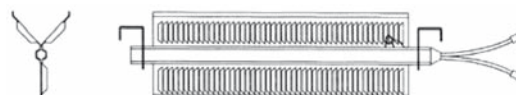
Valve	type	mod.	Valve			Micrometric lockshield valve			Code		Valves pressure drop
			DN	(Ø)	Kvs	DN	(Ø)	Kvs	Fitted	Not Fitted	
VBP	Main	1 - 2	15	1/2"	1,6	15	1/2"	2	9066561H	9066560H	The graph shows the pressure drop (Dp) in kPa on the y-axis (logarithmic scale from 1 to 40) versus the water flow (Qw) in l/h on the x-axis (logarithmic scale from 100 to 4000). Several lines represent different Kvs values: Kvs 1,6, Kvs 1,7, Kvs 2, Kvs 2,5, and Kvs 2,8. The lines show that pressure drop increases with flow rate and decreases with higher Kvs values.
	Main	3	20	3/4"	2,5	15	1/2"	2	9060471H	9060474H	
VBA	Additional	All	15	1/2"	1,6	15	1/2"	2	9060472H	9060475H	
VS	Main	1 - 2	15	1/2"	1,6	-	-	-	9066571H	9066570H	
		3	20	3/4"	2,5	-	-	-	9060484H	9060481H	
	Additional	All	15	1/2"	1,6	-	-	-	9060483H	9060480H	
V2	Main	1 - 2	15	1/2"	1,7	-	-	-	9060476H	9060478H	Legend Qw = water flow (l/h) Dp = pressure drop (kPa)
		3	20	3/4"	2,8	-	-	-	9060477H	9060479H	
	Additional	All	15	1/2"	1,7	-	-	-	9060476H	9060478H	

BEL Electric heater

ID	BEL		
Size	1	2	3
Watt	550	1150	1400
Code	9064031	9064032	9064033

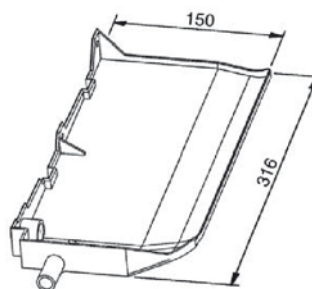
1 PHASE 230V

Electric heater with integral: safety thermostat and relay control.



BSO Extension condensate collection tray to cover valve assembly

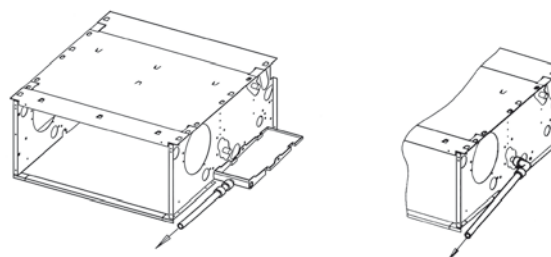
	BSO	
Connection side	left	right
ID	BSO-SX	BSO-DX
Code	6060402	6060403



SCR plastic condensate drain pipe with fast connection

ID	SCR
Code	6060420

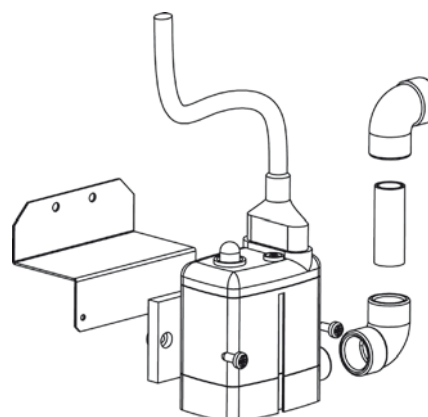
It helps regular drainage of condensate thereby preventing the formation of bends.



PCC condensate drain pump

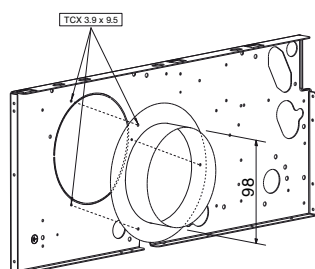
	Fitted	Not fitted
ID	PCC-M	PCC-S
Code	9064011	9064010

Height for vertical flow (m)	Water flow (l/h) depending on the length of horizontal flow	
	5 m	10 m
1	6,8	6,3
2	5,5	5,0
3	4,2	3,8
4	3,0	2,6

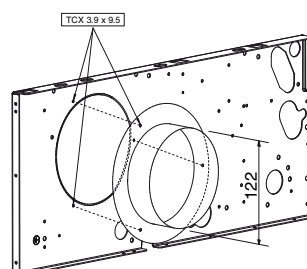


FRC spigot flange

ID	FRC 100
Code	6064191



ID	FRC 120
Code	6064192



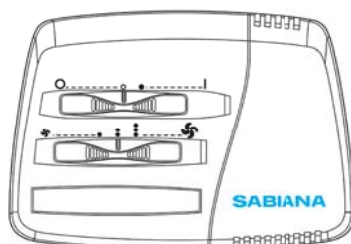
Control operations

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

T2T	●		●		●			●	●		●					9060174
TMO-DI	●	●	●	●	●	●	●	●	●	●	●	●	●	●		9060165
TMO-503-SV2	●		●	●	●		●		●	●	●			●		9060173
TMO-503-S	●		●	●	●			●						●		9060171
TMO-T-AU	●		●	●	●	●	●	●	●	●	●	●		●		9060164
TMO-T	●		●		●	●		●	●	●		●		●		9060161
CR-T	●		●		●			●	●	●		●			●	9066330
MO-3V	●		●												●	9060160

CONTROL IDENTIFICATION CONTROL OPERATIONS	
ON-OFF switch	
ON-OFF switch for electric heater	
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	
Automatic Summer/Winter switch with neutral zone for 4 pipe installation with 2 valves	
Room thermostat for fan control (ON-OFF)	
Room thermostat for 1 valve control (2 pipe installation)	
Room thermostat for 2 valve control (4 pipe installation)	
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)	
Room thermostat for fan and electric heater control	
Installation of electronic low temperature CUT-OUT thermostat (TME)	
Installation of bimetallic low temperature CUT-OUT thermostat (TMM)	
CONTROL CODES	

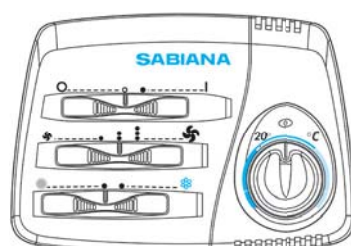
ID	Code
MO-3V	9060160



Dimensions: 133x93x37 mm

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

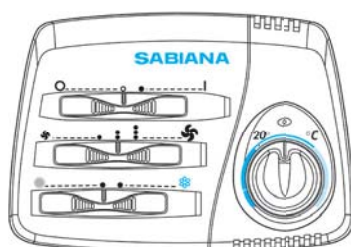
ID	Code
CR-T	9066330



Dimensions: 133x93x37 mm

- Manual speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve(s) 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 (BEL) 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 described in the Carisma Fan Coil units technical documentation).

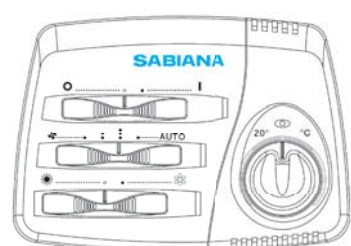
ID	Code
TMO-T	9060161



Dimensions: 133x93x37 mm

- Manual speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve(s) 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 (BEL) 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 described in the Carisma Fan Coil units technical documentation).
- 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 (for 2-pipe systems only). 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	9060164



Dimensions: 133x93x37 mm

- Manual or automatic speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- 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 (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (BEL) 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 described in the Carisma Fan Coil units technical documentation).
- 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 (for 2-pipe systems only). The latter case needs the adjustment of the jumper on the control board (see the instruction leaflet supplied with the control).

Note: with 4-pipe systems and continuous chilled and hot water supply, it allows the automatic summer/winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Dead Zone 2°C).

Wall electronic controls

ID	Code
TMO-503-S	9060171



Dimensions: 118x87x8 mm

The TMO-503-S control for fan coils without 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).

The highest working electric absorption is 200 W; if the fan coil has an higher absorption or more units are connected to the same control, the speed switch SEL-S must be installed.

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

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).

The highest working electric absorption is 200 W; if the fan coil has an higher absorption or more units are connected to the same control, the speed switch SEL-S must be installed.

- 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).

Note: with 4-pipe systems and continuous chilled and hot water supply, it allows the automatic summer/winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Dead Zone 2°C).

ID	Code
TMO-DI	9060165



Dimensions on the wall: 133x93x27 mm
Dimensions in the DIN 503 box: 133x93x18 mm

To be installed on the wall or in the DIN 503 box.

- Manual or automatic speed switch.
- Manual or automatic Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- 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 (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (BEL) only in case that hot water is not used in winter.
- It allows to control the fan and the heating electric resistance.
- It allows to control up to 10 units with SEL-DI speed switch.

Note: with 4-pipe systems and continuous chilled and hot water supply, it allows the automatic summer/winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Dead Zone 2°C).

ID	Code
T2T	9060174



Dimensions: 128x75x25 mm

2-pipes units only

- 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 speed switch (master-slave).

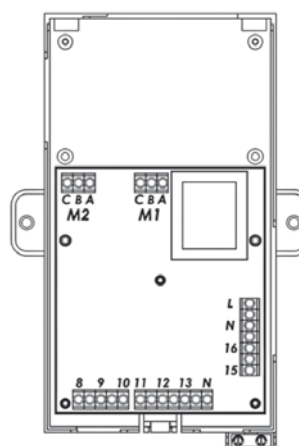
ID	Code
SEL-S	9079110

- 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, MO-T, TMO-T-AU, TMO-503-S and TMO-503-SV2.



ID	Code
SEL-DI	9060139

- Repeater for TMO-DI
- It allows to control up to 10 units with only one TMO-DI centralized thermostat.



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-DI.

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

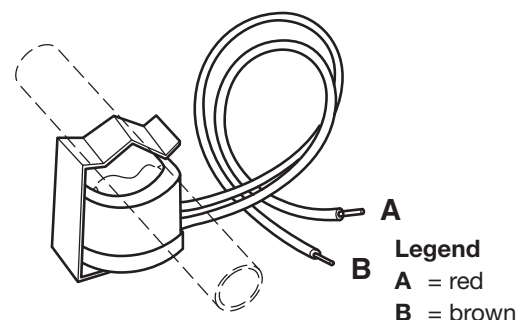
ID	Code
TMM	9053048

To be installed in contact with the hot water circuit.

To be used with the following controls only: MO-3V, CR-T.

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.



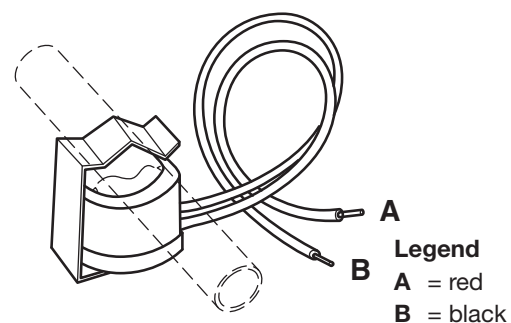
Change-Over CH 15-25

ID	Code
CH 15 -25	9053049

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

For 2-tube installations only (not to be used with 2 way valve).

To be used with the following controls only: TMO-T, TMO-T-AU, TMO-DI.



FreeSabiana Wireless control system

Free Sabiana

Free Sabiana is an innovative, **fully wireless** electronic system for use with fan coil units, based on radio communication. This technology provides installation flexibility and a **more accurate measurement of the room temperature**.



The probe can be moved until the most suitable position is found, without the worry of changes in the environment layout and of its furniture and also without mounting it on a wall. If a new fan coil unit is added, no electrical wiring for the control system is required: just define the control unit and the probe which regulates it. The improved measurement accuracy derives from the possibility to position the probe near the typical location of the user: this enables to keep the temperature exactly at the required value with more energy savings compared with a traditional measurement system.

Transmission is based on communication protocol IEEE802.15.4, the most suitable way to transmit a relatively low amount of information with very low consumption and high reliability.

The system has been certified by a leading independent body, officially recognized by the EU authorities and its sale has been authorized in all the EU and EFTA countries.

Main components

Free Sabiana includes 3 main components:

- **A remote control** which features a button panel and LCD display and can be wall mounted or positioned on a dedicated table support.

It enables the control of all the operating variables of the fan coil units in different configurations. The control is battery powered.

The temperature and the operating speed of the fan coil unit are set with two large buttons featuring user friendly graphics.

Description	ID	Code
Remote control	Free-Com	9060572



Control unit with support

- **A power unit** to be installed on the fan coil (fan coil interface).

It controls the fan and the valves of the fan coil. The power unit is connected to the electric supply.

The power unit receives the information required to control the fan coil both from the remote control and locally, such as the temperature of the coil.

Description	ID	Code
Power unit fitted on the unit	Free-Upm	9060571
Power unit not fitted on the unit	Free-Ups	9060570



Power unit

- **A room temperature probe**, which can be wall mounted or positioned on a dedicated table support.

