MBTClimate

High pressure fan coils

Carisma CSS-ECM

sabiana.it

TABLE OF CONTENTS

INTRODUCTION

In line with innovative trends and modern industrial design, the Carisma CSS-ECM fan coil range meets today's demanding requirements of performance, size, acoustics, low energy, ease of installation and maintenance.

Carisma CSS-ECM is a high pressure ductable fan coil of reduced height.
Contrary to the traditional ductable units, the range offers lower energy consumption.

Carisma CSS-ECM is able to vary the air flow rate continiously, by offering an elevated management and control flexibility, by assuring at the same time excellent comfort conditions and a very low energy consumption.
The innovative synchronous electronic motor with permanent magnets, is controlled by an inverter board designed and developed in Italy.
The air flow rate can be varied in continuous by means of a 1-10 V signal generated by Sabiana controls or by independent control systems.

The continuous air flow rate control improves the acoustic comfort and allows a more punctual reply to the thermal loads variation and a greater stability of the requested indoor air temperature.

The full compliance with the Electromagnetic Compatibility Directive and with the other severe Standards in force is certified by an independent institute.
The electric power supply required for the unit is therefore single-phase with voltage of 230 V and frequency of 50-60 Hz.

A full range of control options is available offering greater flexibility in the installation of units, with the highest precision in monitoring and maintaining the desired comfort conditions.

The model is complemented with a full range of accessories included by default for a fan coil installation, such as the most common ones: various types of adjustment valves, auxiliary condensate drain pump, flanges and air outlet/inlet plenum.

CONSTRUCTION FEATURES

The range includes 3 sizes (from 62 to 537 m^3/h) each one equipped with 3 row coils and with the possibility to add 1 row coil for 4 pipe systems.
The range, being moreover only 156 mm high, is perfect to meet all air-conditioning requirements of residential and work environments like offices, shops, restaurants and hotel rooms featuring installations with available pressure (up to 400 Pa).

Casing

Made of 1 mm galvanized steel, a rear panel and two lateral sides insulated with 3 mm polyolefin (PO) foam.

Fan assembly

High efficiency permanent magnet centrifugal fan with power supply of 230V/1f/50-60Hz.

Coil

It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The main coil and additional coil are equipped with two Ø 1/2" BSP female gas connections.
The coil has Ø 1/8" inch BSP air vent and drain.
The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
The connections are on the left side looking from the air outlet of the unit (see picture).
On request we can deliver the unit with the connections on the right end side. This operation can also be easily carried out on the construction site during installation.

Condensate collection tray

Made of coated sheet metal and fastened to the internal structure; the tray is insulated with 3 mm polyolefin (PO) foam (B-s2-d0 EN 13501-1). The outside diameter of the condensate discharge pipe is Ø 15 mm.

Filter

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

TECHNICAL FEATURES

3 row coil - 2 pipe units

The following standard rating conditions are used:

COOLING

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

HEATING

Entering air temperature: + 20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

MODEL		CSS-ECM 13			CSS-ECM 23			CSS-ECM 33		
Inverter speed signal (Vdc)		2	4,7	6,5	1,8	4,5	5,7	2	4,9	6,7
		MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX
Air flow	m^3/h	62	168	236	107	307	399	138	385	537
Available pressure	Pa	7	50	99	6	50	83	7	50	97
Cooling total capacity	kW	0,48	1,22	1,66	0,74	2,10	2,64	0,97	2,88	3,81
Cooling sensible capacity	kW	0,37	0,91	1,25	0,55	1,53	1,97	0,73	2,04	2,76
Heating capacity	kW	0,48	1,32	1,79	0,79	2,23	2,77	1,04	3,00	4,01
Dp Cooling	kPa	1,5	5,7	10,7	1,5	5,3	8,9	4,5	11,8	25,5
Dp Heating	kPa	1,4	5,9	9,9	1,5	4,7	7,2	2,7	12,6	20,7
Fan	W	4,5	12,0	25,0	7,5	20,0	35,0	8,5	25,0	51,0
Sound power outlet (Lw)	dB(A)	31	47	54	33	51	57	35	52	60
Sound power inlet + radiated (Lw)	dB(A)	31	51	58	29	53	58	33	54	62
Sound pressure level outlet (Lp) (1)	dB(A)	22	38	45	24	42	48	26	43	51
Sound pressure level inlet + radiated (Lp) (1)	dB(A)	22	42	49	20	44	49	24	45	53
Plenum code		9059111	9059111	9059111	9059112	9059112	9059112	9059113	9059113	9059113

(1) The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

3+1 row coil - 4 pipe units

The following standard rating conditions are used:

COOLING

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

HEATING

Entering air temperature: + 20 °C
Water temperature: +65 °C E.W.T. +55 °C L.W.T.