It is a battery powered device, able to measure the air temperature in the spot where it is positioned, generating temperature information which is communicated to the other devices.

Description	ID	Code
Temperature probe	Free-Sen	9060573



Probe with support

FreeSabiana Wireless control system

Main features of the remote control

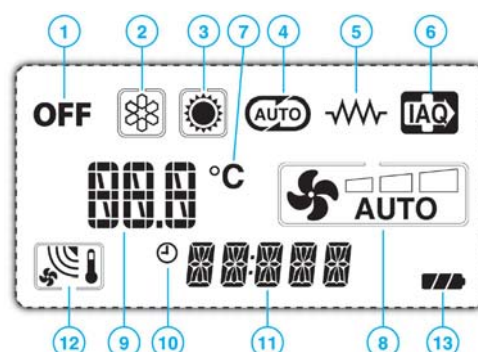
The control enables:

- Fan coil on/off switching
- Fan speed selection (high - medium - low - automatic)
- Summer/winter operation selection
- Valve on/off
- Real time clock setting
- Temperature setting
- Daily switch on/off setting (timer function)
- Enable/disable the timer function
- Activation of the (eventual) electrostatic filter
- Activation of the (eventual) electric resistance



Main information displayed:

- 1 = On-off status
- 2 = Summer operation
- 3 = Winter operation
- 4 = Automatic season change
- 5 = Electric resistance
- 6 = Crystall filter
- 7 = Room temperature (with decimal accuracy)
- 8 = Fan operating speed
- 9 = Required/measured temperature
- 10 = Timer
- 11 = Clock
- 12 = Transmission signal
- 13 = Battery level



Main features of the power unit to be installed on the fan coil

The power unit controls the fan and the valves of the fan coil.
The power unit receives the information required to control such units both from the remote control and locally.



It enables the following main actions:

- Fan on/off at a set speed
- Fan speed change (fan on/off)
- Water valve/s on/off (1 valve for 2 tube system - 2 valves for 4 tube system)
- Fan speed change operating the water valve/s
- Control of the electric resistance as main heating unit or as integration to the battery supplied with hot water
- Control of the operation of the electrostatic filter (in parallel to the fan)
- Management of the dead zone function for 4-tube systems
- Available functional inputs:
 - Consent for remote on/off
 - Consent for remote Summer/Winter switch (centralized)
 - Consent for the activation of the Energy Saving function with setting change
 - Minimum probe
 - Probe for season change

Main features of the temperature probe

This device is able to measure the temperature of the air in the spot where it is positioned and to transmit it by means of radio communication to the other devices in the system. It is battery powered and can be freely positioned in the area to be air-conditioned.

Display:

- Measured environment temperature
- Transmission signal
- Clock
- Battery status



Description	ID	Code
Infra-red remote control with electronic board fitted on the unit	IRC-M	9060175
Infra-red remote control with electronic board not fitted on the unit	IRC-S	9060176
ETN +/-3°C with electronic board fitted on the unit	IRC-ETN-M	9060166
ETN +/-3°C with electronic board not fitted on the unit	IRC-ETN-S	9060167

The Carisma Coanda cassettes can be supplied with a micro-processor managing system operated by an infra-red remote control with liquid crystal display or by a wall mounted IRC-ETN control.

Integral with the unit is the room temperature probe, the water temperature probe (cut-out thermostat), the infra-red remote control and the electronic board with RS485 communicating connection which can control up to 20 units connected between them. The electronic board is of master/slave mode and the serial communicating connection allows the serial connection; in the master/slave connection of more units, it is recommended to install the infra-red receiver on the master unit.

IRC controls are not suitable for BEL electric heater.

The units with IR control are supplied with room temperature probe and water temperature probe (cut-out thermostat).

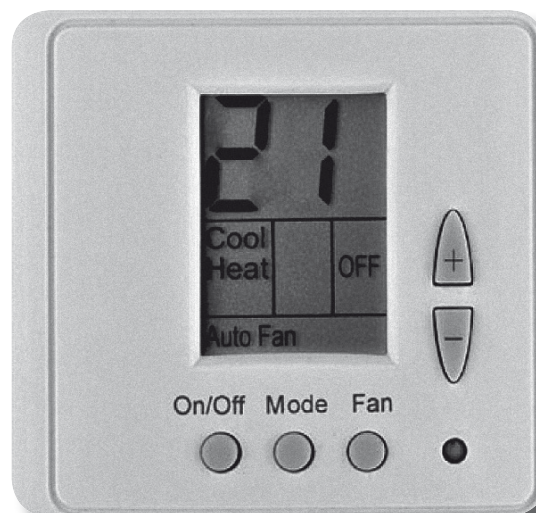
The infra-red control features the following functions:

- Temperature set.
- Fan speed switch with possible automatic speed selection.
- 24 hours on/off program.
- On/off cooling valve control.
- On/off heating valve control.
- Control of the valves only or of the valves and the fan together.
- Valve control of 2 or 4-pipe systems with winter/summer switch on the infra-red control.
- Valve control of 4-pipe systems with automatic heating/cooling mode selection with 2°C dead zone.
- Activating the sensor connected to the T3 contact of the board (non active in the standard configuration), it works like a cut-out thermostat: fitted between the coil fins it stops the fan when the water temperature is lower than 38°C and it starts the fan when the water temperature reaches 42°C.

The wall mounted control features the following functions:

- switch the appliance on and off
- set the fan speed
- set the range of temperature settings (default +/- 3 °C, modifiable on site up to +/- 9°C)
- modify the set point determined by the MaxiNet system by a value of +/- X°C.

The Maxinet system can set the operating mode, the set point and all other operating parameters of the unit, as well as display the settings made by the user. The Maxinet system always has priority over the ETN controller. For the correct use of the system, also see the manual for the cassette with remote control and the Maxinet supervision program.



Unit with IRC electronic board

IRC electronic board

The electronic board, fitted inside the electrical panel, can manage different control modes so as to best satisfy the requirements of the installation. These modes are selected by suitably positioning the configuration dipswitches, which define the following main functions:

- 2 pipe / 4-pipe system
- Operation without / with remote control
- Continuous ventilation
- Close valve and stop fan in cooling mode (autofan function)
- Close valve and stop fan in heating mode (autofan function)
- Close valve and stop fan in both cooling and heating mode (autofan function)

The autofan function allows the simultaneous on/off control of the water valve and the fan, while at the same time optimising the operation of the unit. When reaching the set point, the controller closes the water valve (valve off) and only 3 minutes later stops the fan, so as to correctly compensate for the valve closing time. To prevent the air probe from measuring an incorrect temperature, when the fan is off the controller runs a number of fan ON cycles to annul the effect of any stratification of the air in the room.

In 2-pipe systems, a water probe can be installed on the supply pipe to the unit upstream of the water valve. Based on the temperature read in this section of the pipe, the device will select either cooling or heating operation.

The electronic board also features a contact for connection to a window switch or remote enabling signal. When the contact is closed, the unit can operate, when the contact is open, the unit stops. The same contact can be used for starting and stopping the unit from an external timer or any other remote switching device.

In addition, a series of units can be switched on or off at the same time, by using a flip-flop switch connected to the terminals present on the board.

Sensors that require a 12 volt power supply, for example occupancy sensors, can be connected to other terminals on the electronic board and then to the on/off contacts. The board is able to power external sensors with a maximum current of 60mA.

IRC ELECTRONIC BOARD



INSTALLATION EXAMPLE WITH INFRA-RED REMOTE CONTROL



A group of Carisma units with IRC electronic board can be connected via a serial link and can consequently be managed at the same time by just one infra-red remote control or IRC-ETN wall mounted control. Using the special jumper present on the board, one unit must be configured as the master, and all the others as slaves. It is clear that 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 infra-red remote control

One control for each unit



One control for more units (20 units max.)

(MAXIMUM TOTAL LENGTH OF THE CONNECTION CABLE = 800 m)



IRC control with ETN

One control for each unit

(MAXIMUM LENGTH OF THE CONNECTION CABLE = 20 m)



One control for more units (20 units max.)

(MAXIMUM TOTAL LENGTH OF THE CONNECTION CABLE = 800 m)



T2 Change-Over for infra-red remote control (accessory)

ID	Code
T2	9079103



Suitable for units with infra-red remote control only.

The NTC sensor, if connected to the T2 contact of the board, works like a change-over: fitted in contact to the supplypipe it controls automatically the winter/summer switch in accordance to the water temperature.

ECM Version

One Way Cassette Fan Coil with EC Brushless Electronic Motor and Inverter Board

CONSTRUCTIONAL FEATURES OF THE MAIN COMPONENTS

Casing

Made from galvanized steel with closed cell insulation.

Diffuser with intake grille

In prepainted metal sheet in RAL 9003 colour with intake grille that can be opened for inspection and maintenance of the air filter.

Air Filter

Polypropylene cellular fabric regenerating filter.

Fan Assembly

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

Electronic motor

Three phase permanent magnet brushless electronic motor that is controlled with current reconstructed according to a BLAC sinusoidal wave. The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply. The electric power supply required for the machine is therefore single-phase with voltage of 230-240V and frequency of 50-60Hz.

Heat exchange coil

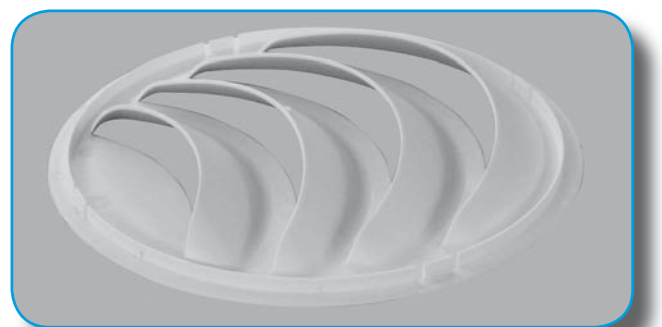
It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain. The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion. **The connection side cannot be changed on site.**

Condensate Collection Tray

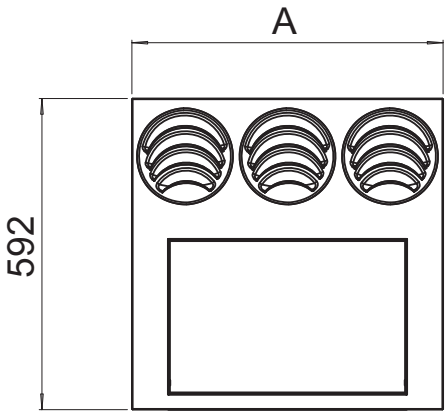
Made from plastic with an "L"-shape fitted on the inner casing. The outside diameter of the condensate discharge pipe is 15mm.

Round diffuser

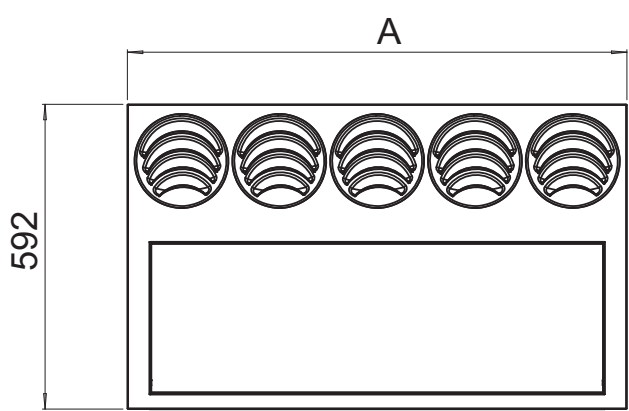
The Carisma Coanda one-way cassette units are supplied with round diffusers suitably designed to generate an airflow with "coanda" effect. The direction of diffuser air flow can be adjusted on site.



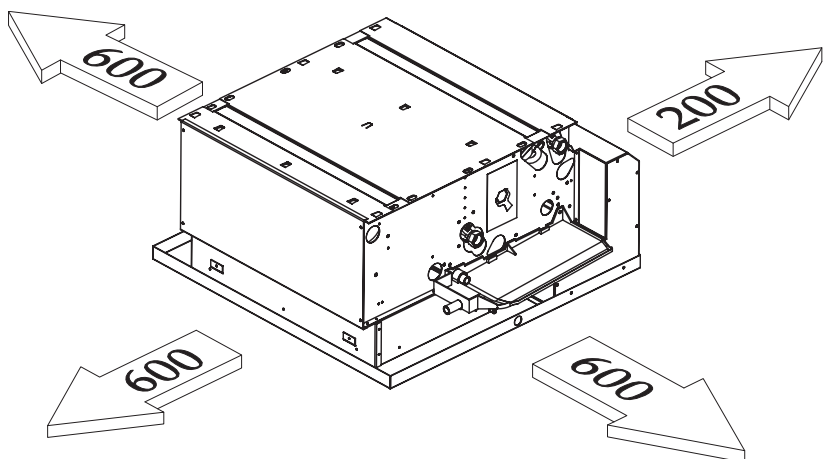
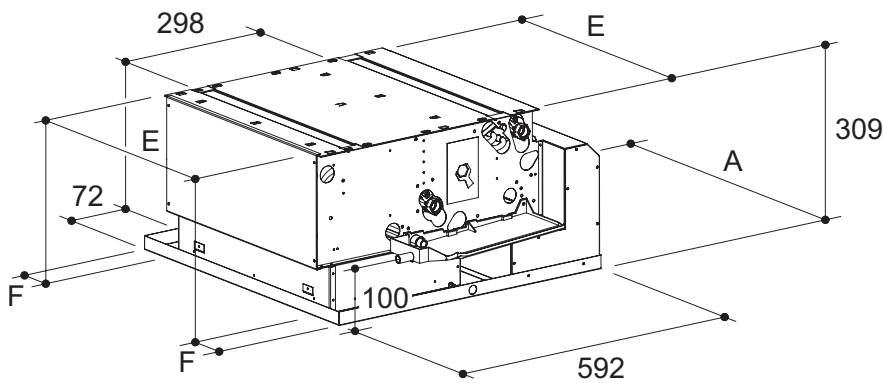
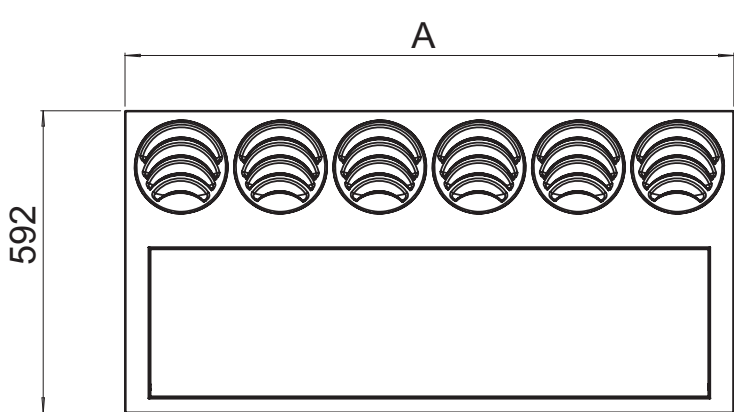
Carisma Coanda Gr 1 - 3 diffusers

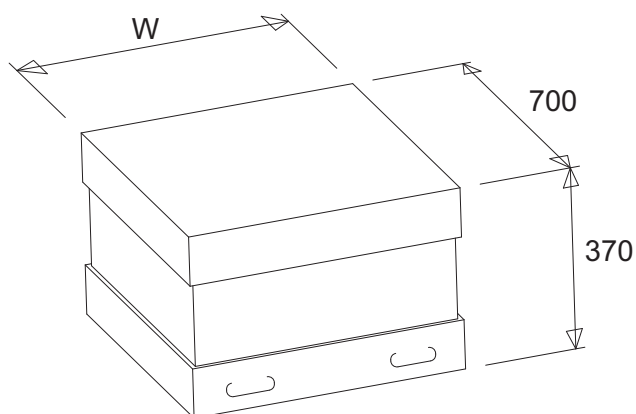


Carisma Coanda Gr 2 - 5 diffusers



Carisma Coanda Gr 3 - 6 diffusers





DIMENSIONS (mm)

MODEL	1	2	3
A	592	970	1192
E	454	884	1099
F	78	43	46,5
W	750	1130	1350

WEIGHT (kg)

		Weight packed unit			Weight unpacked unit		
MODEL		1	2	3	1	2	3
Rows	3	18	34	44	16	33	42
	3+1	20	40	51	19	38	48
	3+2	23	46	58	22	43	54
	4	20	37	48	18	35	45
	4+1	23	42	54	21	40	51

WATER CONTENT (l)

MODEL		1	2	3
Rows	3	0,6	1,3	1,7
	4	0,8	1,7	2,4
	+1	0,2	0,4	0,5
	+2	0,4	0,8	1,0

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		CCN-ECM 13					CCN-ECM 23					CCN-ECM 33				
Speed		1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)
		MIN		MED		MAX	MIN		MED		MAX	MIN		MED		MAX
Air flow	m ³ /h	130	165	205	250	295	215	295	370	450	540	275	345	430	525	620
Cooling total emission (E)	kW	0,82	1,00	1,18	1,37	1,56	1,46	1,92	2,31	2,74	3,16	1,87	2,31	2,78	3,28	3,75
Cooling sensible emission (E)	kW	0,62	0,76	0,91	1,07	1,24	1,07	1,42	1,73	2,07	2,41	1,37	1,70	2,06	2,45	2,83
Heating (E)	kW	1,02	1,25	1,50	1,75	2,02	1,72	2,28	2,79	3,33	3,85	2,19	2,72	3,30	3,93	4,54
ΔP Cooling (E)	kPa	2,1	3,0	4,0	5,2	6,5	3,2	5,2	7,3	9,8	12,6	5,8	8,4	11,7	15,7	19,8
ΔP Heating (E)	kPa	1,7	2,4	3,3	4,3	5,3	2,6	4,2	6,0	8,0	10,4	4,7	6,9	9,4	12,9	16,6
Fan (E)	W	8	11	14	21	29	8	11	16	24	37	10	13	19	29	42
Sound power (E)	Lw	dB(A)	35	41	46	51	55	34	40	46	52	56	36	42	48	54
Sound pressure (*)	Lp	dB(A)	26	32	37	42	46	25	31	37	43	47	27	33	39	45

MODEL		CCN-ECM 14					CCN-ECM 24					CCN-ECM 34				
Speed		1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)
		MIN		MED		MAX	MIN		MED		MAX	MIN		MED		MAX
Air flow	m ³ /h	130	165	205	250	295	215	295	370	450	540	275	345	430	525	620
Cooling total emission (E)	kW	0,91	1,12	1,34	1,58	1,81	1,55	2,06	2,51	3,00	3,50	1,95	2,42	2,94	3,49	4,02
Cooling sensible emission (E)	kW	0,66	0,82	0,99	1,18	1,38	1,11	1,49	1,84	2,21	2,60	1,41	1,76	2,15	2,57	2,98
Heating (E)	kW	1,07	1,32	1,60	1,90	2,20	1,82	2,46	3,03	3,68	4,32	2,25	2,82	3,44	4,12	4,78
ΔP Cooling (E)	kPa	4,1	5,9	8,1	10,9	13,9	5,0	8,2	11,6	15,9	20,8	4,3	6,4	8,9	12,1	15,5
ΔP Heating (E)	kPa	3,3	4,8	6,6	9,0	11,6	4,1	6,7	9,4	13,2	17,1	3,5	5,2	7,4	10,0	13,0
Fan (E)	W	8	11	14	21	29	8	11	16	24	37	10	13	19	29	42
Sound power (E)	Lw	dB(A)	35	41	46	51	55	34	40	46	52	56	36	42	48	54
Sound pressure (*)	Lp	dB(A)	26	32	37	42	46	25	31	37	43	47	27	33	39	45

4-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: + 70°C E.W.T. / + 60°C L.W.T.

MODEL		CCN-ECM 13 + 1					CCN 23-ECM + 1					CCN 33-ECM + 1				
Speed		1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)
		MIN		MED		MAX	MIN		MED		MAX	MIN		MED		MAX
Air flow	m ³ /h	130	165	205	250	295	215	295	370	450	540	275	345	430	525	620
Cooling total emission (E)	kW	0,82	1,00	1,18	1,37	1,56	1,46	1,92	2,31	2,74	3,16	1,87	2,31	2,78	3,28	3,75
Cooling sensible emission (E)	kW	0,62	0,76	0,91	1,07	1,24	1,07	1,42	1,73	2,07	2,41	1,37	1,70	2,06	2,45	2,83
Heating (E)	kW	0,87	1,03	1,18	1,35	1,52	1,58	1,97	2,31	2,66	3,01	2,04	2,42	2,82	3,24	3,64
ΔP Cooling (E)	kPa	2,1	3,0	4,0	5,2	6,5	3,2	5,2	7,3	9,8	12,6	5,8	8,4	11,7	15,7	19,8
ΔP Heating (E)	kPa	1,4	1,9	2,5	3,1	3,8	1,0	1,5	2,0	2,5	3,1	1,8	2,5	3,3	4,2	5,1
Fan (E)	W	8	11	14	21	29	8	11	16	24	37	10	13	19	29	42
Sound power (E)	Lw	dB(A)	35	41	46	51	55	34	40	46	52	56	36	42	48	54
Sound pressure (*)	Lp	dB(A)	26	32	37	42	46	25	31	37	43	47	27	33	39	45

(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.

Working conditions and Air throw

WORKING CONDITIONS

Max. entering water temperature..... + 80 °C
 Min. entering water temperature..... + 5 °C
 for entering water temperatures below + 5°C, contact
 "SABIANA" technical department
 Max. rated pressure 1000 kPa (10 bars)

Installation height (m)

MODEL	1	2	3
Minimum	2,6	2,6	2,6
Maximum	3,2	3,2	3,5

Water flow limits for main coil (l/h)

MODEL	3 rows			4 rows		
	13	23	33	14	24	34
Minimum	100	150	150	100	150	200
Maximum	500	1000	1500	750	1000	2000

Water flow limits for additional coil (l/h)

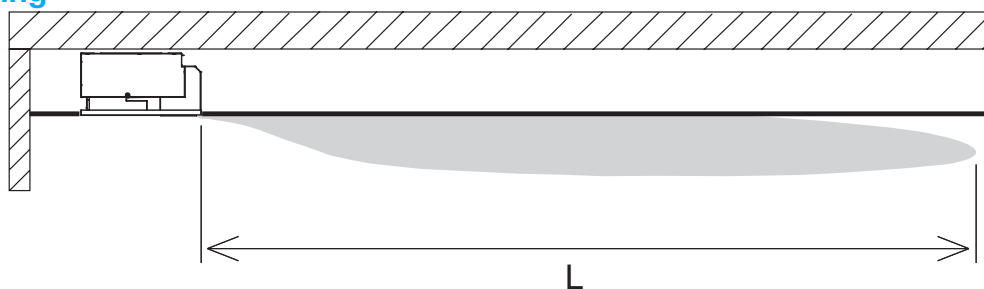
MODEL	1 row			2 rows		
	1	2	3	1	2	3
Minimum	50	100	100	50	100	100
Maximum	250	450	650	250	450	650

Motor electrical data (max. absorption)

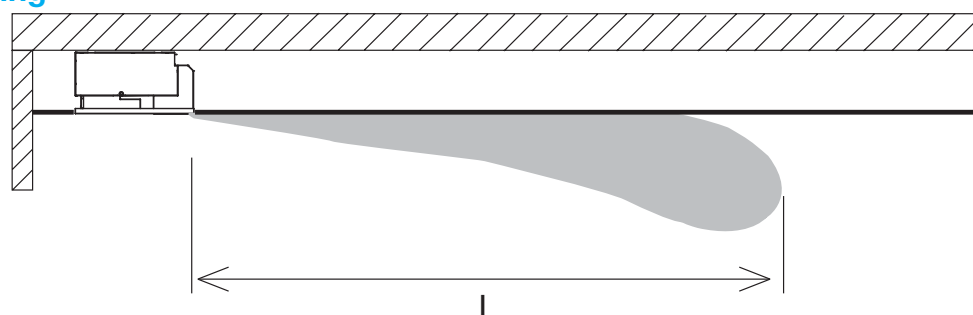
MODEL		1	2	3
230/1 50Hz	W	29	37	42

AIR THROW

C1 - Heating



C2 - Cooling



		Carisma Coanda CCN-ECM 1						Carisma Coanda CCN-ECM 2						Carisma Coanda CCN-ECM 3					
MODEL		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Air throw L (m)	C1	3,8	4,5	5,8	6,3	6,8	7,2	4	5	6,1	7	8	9	4,5	5,2	6,3	7,5	8,8	9,5
	C2	3	3,6	4,6	5	5,4	5,7	3,2	4	4,8	5,6	6,4	7,2	3,6	4,1	5	6	7	7,6

Cooling emission of 3 row coil

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			
CCN-ECM 13	10	295	1,69	1,23	291	7,5	1,50	1,16	258	6,1	1,11	1,01	191	3,5	0,89	0,89	153	2,3			
	7,5	250	1,48	1,07	255	6,0	1,32	1,01	227	4,8	0,98	0,88	169	2,8	0,77	0,77	132	1,8			
	5	205	1,27	0,91	218	4,6	1,14	0,85	196	3,7	0,85	0,74	146	2,2	0,65	0,65	112	1,4			
	3	165	1,08	0,76	186	3,4	0,97	0,71	167	2,8	0,72	0,62	124	1,7	0,55	0,55	95	1,0			
	1	130	0,89	0,62	153	2,4	0,80	0,58	138	2,0	0,60	0,51	103	1,2	0,45	0,45	77	0,7			
CCN-ECM 23	10	540	3,40	2,41	585	14,3	3,05	2,26	525	11,7	2,31	1,97	397	7,1	1,74	1,74	299	4,3			
	7,5	450	2,94	2,06	506	11,1	2,64	1,94	454	9,1	2,01	1,69	346	5,5	1,49	1,49	256	3,2			
	5	370	2,49	1,73	428	8,3	2,23	1,62	384	6,8	1,70	1,41	292	4,2	1,25	1,25	215	2,4			
	3	295	2,06	1,42	354	5,9	1,85	1,33	318	4,9	1,42	1,16	244	3,0	1,03	1,03	177	1,7			
	1	215	1,57	1,07	270	3,7	1,42	1,01	244	3,0	1,09	0,87	187	1,9	0,77	0,77	132	1,0			
CCN-ECM 33	10	620	4,03	2,82	693	22,5	3,63	2,65	624	18,6	2,77	2,31	476	11,4	2,04	2,04	351	6,6			
	7,5	525	3,53	2,45	607	17,8	3,17	2,30	545	14,7	2,43	2,01	418	9,0	1,77	1,77	304	5,1			
	5	430	2,99	2,06	514	13,3	2,69	1,93	463	11,0	2,06	1,68	354	6,8	1,49	1,49	256	3,8			
	3	345	2,48	1,70	427	9,6	2,24	1,59	385	7,9	1,72	1,39	296	4,9	1,23	1,23	212	2,7			
	1	275	2,01	1,37	346	6,6	1,82	1,28	313	5,5	1,40	1,12	241	3,4	0,98	0,98	169	1,8			

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			
CCN-ECM 13	10	295	1,49	1,16	256	6,0	1,31	1,09	225	4,8	0,97	0,97	167	2,8	0,81	0,81	139	2,0			
	7,5	250	1,31	1,01	225	4,8	1,15	0,94	198	3,8	0,84	0,84	144	2,1	0,70	0,70	120	1,5			
	5	205	1,13	0,85	194	3,7	0,99	0,80	170	2,9	0,70	0,69	120	1,6	0,60	0,60	103	1,2			
	3	165	0,96	0,72	165	2,8	0,85	0,67	146	2,2	0,60	0,57	103	1,2	0,50	0,50	86	0,9			
	1	130	0,79	0,58	136	2,0	0,70	0,55	120	1,6	0,50	0,47	86	0,9	0,41	0,41	71	0,6			
CCN-ECM 23	10	540	3,03	2,27	521	11,7	2,68	2,12	461	9,3	1,92	1,83	330	5,1	1,59	1,59	273	3,6			
	7,5	450	2,63	1,95	452	9,1	2,32	1,82	399	7,3	1,68	1,57	289	4,1	1,36	1,36	234	2,8			
	5	370	2,22	1,63	382	6,8	1,97	1,52	339	5,4	1,43	1,31	246	3,1	1,15	1,15	198	2,0			
	3	295	1,84	1,34	316	4,9	1,63	1,25	280	3,9	1,19	1,07	205	2,2	0,94	0,94	162	1,4			
	1	215	1,41	1,01	243	3,0	1,25	0,94	215	2,4	0,92	0,81	158	1,4	0,71	0,71	122	0,9			
CCN-ECM 33	10	620	3,60	2,66	619	18,5	3,20	2,49	550	14,9	2,32	2,15	399	8,4	1,87	1,87	322	5,6			
	7,5	525	3,15	2,31	542	14,6	2,80	2,16	482	11,8	2,04	1,86	351	6,7	1,62	1,62	279	4,4			
	5	430	2,67	1,94	459	10,9	2,38	1,81	409	8,8	1,74	1,56	299	5,0	1,37	1,37	236	3,2			
	3	345	2,22	1,60	382	7,9	1,98	1,50	341	6,4	1,45	1,29	249	3,7	1,12	1,12	193	2,3			
	1	275	1,80	1,29	310	5,5	1,61	1,20	277	4,4	1,19	1,03	205	2,6	0,90	0,90	155	1,6			

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				
CCN-ECM 13	10	295	1,31	1,09	225	4,8	1,12	1,01	193	3,6	0,89	0,89	153	2,4	0,73	0,73	126	1,7				
	7,5	250	1,15	0,94	198	3,8	0,99	0,88	170	2,9	0,77	0,77	132	1,9	0,63	0,63	108	1,3				
	5	205	0,99	0,80	170	2,9	0,85	0,74	146	2,2	0,65	0,65	112	1,4	0,54	0,54	93	1,0				
	3	165	0,84	0,67	144	2,2	0,73	0,62	126	1,7	0,55	0,55	95	1,0	0,46	0,46	79	0,7				
	1	130	0,70	0,55	120	1,6	0,60	0,51	103	1,2	0,45	0,45	77	0,7	0,37	0,37	64	0,5				
CCN-ECM 23	10	540	2,67	2,13	459	9,4	2,32	1,98	399	7,2	1,74	1,74	299	4,3	1,44	1,44	248	3,1				
	7,5	450	2,32	1,82	399	7,3	2,01	1,70	346	5,7	1,49	1,49	256	3,3	1,24	1,24	213	2,3				
	5	370	1,96	1,53	337	5,4	1,71	1,42	294	4,2	1,26	1,26	217	2,4	1,04	1,04	179	1,7				
	3	295	1,63	1,25	280	3,9	1,42	1,17	244	3,1	1,03	1,03	177	1,7	0,85	0,85	146	1,2				
	1	215	1,24	0,95	213	2,4	1,09	0,88	187	1,9	0,77	0,77	132	1,0	0,64	0,64	110	0,7				
CCN-ECM 33	10	620	3,19	2,50	549	14,9	2,78	2,33	478	11,6	2,05	2,05	353	6,7	1,70	1,70	292	4,7				
	7,5	525	2,79	2,16	480	11,8	2,43	2,02	418	9,2	1,77	1,77	304	5,2	1,47	1,47	253	3,7				
	5	430	2,37	1,82	408	8,8	2,07	1,69	356	6,9	1,50	1,50	258	3,9	1,24	1,24	213	2,7				
	3	345	1,97	1,50	339	6,4	1,72	1,39	296	5,0	1,23	1,23	212	2,7	1,02	1,02	175	1,9				
	1	275	1,60	1,21	275	4,4	1,40	1,12	241	3,5	0,96	0,95	165	1,8	0,82	0,82	141	1,3				

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

Vdc = Inverter power

Qv = Air flow

Dp(c) = Water side
pressure drop

Pc = Cooling Total emission

Qw = Water flow

Ps = Cooling Sensible
emission

Cooling emission of 4 row coil

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

Model	Vdc	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
CCN-ECM 14	10	295	1,95	1,37	335	15,9	1,75	1,29	301	13,0	1,33	1,12	229	7,8	0,99	0,99	170	4,7
	7,5	250	1,70	1,18	292	12,4	1,52	1,11	261	10,2	1,16	0,97	200	6,2	0,85	0,85	146	3,6
	5	205	1,44	0,99	248	9,2	1,29	0,93	222	7,6	0,98	0,81	169	4,6	0,72	0,72	124	2,6
	3	165	1,20	0,82	206	6,8	1,08	0,77	186	5,6	0,83	0,67	143	3,4	0,60	0,60	103	1,9
	1	130	0,98	0,66	169	4,7	0,88	0,62	151	3,9	0,68	0,54	117	2,4	0,48	0,48	83	1,3
CCN-ECM 24	10	540	3,76	2,60	647	23,6	3,38	2,44	581	19,5	2,59	2,12	445	12,1	1,88	1,88	323	6,7
	7,5	450	3,22	2,21	554	18,0	2,90	2,08	499	14,9	2,23	1,81	384	9,3	1,60	1,60	275	5,1
	5	370	2,69	1,83	463	13,2	2,43	1,72	418	10,9	1,87	1,50	322	6,8	1,33	1,33	229	3,7
	3	295	2,21	1,49	380	9,3	1,99	1,40	342	7,7	1,54	1,22	265	4,8	1,08	1,08	186	2,5
	1	215	1,66	1,12	286	5,6	1,50	1,05	258	4,7	1,16	0,91	200	2,9	0,77	0,76	132	1,4
CCN-ECM 34	10	620	4,32	2,98	743	17,6	3,89	2,80	669	14,6	2,98	2,44	513	9,0	2,15	2,15	370	5,0
	7,5	525	3,75	2,57	645	13,7	3,38	2,41	581	11,4	2,60	2,10	447	7,1	1,86	1,86	320	3,9
	5	430	3,15	2,15	542	10,1	2,85	2,02	490	8,4	2,19	1,75	377	5,2	1,55	1,55	267	2,8
	3	345	2,60	1,76	447	7,2	2,35	1,65	404	6,0	1,81	1,44	311	3,7	1,27	1,27	218	2,0
	1	275	2,09	1,41	359	4,9	1,89	1,32	325	4,1	1,46	1,15	251	2,6	0,97	0,96	167	1,2

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

Model	Vdc	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
CCN-ECM 14	10	295	1,74	1,29	299	13,0	1,54	1,21	265	10,3	1,11	1,04	191	5,7	0,91	0,91	157	4,0
	7,5	250	1,51	1,11	260	10,1	1,34	1,04	230	8,1	0,97	0,89	167	4,5	0,78	0,78	134	3,1
	5	205	1,28	0,93	220	7,6	1,14	0,87	196	6,1	0,83	0,75	143	3,4	0,66	0,66	114	2,2
	3	165	1,08	0,78	186	5,5	0,95	0,73	163	4,5	0,70	0,62	120	2,5	0,55	0,55	95	1,6
	1	130	0,87	0,63	150	3,8	0,78	0,58	134	3,1	0,57	0,50	98	1,8	0,44	0,44	76	1,1
CCN-ECM 24	10	540	3,36	2,45	578	19,4	2,99	2,29	514	15,7	2,19	1,97	377	8,9	1,72	1,72	296	5,8
	7,5	450	2,88	2,08	495	14,9	2,57	1,95	442	12,0	1,89	1,68	325	6,9	1,46	1,46	251	4,3
	5	370	2,41	1,73	415	10,8	2,15	1,62	370	8,8	1,58	1,39	272	5,1	1,22	1,22	210	3,1
	3	295	1,98	1,41	341	7,6	1,76	1,32	303	6,2	1,31	1,13	225	3,6	0,99	0,99	170	2,2
	1	215	1,49	1,05	256	4,6	1,33	0,98	229	3,8	0,99	0,84	170	2,2	0,74	0,74	127	1,3
CCN-ECM 34	10	620	3,87	2,81	666	14,5	3,43	2,63	590	11,7	2,52	2,26	433	6,7	1,97	1,97	339	4,3
	7,5	525	3,36	2,42	578	11,3	2,99	2,26	514	9,1	2,19	1,95	377	5,2	1,71	1,71	294	3,3
	5	430	2,82	2,02	485	8,3	2,52	1,89	433	6,8	1,85	1,62	318	3,9	1,42	1,42	244	2,4
	3	345	2,33	1,66	401	5,9	2,08	1,55	358	4,8	1,54	1,33	265	2,8	1,16	1,16	200	1,7
	1	275	1,87	1,33	322	4,1	1,67	1,24	287	3,3	1,24	1,06	213	1,9	0,93	0,93	160	1,1

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

Model	Vdc	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
CCN-ECM 14	10	295	1,54	1,21	265	10,4	1,33	1,13	229	8,0	1,00	1,00	172	4,7	0,82	0,82	141	3,4
	7,5	250	1,34	1,04	230	8,1	1,16	0,97	200	6,3	0,86	0,86	148	3,6	0,71	0,71	122	2,6
	5	205	1,13	0,88	194	6,1	0,99	0,81	170	4,7	0,72	0,72	124	2,7	0,60	0,60	103	1,9
	3	165	0,95	0,73	163	4,5	0,83	0,68	143	3,5	0,60	0,60	103	1,9	0,50	0,50	86	1,4
	1	130	0,77	0,59	132	3,1	0,68	0,54	117	2,4	0,46	0,46	79	1,2	0,40	0,40	69	0,9
CCN-ECM 24	10	540	2,98	2,30	513	15,7	2,60	2,14	447	12,3	1,88	1,88	323	6,9	1,56	1,56	268	4,9
	7,5	450	2,56	1,95	440	12,0	2,23	1,82	384	9,4	1,60	1,60	275	5,2	1,33	1,33	229	3,7
	5	370	2,14	1,62	368	8,8	1,87	1,51	322	6,9	1,28	1,27	220	3,5	1,11	1,11	191	2,7
	3	295	1,76	1,32	303	6,2	1,54	1,23	265	4,9	1,06	1,04	182	2,5	0,90	0,90	155	1,8
	1	215	1,32	0,99	227	3,8	1,16	0,92	200	3,0	0,81	0,77	139	1,6	0,67	0,67	115	1,1
CCN-ECM 34	10	620	3,42	2,63	588	11,7	2,99	2,45	514	9,2	2,16	2,16	372	5,1	1,79	1,79	308	3,6
	7,5	525	2,97	2,27	511	9,1	2,60	2,11	447	7,2	1,87	1,87	322	4,0	1,55	1,55	267	2,8
	5	430	2,50	1,90	430	6,8	2,19	1,77	377	5,3	1,50	1,49	258	2,7	1,29	1,29	222	2,0
	3	345	2,07	1,55	356	4,8	1,81	1,45	311	3,8	1,25	1,22	215	1,9	1,06	1,06	182	1,4
	1	275	1,66	1,24	286	3,3	1,46	1,16	251	2,6	1,02	0,98	175	1,4	0,84	0,84	144	1,0

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

Qv = Air flow

Dp(c) = Water side pressure drop

Pc = Cooling Total emission

Qw = Water flow

Ps = Cooling Sensible emission

Heating emission of 3 row coil

Entering air temperature: +20°C

Model	Vdc	WT: 70/60°C				WT: 60/50°C			WT: 50/40°			WT: 50/45°			WT: 45/40°		
		Qv m³/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
CCN-ECM 13	10	295	3,44	296	6,0	2,63	226	3,9	1,82	313	2,1	2,10	361	9,1	1,70	292	6,4
	7,5	250	2,98	256	4,7	2,28	196	3,0	1,58	272	1,6	1,82	313	7,0	1,47	253	4,9
	5	205	2,54	218	3,5	1,94	167	2,3	1,35	232	1,2	1,55	267	5,3	1,26	217	3,7
	3	165	2,12	182	2,6	1,62	139	1,7	1,13	194	0,9	1,30	224	3,9	1,05	181	2,7
	1	130	1,72	148	1,8	1,32	114	1,1	0,92	158	0,6	1,05	181	2,7	0,85	146	1,9
CCN-ECM 23	10	540	6,49	558	10,2	4,98	428	6,6	3,47	597	3,6	3,96	681	15,4	3,21	552	10,9
	7,5	450	5,60	482	7,9	4,30	370	5,1	3,00	516	2,8	3,42	588	11,9	2,78	478	8,4
	5	370	4,67	402	5,8	3,59	309	3,7	2,51	432	2,1	2,85	490	8,6	2,32	399	6,1
	3	295	3,82	329	4,0	2,94	253	2,6	2,06	354	1,4	2,34	402	6,1	1,90	327	4,3
	1	215	2,88	248	2,4	2,22	191	1,6	1,55	267	0,9	1,76	303	3,7	1,43	246	2,6
CCN-ECM 33	10	620	7,61	654	15,8	5,85	503	10,3	4,09	703	5,6	4,65	800	23,8	3,77	648	16,8
	7,5	525	6,59	567	12,3	5,07	436	8,0	3,55	611	4,4	4,03	693	18,5	3,27	562	13,0
	5	430	5,53	476	9,0	4,25	366	5,9	2,98	513	3,2	3,38	581	13,5	2,74	471	9,6
	3	345	4,54	390	6,4	3,50	301	4,2	2,45	421	2,3	2,78	478	9,6	2,26	389	6,8
	1	275	3,65	314	4,3	2,82	243	2,8	1,98	341	1,6	2,23	384	6,5	1,82	313	4,6

Heating emission of 4 row coil

Entering air temperature: +20°C

Model	Vdc	WT: 70/60°C				WT: 60/50°C			WT: 50/40°			WT: 50/45°			WT: 45/40°		
		Qv m³/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
CCN-ECM 14	10	295	3,69	317	11,1	2,83	243	7,2	1,97	339	3,9	2,25	387	16,7	1,83	315	11,8
	7,5	250	3,19	274	8,6	2,45	211	5,6	1,71	294	3,1	1,95	335	13,0	1,58	272	9,2
	5	205	2,68	230	6,3	2,06	177	4,1	1,44	248	2,3	1,64	282	9,5	1,33	229	6,7
	3	165	2,22	191	4,5	1,71	147	3,0	1,19	205	1,6	1,36	234	6,8	1,10	189	4,8
	1	130	1,78	153	3,1	1,37	118	2,0	0,96	165	1,1	1,09	187	4,7	0,89	153	3,3
CCN-ECM 24	10	540	7,27	625	17,3	5,60	482	11,3	3,93	676	6,3	4,44	764	26,1	3,62	623	18,5
	7,5	450	6,17	531	13,0	4,76	409	8,5	3,35	576	4,7	3,77	648	19,6	3,07	528	13,9
	5	370	5,08	437	9,2	3,93	338	6,0	2,76	475	3,4	3,11	535	13,9	2,53	435	9,9
	3	295	4,11	353	6,3	3,17	273	4,2	2,24	385	2,3	2,51	432	9,6	2,05	353	6,8
	1	215	3,04	261	3,7	2,35	202	2,5	1,66	286	1,4	1,86	320	5,6	1,52	261	4,0
CCN-ECM 34	10	620	8,00	688	12,0	6,16	530	7,8	4,31	741	4,3	4,89	841	18,0	3,97	683	12,7
	7,5	525	6,89	593	9,2	5,30	456	6,0	3,72	640	3,3	4,21	724	13,8	3,42	588	9,8
	5	430	5,74	494	6,7	4,43	381	4,4	3,11	535	2,4	3,51	604	10,0	2,85	490	7,1
	3	345	4,70	404	4,7	3,62	311	3,1	2,55	439	1,7	2,87	494	7,1	2,34	402	5,0
	1	275	3,75	323	3,2	2,90	249	2,1	2,04	351	1,2	2,30	396	4,8	1,87	322	3,4

Legend

WT = Water temperature

Vdc = Inverter power

Qv = Air flow

Ph = Emission

Qw = Water flow

Dp(c) = Water side
pressure drop

Heating emission of 1 row additional coil

Entering air temperature: +20°C

		WT: 80/70°C					WT: 75/65°			WT: 70/60°			WT: 65/55°			WT: 60/50°			WT: 55/45°		
Model	Vdc	Qv	Ph	Qw	Dp(c)	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	kW	l/h	kPa	
CCN-ECM 13+1 14+1	10	295	1,90	163	5,5	1,71	147	4,7	1,52	131	3,8	1,33	114	3,1	1,14	98	2,4	0,95	82	1,8	
	7,5	250	1,69	145	4,5	1,52	131	3,8	1,35	116	3,1	1,18	101	2,5	1,02	88	1,9	0,85	73	1,4	
	5	205	1,48	127	3,5	1,33	114	3,0	1,18	101	2,5	1,04	89	2,0	0,89	77	1,5	0,74	64	1,1	
	3	165	1,28	110	2,8	1,16	100	2,3	1,03	89	1,9	0,90	77	1,5	0,77	66	1,2	0,64	55	0,9	
	1	130	1,09	94	2,1	0,98	84	1,7	0,87	75	1,4	0,76	65	1,2	0,66	57	0,9	0,55	47	0,7	
CCN-ECM 23+1 24+1	10	540	3,77	324	4,5	3,39	292	3,8	3,01	259	3,1	2,64	227	2,5	2,26	194	2,0	1,89	163	1,4	
	7,5	450	3,33	286	3,6	2,99	257	3,1	2,66	229	2,5	2,33	200	2,0	2,00	172	1,6	1,67	144	1,2	
	5	370	2,88	248	2,8	2,59	223	2,4	2,31	199	2,0	2,02	174	1,6	1,74	150	1,2	1,45	125	0,9	
	3	295	2,46	212	2,1	2,22	191	1,8	1,97	169	1,5	1,73	149	1,2	1,49	128	0,9	1,24	107	0,7	
	1	215	1,97	169	1,4	1,77	152	1,2	1,58	136	1,0	1,38	119	0,8	1,19	102	0,6	1,00	86	0,5	
CCN-ECM 33+1 34+1	10	620	4,53	390	7,3	4,08	351	6,2	3,64	313	5,1	3,19	274	4,1	2,75	237	3,2	2,31	199	2,4	
	7,5	525	4,04	347	6,0	3,64	313	5,1	3,24	279	4,2	2,85	245	3,4	2,45	211	2,6	2,06	177	2,0	
	5	430	3,51	302	4,7	3,17	273	4,0	2,82	243	3,3	2,48	213	2,7	2,14	184	2,1	1,79	154	1,5	
	3	345	3,01	259	3,6	2,71	233	3,0	2,42	208	2,5	2,12	182	2,0	1,83	157	1,6	1,54	132	1,2	
	1	275	2,53	218	2,6	2,28	196	2,2	2,04	175	1,8	1,79	154	1,5	1,54	132	1,2	1,30	112	0,9	

Heating emission of 2 row additional coil

Entering air temperature: +20°C

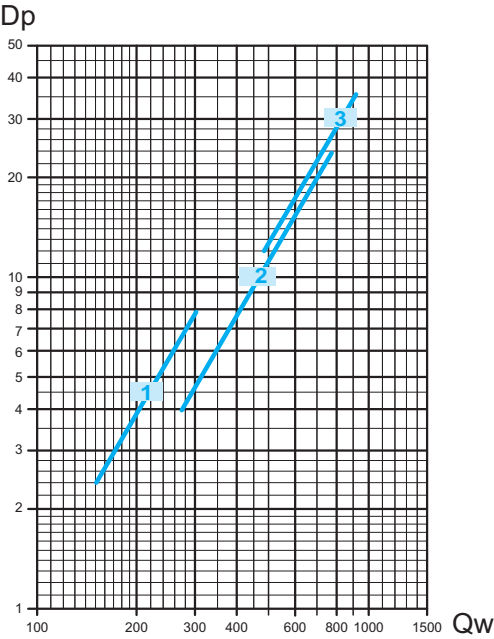
		WT: 65/55°C				WT: 60/50°			WT: 55/45°			WT: 50/40°			WT: 45/40°			WT: 45/35°		
Model	Vdc	Qv	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)
		m³/h	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa
CCN-ECM 13+2	10	295	2,32	200	14,8	2,00	172	11,6	1,69	145	8,8	1,37	118	6,2	1,30	224	19,2	1,06	91	4,0
	7,5	250	2,04	175	11,9	1,77	152	9,3	1,49	128	7,0	1,21	104	5,0	1,14	196	15,4	0,94	81	3,2
	5	205	1,77	152	9,2	1,53	132	7,2	1,29	111	5,4	1,05	90	3,9	0,99	170	11,9	0,81	70	2,5
	3	165	1,51	130	6,9	1,30	112	5,5	1,10	95	4,1	0,90	77	2,9	0,84	144	9,0	0,69	59	1,9
	1	130	1,26	108	5,1	1,09	94	4,0	0,92	79	3,0	0,75	65	2,2	0,71	122	6,6	0,58	50	1,4
CCN-ECM 23+2	10	540	4,56	392	12,3	3,94	339	9,7	3,33	286	7,3	2,72	234	5,2	2,55	439	15,9	2,11	181	3,4
	7,5	450	3,98	342	9,6	3,44	296	7,6	2,91	250	5,7	2,38	205	4,1	2,23	384	12,5	1,84	158	2,7
	5	370	3,42	294	7,4	2,97	255	5,8	2,51	216	4,4	2,05	176	3,2	1,92	330	9,6	1,59	137	2,1
	3	295	2,86	246	5,4	2,48	213	4,3	2,10	181	3,2	1,72	148	2,3	1,60	275	7,0	1,33	114	1,5
	1	215	2,21	190	3,4	1,91	164	2,7	1,62	139	2,1	1,33	114	1,5	1,24	213	4,4	1,03	89	1,0
CCN-ECM 33+2	10	620	5,42	466	19,8	4,70	404	15,6	3,98	342	11,8	3,26	280	8,5	3,04	523	25,6	2,54	218	5,6
	7,5	525	4,77	410	15,8	4,14	356	12,5	3,51	302	9,5	2,87	247	6,8	2,67	459	20,5	2,24	193	4,5
	5	430	4,12	354	12,2	3,58	308	9,7	3,03	261	7,3	2,49	214	5,3	2,31	397	15,8	1,94	167	3,5
	3	345	3,45	297	8,9	3,00	258	7,1	2,54	218	5,4	2,08	179	3,9	1,93	332	11,6	1,63	140	2,5
	1	275	2,82	243	6,3	2,45	211	5,0	2,08	179	3,8	1,71	147	2,7	1,58	272	8,1	1,33	114	1,8

Legend

WT = Water temperature
Vdc = Inverter power
Qv = Air flow

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

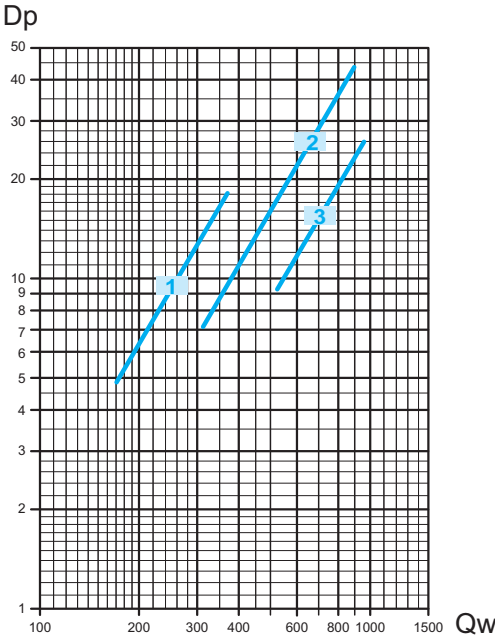
3 row coil



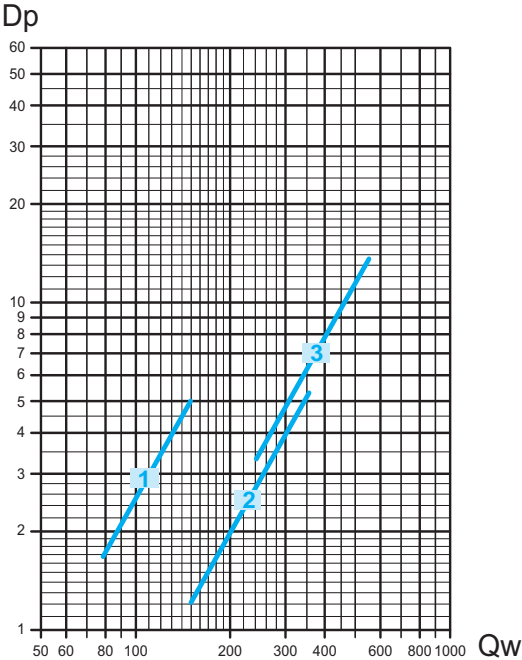
Pressure drop for mean water temperature of 10°C; for different temperatures multiply the pressure drop figure by the K correction factors in the table.

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

4 row coil



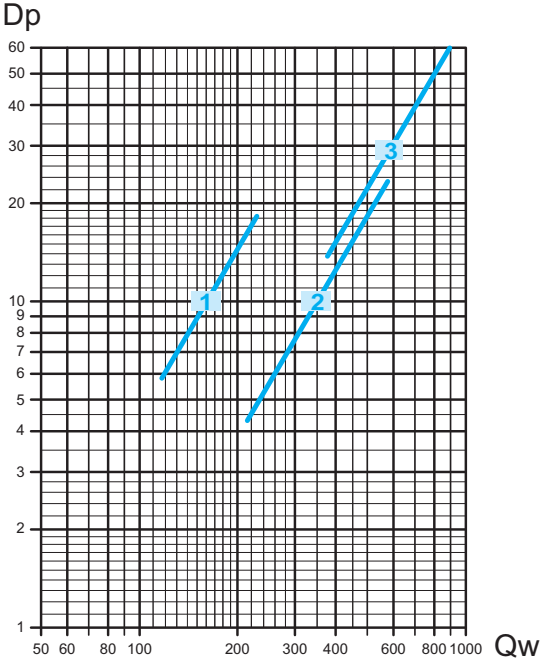
1 row additional coil



Pressure drop for mean water temperature of 65°C; for different temperatures multiply the pressure drop figure by the K correction factors in the table.

°C	40	50	60	70	80
K	1,14	1,08	1,02	0,96	0,90

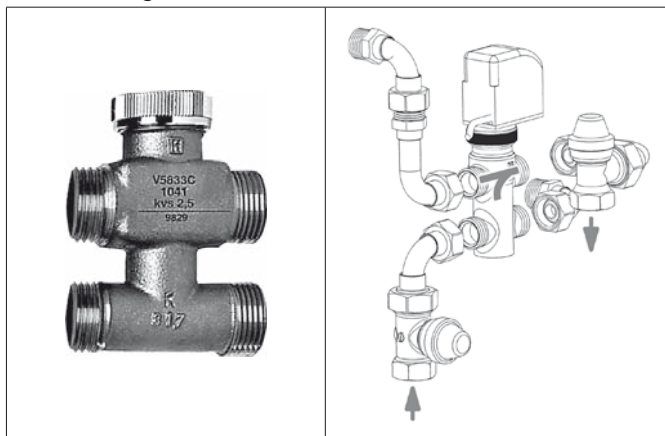
2 row additional coil



Legend
Qw = water flow (l/h)
Dp = pressure drop (kPa)

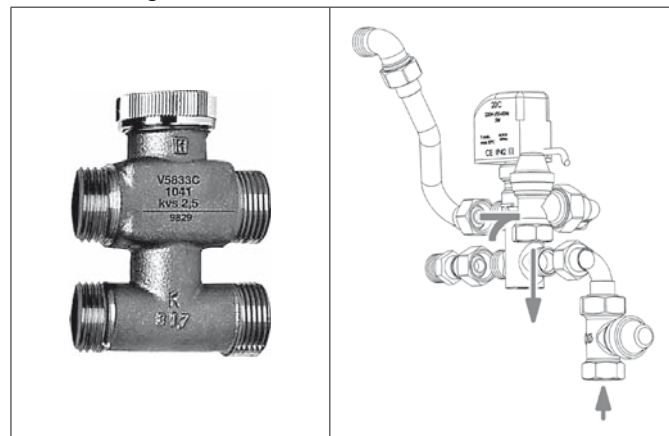
VBP Main coil 3 way valve

Control valve kit: 3 way valve, ON-OFF, with electric motor and mounting kit with micrometric lockshield valve.



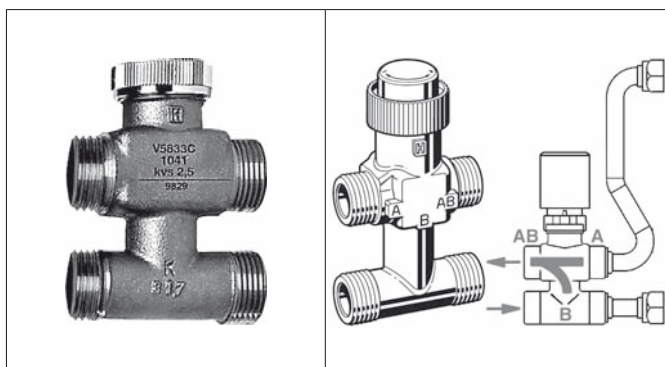
VBA Additional coil 3 way valve

Control valve kit: 3 way valve, ON-OFF, with electric motor and mounting kit with micrometric lockshield valve.



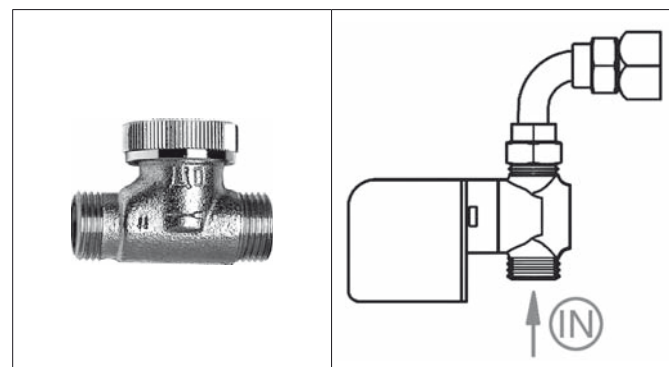
VS Simplified kit for 3 way valve for main and additional coil

3 way valve, (ON-OFF) with electric motor and mounting kit. Valve with flat connection without micrometric lockshield valve.



V2 2 way valve for main and additional coil

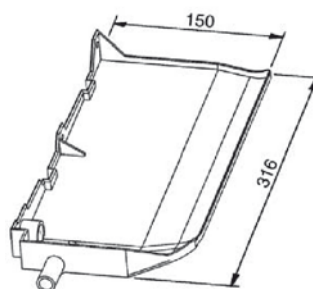
Control valve kit: 2 way valve, ON-OFF, with electric motor and mounting kit.



Valve	type	mod.	Valve			Micrometric lockshield valve			Code		Valves pressure drop
			DN	(Ø)	Kvs	DN	(Ø)	Kvs	Fitted	Not Fitted	
VBP	Main	1 - 2	15	1/2"	1,6	15	1/2"	2	9066561H	9066560H	Dp Qw Kvs 1,6 Kvs 1,7 Kvs 2 Kvs 2,5 Kvs 2,8
	Main	3	20	3/4"	2,5	15	1/2"	2	9060471H	9060474H	
VBA	Additional	All	15	1/2"	1,6	15	1/2"	2	9060472H	9060475H	
VS	Main	1 - 2	15	1/2"	1,6	-	-	-	9066571H	9066570H	
		3	20	3/4"	2,5	-	-	-	9060484H	9060481H	
	Additional	All	15	1/2"	1,6	-	-	-	9060483H	9060480H	
V2	Main	1 - 2	15	1/2"	1,7	-	-	-	9060476H	9060478H	Legend Qw = water flow (l/h) Dp = pressure drop (kPa)
		3	20	3/4"	2,8	-	-	-	9060477H	9060479H	
	Additional	All	15	1/2"	1,7	-	-	-	9060476H	9060478H	

BSO Extension condensate collection tray to cover valve assembly

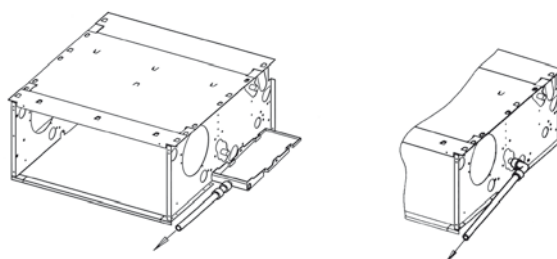
	BSO	
Connection side	left	right
ID	BSO-SX	BSO-DX
Code	6060402	6060403



SCR plastic condensate drain pipe with fast connection

ID	SCR
Code	6060420

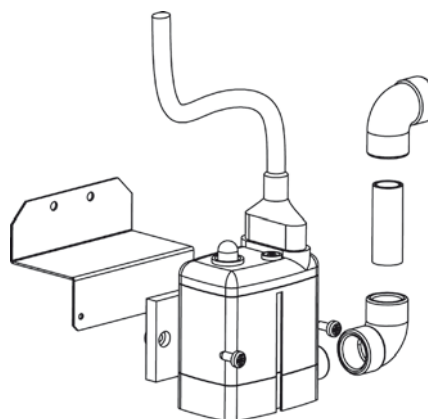
It helps regular drainage of condensate thereby preventing the formation of bends.



PCC condensate drain pump

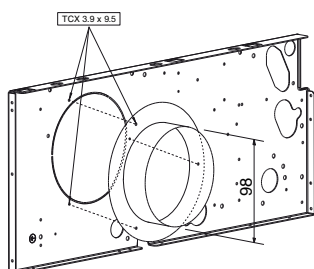
	Fitted	Not fitted
ID	PCC-M	PCC-S
Code	9064011	9064010

Height for vertical flow (m)	Water flow (l/h) depending on the length of horizontal flow	
	5 m	10 m
1	6,8	6,3
2	5,5	5,0
3	4,2	3,8
4	3,0	2,6

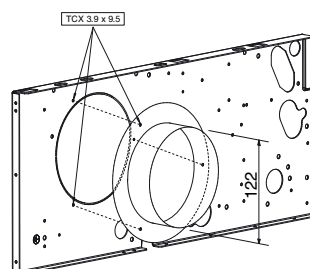


FRC spigot flange

ID	FRC 100
Code	6064191



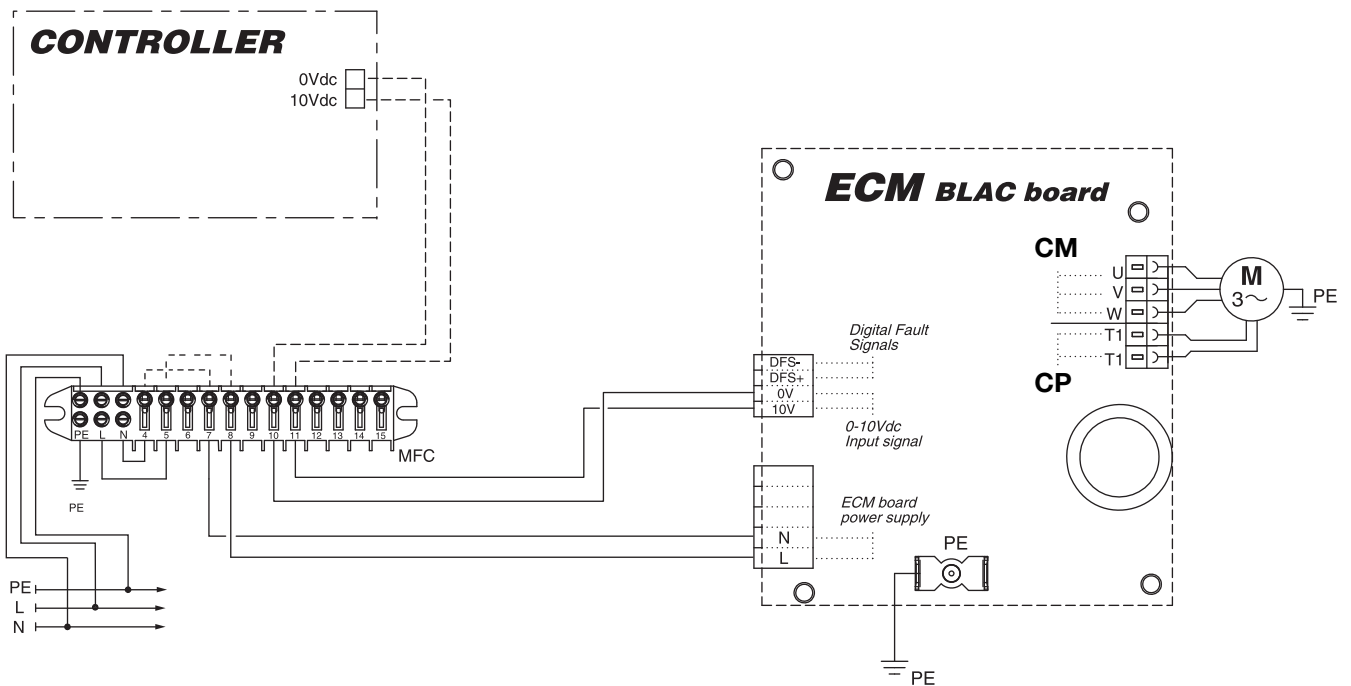
ID	FRC 120
Code	6064192



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:

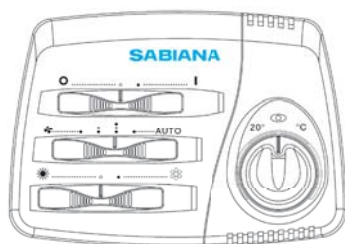
- Impedance < 100 Ω ;
- Maximum speed 10 Vdc;
- Fan OFF with V < 0,9 Vdc.
- Signal 0,3 / 13 V.

CCN-ECM electric wiring diagram



Legend	
CONTROLLER	= Controller
ECM BLAC BOARD	= Inverter circuit board
M	= Electronic motor
CM	= Motor fan connection
CP	= Motor fan thermal protection connection

ID	Code
CR-T-ECM	9066342



Dimensioni: 133x93x37 mm

The control must always be connected with UPM-ECM power unit (fitted on the unit) or with UPS-ECM power unit (not fitted on the unit).

- It allows to control up to 16 units (one power unit for each unit).
- ON-OFF switch.
- Manual 3 speed switch or automatic continuous speed control.
- Manual Summer/Winter switch.
- Continuous speed control based on the difference between ambient temperature and Set temperature (speed switch in Auto position).
- Electronic room thermostat for fan or valves control (ON-OFF).
- Simultaneous thermostatic control of the valves and fan.
- It allows to control the low temperature cut-out thermostat (NTC).
- It allows to control the summer/winter cycle with a centralized and remote switch or with an automatic change-over fitted on the water pipe (for 2-tube installations only).

Note: with 4-pipe systems and continuous chilled and hot water supply, it allows the automatic summer/winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Dead Zone 2°C).

Description	ID	Code
Power unit for CR-T-ECM remote control (fitted on the unit)	UPM-ECM	9066341
Power unit for CR-T-ECM remote control (not fitted on the unit)	UPS-ECM	9066340



Control power absorption: 1,5 VA

Power unit to be installed on the fan coil (fan coil interface).
It controls the fan and the valves of the fan coil.
The power unit is connected to the electric supply.
The power unit receives the information required from the control.

NTC low temperature cut-out thermostat

ID	Code
NTC	3021090



To be fitted between the coil fins; when connecting the control, the NTC probe cable must be separated from the power supply wires.

To be used with the following controls: CR-T-ECM

It stops the fan when the water temperature is lower than 28°C and it starts the fan when is higher than 33°C.

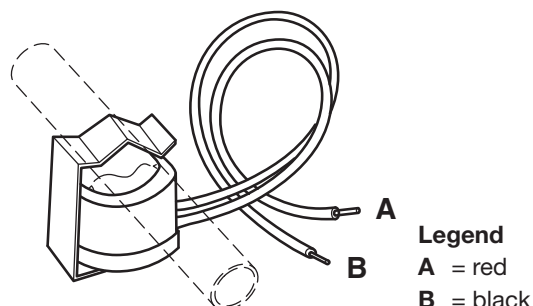
Change-Over CH 15-25

ID	Code
CH 15 -25	9053049

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

For 2-tube installations only (not to be used with 2 way valve).

To be used with the following controls: CR-T-ECM.



Legend
A = red
B = black

Description	ID	Code
Control board fitted on the unit	IR-ECM-M	9066326
Control board not fitted on the unit	IR-ECM-S	9066325

This version is supplied integral with the IR-ECM electronic board that supplies the 1-10V signal to the inverter board, in accordance to the instructions received by the infra-red remote control with receiver (RT03/ECM identification) or by the wall mounted control (ETN/ECM identification).

The units can be controlled as stand-alone, master/slave or in serial connection.

With the dip switches on the IR-ECM electronic board, it is possible to choose the following working modes:

- 2 pipe / 4 pipe system:
dip switch *N.ro 1 = ON / OFF*
- Continuous ventilation:
dip switch *N.ro 4 = ON*
- Close valve and stop fan in cooling mode (autofan function):
dip switch *N.ro 4 = OFF* *N.ro 5 = ON* *N.ro 6 = OFF*
- Close valve and stop fan in heating mode (autofan function):
dip switch *N.ro 4 = OFF* *N.ro 5 = OFF* *N.ro 6 = OFF*
- Close valve and stop fan in both cooling and heating mode (autofan function):
dip switch *N.ro 4 = OFF* *N.ro 5 = ON* *N.ro 6 = ON*

The autofan function allows the simultaneous ON/OFF control of the water valve and the fan, while at the same time optimising the operation of the unit. When reaching the set point, the controller closes the water valve (valve OFF) and only 3 minutes later stops the fan, so as to correctly compensate for the valve closing time. The autofan function can be activated in cooling only mode, in heating only mode or in both operating modes.

In two pipe systems, a water probe (T2 accessory) can be installed on the supply pipe to the unit upstream of the water valve. Based on the temperature read in this section of the pipe, the device will select either cooling or heating operation.

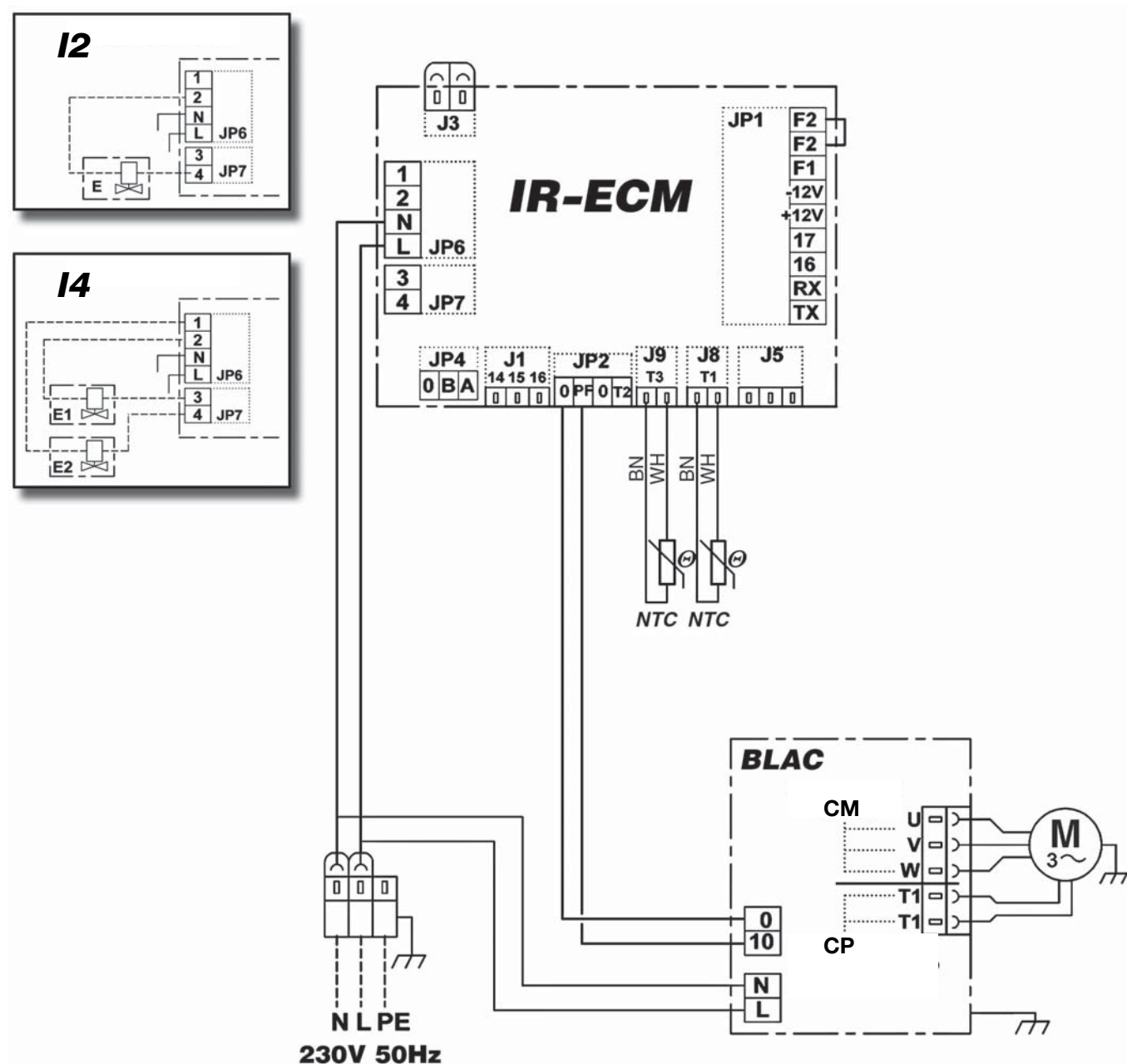
The electronic board also features a contact for connection to a window switch or remote enabling signal. When the contact is closed, the unit can operate, when the contact is open, the unit stops. The same contact can be used for starting and stopping the unit from an external timer or any other remote switching device.

In addition, a series of units can be switched ON or OFF at the same time, by using a flip-flop switch connected to the terminals present on the board (F1 – 12V).

Sensors that require a 12 Volt power supply, for example occupancy sensors, can be connected to other terminals on the electronic board and then to the ON/OFF contacts. The board is able to power external sensors with a maximum current of 60 mA.

Board power absorption: 2,5 VA

CCN-ECM electric wiring diagram with IR-ECM electronic board



Legend

I2 = 2-pipe units
I4 = 4-pipe units
IR-ECM = Electronic control board
BLAC = Inverter circuit board
M = Electronic motor
CM = Motor fan connection

CP = Motor fan thermal protection connection
E = Hot and cold water valve (2-pipe units)
E1 = Hot water valve (4-pipe units)
E2 = Cold water valve (4-pipe units)
T3 = Low temperature cut-out thermostat
T1 = Air intake temperature probe

Description	ID	Code
Infra-red remote control with receiver to be used only with IR-ECM electronic board, with not fitted receiver	RT03/ECM-S	9066327
Wall mounted control to be used only with IR-ECM electronic board	ETN/ECM	3021232

The Carisma Coanda cassettes can be supplied with a micro-processor managing system operated by an infra-red remote control with liquid crystal display or by a wall mounted ETN/ECM control.

Integral with the unit is the room temperature probe, the water temperature probe (cut-out thermostat), the infra-red remote control and the electronic board with RS485 communicating connection which can control up to 20 units connected between them. The electronic board is of master/slave mode and the serial communicating connection allows the serial connection; in the master/slave connection of more units, it is recommended to install the infra-red receiver on the master unit.

The units with IR control are supplied with room temperature probe and water temperature probe (cut-out thermostat).



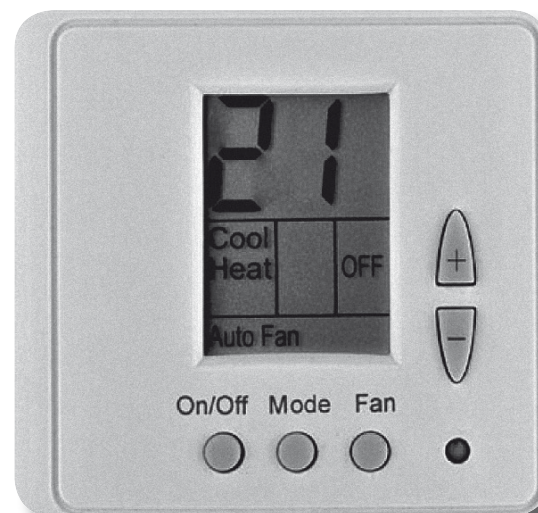
The infra-red control features the following functions:

- Temperature set.
- Fan speed switch with possible automatic speed selection.
- 24 hours on/off program.
- On/off cooling valve control.
- On/off heating valve control.
- Control of the valves only or of the valves and the fan together.
- Valve control of 2 or 4-pipe systems with winter/summer switch on the infra-red control.
- Valve control of 4-pipe systems with automatic heating/cooling mode selection with 2°C dead zone.
- Activating the sensor connected to the T3 contact of the board (non active in the standard configuration), it works like a cut-out thermostat: fitted between the coil fins it stops the fan when the water temperature is lower than 38°C and it starts the fan when the water temperature reaches 42°C.

The wall mounted control features the following functions:

- switch the appliance on and off
- set the fan speed
- set the range of temperature settings (default +/- 3 °C, modifiable on site up to +/- 9°C)
- modify the set point determined by the MaxiNet system by a value of +/- X°C.

The Maxinet system can set the operating mode, the set point and all other operating parameters of the unit, as well as display the settings made by the user. The Maxinet system always has priority over the ETN controller. For the correct use of the system, also see the manual for the cassette with remote control and the Maxinet supervision program.



IR-ECM electronic board

The electronic board, fitted inside the electrical panel, can manage different control modes so as to best satisfy the requirements of the installation. These modes are selected by suitably positioning the configuration dipswitches, which define the following main functions:

- 2 pipe / 4-pipe system
- Operation without / with remote control
- Continuous ventilation
- Close valve and stop fan in cooling mode (autofan function)
- Close valve and stop fan in heating mode (autofan function)
- Close valve and stop fan in both cooling and heating mode (autofan function)

The autofan function allows the simultaneous on/off control of the water valve and the fan, while at the same time optimising the operation of the unit. When reaching the set point, the controller closes the water valve (valve off) and only 3 minutes later stops the fan, so as to correctly compensate for the valve closing time. To prevent the air probe from measuring an incorrect temperature, when the fan is off the controller runs a number of fan ON cycles to annul the effect of any stratification of the air in the room.

In 2-pipe systems, a water probe can be installed on the supply pipe to the unit upstream of the water valve. Based on the temperature read in this section of the pipe, the device will select either cooling or heating operation.

The electronic board also features a contact for connection to a window switch or remote enabling signal. When the contact is closed, the unit can operate, when the contact is open, the unit stops. The same contact can be used for starting and stopping the unit from an external timer or any other remote switching device.

In addition, a series of units can be switched on or off at the same time, by using a flip-flop switch connected to the terminals present on the board.

Sensors that require a 12 volt power supply, for example occupancy sensors, can be connected to other terminals on the electronic board and then to the on/off contacts. The board is able to power external sensors with a maximum current of 60mA.

IR-ECM ELECTRONIC BOARD



INSTALLATION EXAMPLE WITH INFRA-RED REMOTE CONTROL



Unit with IR-ECM electronic board

A group of Carisma units with IR-ECM electronic board can be connected via a serial link and can consequently be managed at the same time by just one infra-red remote control or ETN-ECM wall mounted control. Using the special jumper present on the board, one unit must be configured as the master, and all the others as slaves. It is clear that 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 infra-red remote control

One control for each unit



One control for more units (20 units max.)

(MAXIMUM TOTAL LENGTH OF THE CONNECTION CABLE = 800 m)



With ETN-ECM wall mounted control

One control for each unit (MAXIMUM LENGTH OF THE CONNECTION CABLE = 20 m)



One control for more units (20 units max.) (MAXIMUM TOTAL LENGTH OF THE CONNECTION CABLE = 800 m)



T2 Change-Over for infra-red remote control (accessory)

ID	Code
T2	9079103



Suitable for units with infra-red remote control only.

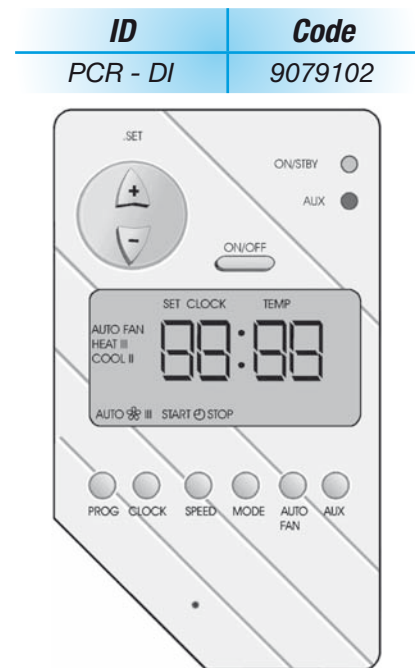
The NTC sensor, if connected to the T2 contact of the board, works like a change-over: fitted in contact to the supply pipe it controls automatically the winter/summer switch in accordance to the water temperature.

Unit with IRC electronic board

Multifunction control

A group of Carisma Coanda cassette units with infra-red remote control microprocessor can be connected via a serial link and can consequently be managed at the same time by just one infra-red remote control. Using the special jumper present on the board, one unit must be configured as the master, and all the others as slaves. It is clear that 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.

Another option available for the serial communication between the units is the possibility to connect up to 60 Carisma Coanda cassette units in series (the maximum length of the connection cable must not exceed 800 m) and manage them with just one wall mounted intelligent PCR-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. If more than 60 units need to be connected, two or more wall mounted intelligent controllers must be used. Each wall mounted controller only manages the units it is connected to.



The PCR-DI control is used to manage a series of cassettes, up to a maximum of 60 units, from one single control point. The PCR-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 cassette 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

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 PCR-DI panel can also be used for the time management of the units over the week. Two on times and two off times can be set on the units for each day of the week.

The weekly programming mode can be stopped at any time, returning to the manual setting and then weekly programming mode can subsequently be started again.

Maxinet program for managing a network of Sabiana IR hydronic terminals

Maxinet is a centralised control system for networks of IR hydronic terminals, based on software that runs on Windows XP professional Service Pack 2.

The Maxinet software offers a practical and economical solution for managing the terminals, 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.

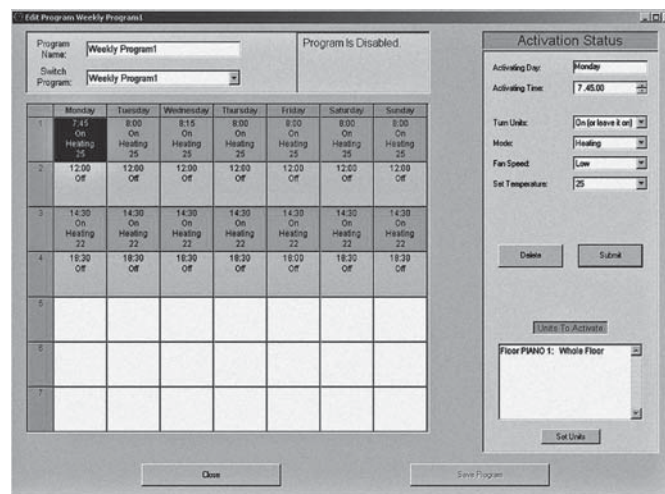
The program exploits all the potential of our appliances with remote controls, representing an addition to the latter.

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



The program can be used to:

- create uniform logical blocks (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.

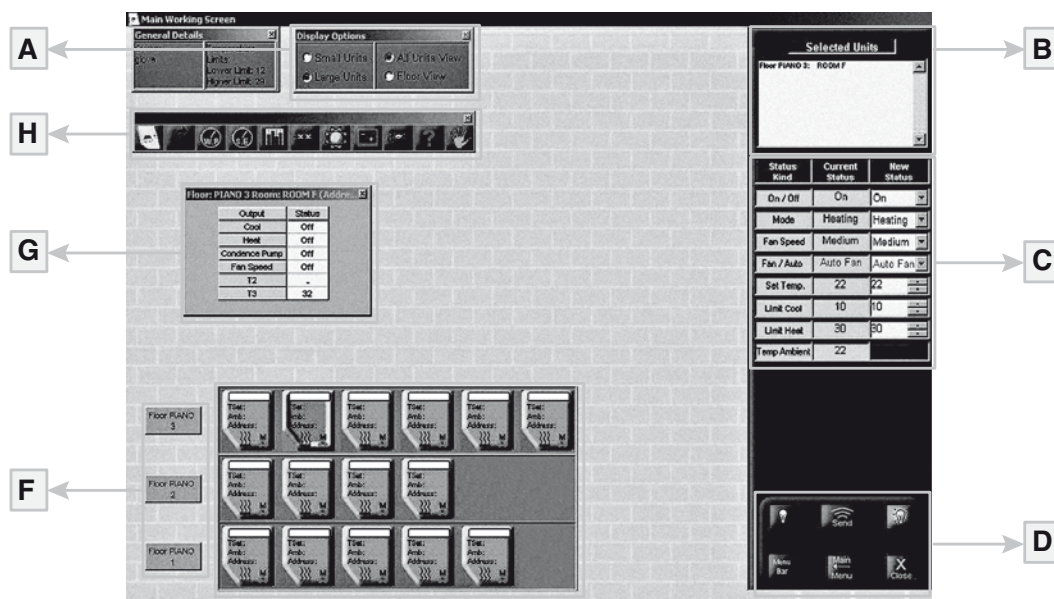


The "Weekly Program" can be used to set the unit operating parameters for each day of the week. Up to 20 different weekly programs can be set.

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.

One especially useful function of the weekly program is to have the program to carry out timed checking routines to identify whether the operating mode or temperature setting have been modified on the terminals, for example using the local remote control. If activated, the routine will reset all the unit operating parameters to the values set in the weekly program.

Maxinet management system for a network of fan coils



Legend

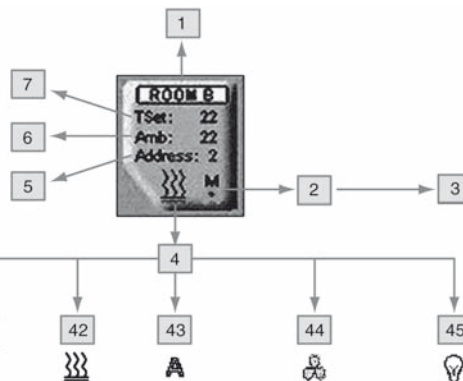
- A = selection of the viewing mode
- B = selection of the different units
- C = control parameters
- D = controls

- E = unit
- F = floors /sections selection
- G = working mode of every unit
- H = main menu

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.

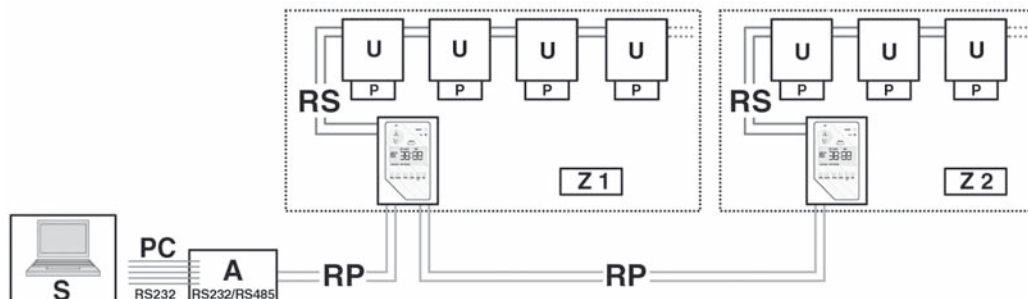
Legend

- 1 = room (name/number)
- 2 = fan
- 3 = auto fan
- 4 = mode
 - 41 = cooling
 - 42 = heating
 - 43 = auto
 - 44 = fan only
 - 45 = off
- 5 = address
- 6 = temperature
- 7 = set



PC Maxinet Software

Connection of a Carisma Coanda cassette network of more than 60 units.



Legend

- U = Carisma Coanda unit
- P = panel
- Z1 = zone 1
- Z2 = zone 2

- S = Maxinet software
- A = adaptor
- RP = main network
- RS = secondary network
- PC = PC connector

RS 485 serial connection cable

Shielded cable to be used:
Belden 9841, RS-485, 1x2x24 AWG SFTP, 120 Ohm



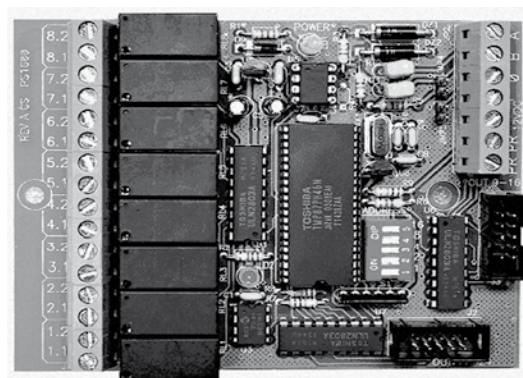
MaxiNet Accessories

ID	Code
S08R	9079105

In addition to the air-conditioning units, MaxiNet can also work with general output cards. Each card contains 8 outputs which can be connected to "On / Off" devices.

The contact of each relay may therefore be used by connecting it in series with the coil of the remote on/off switches of the motor of a pump, a chiller or a boiler, or with the coils of the remote switches controlling "lights", air extractor fans, opening and closing of doors and electrically-driven devices such as gates or shutters.

The Out-Put card can be connected in a Maxinet network and controlled by the software. Up to 10 cards can be used.



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.

Air Conditioning
One Way Cassette Fan Coils
Carisma Coanda CCN
Carisma Coanda CCN-ECM



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