MODEL		CSS-ECM 13+1			CSS-ECM 23+1			CSS-ECM 33+1		
Inverter speed signal (Vdc)		2	4,7	6,5	1,8	4,5	5,7	2	4,9	6,7
		MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX
Air flow	m^3/h	61	163	229	99	285	368	131	371	519
Available pressure	Pa	7	50	98	6	50	84	7	50	97
Cooling total capacity	kW	0,47	1,18	1,62	0,71	2,04	2,58	0,94	2,79	3,74
Cooling sensible capacity	kW	0,35	0,88	1,21	0,52	1,50	1,93	0,69	1,98	2,69
Heating capacity	kW	0,48	1,15	1,44	0,78	1,89	2,21	1,04	2,41	2,97
Dp Cooling	kPa	0,8	5,1	9,4	0,5	5,8	8,2	2,3	11,2	18,1
Dp Heating	kPa	0,9	1,8	3,5	0,6	4,3	5,9	1,1	7,9	10,7
Fan	W	4,5	14,0	26,0	8,0	21,0	36,0	8,5	25,0	53,0
Sound power outlet (Lw)	dB(A)	31	47	54	33	51	57	35	52	60
Sound power inlet + radiated (Lw)	dB(A)	31	51	58	29	53	58	33	54	62
Sound pressure level outlet (Lp) (1)	dB(A)	22	38	45	24	42	48	26	43	51
Sound pressure level inlet + radiated (Lp) (1)	dB(A)	22	42	49	20	44	49	24	45	53
Plenum code		9059111	9059111	9059111	9059112	9059112	9059112	9059113	9059113	9059113

(1) The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

MAIN PERFORMANCES AND TECHNICAL CHARACTERISTICS

3 row coil - 2 pipe units

The following standard rating conditions are used:

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

HEATING
Entering air temperature: + 20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

Available pressure: 0 Pa

MODEL		CSS-ECM 13						CSS-ECM 23						CSS-ECM 33					
Inverter speed signal (Vdc)		2	3	4,7	6,5	8	10	1,8	3	4,5	5,7	8	10	2	3	4,9	6,7	8	10
Air flow	m^3/h	85	154	245	343	453	549	155	289	455	590	860	985	190	305	528	740	890	1.057
Cooling total capacity	kW	0,66	1,12	1,66	2,19	2,73	3,16	1,18	2,01	3,03	3,73	5,01	5,53	1,60	2,41	3,77	4,87	5,59	6,31
Cooling sensible capacity	kW	0,47	0,82	1,25	1,67	2,13	2,50	0,84	1,47	2,24	2,80	3,85	4,31	1,07	1,61	2,56	3,36	3,86	4,42
Heating capacity	kW	0,69	1,23	1,92	2,61	3,36	3,98	1,19	2,13	3,21	4,05	5,58	6,24	1,54	2,42	4,05	5,50	6,47	7,52
Dp Cooling	kPa	1,4	5,3	10,6	17,4	25,9	33,9	1,4	6,0	12,4	18,0	30,6	36,8	5,0	10,2	22,5	35,7	45,8	57,1
Dp Heating	kPa	1,9	5,3	11,6	20,4	32,2	44,1	2,0	5,6	11,6	17,6	31,6	38,9	3,9	8,6	21,5	37,4	50,4	66,2
Fan	W	4,5	5,0	10,5	20,9	33,8	53,1	8,1	10,4	18,7	31,7	78,4	108,5	9,0	10,9	23,1	45,1	72,9	105,3
Sound power (Lw)	dB(A)	35	42	54	63	66	68	36	46	57	64	69	71	37	44	57	67	69	70
Sound pressure (Lp) (1)	dB(A)	26	33	45	54	57	59	27	37	48	55	60	62	28	35	48	58	60	61

(1) The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

Note: for the sound pressure levels with available pressure different from 0 Pa, contact the Sabiana technical sales department.

3+1 row coil - 4 pipe units

The following standard rating conditions are used:

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

HEATING
Entering air temperature: + 20 °C
Water temperature: +65 °C E.W.T. +55 °C L.W.T.

Available pressure: 0 Pa

MODEL		CSS-ECM 13+1						CSS-ECM 23+1						CSS-ECM 33+1					
Inverter speed signal (Vdc)		2	3	4,7	6,5	8	10	1,8	3	4,5	5,7	8	10	2	3	4,9	6,7	8	10
Air flow	m^3/h	85	154	245	343	453	549	155	289	455	590	860	985	190	305	528	740	890	1.057
Cooling total capacity	kW	0,63	1,08	1,60	2,09	2,59	3,00	1,17	1,97	2,81	3,51	4,64	5,10	1,54	2,31	3,62	4,69	5,37	6,09
Cooling sensible capacity	kW	0,45	0,79	1,20	1,59	2,02	2,37	0,83	1,44	2,11	2,67	3,62	4,03	1,06	1,62	2,61	3,42	3,98	4,57
Heating capacity	kW	0,68	1,08	1,52	1,92	2,31	2,61	1,14	1,82	2,51	2,98	3,77	4,09	1,43	2,04	3,04	3,81	4,29	4,78
Dp Cooling	kPa	1,3	4,9	9,9	16,0	23,6	30,9	1,4	5,8	10,8	16,1	26,8	31,9	4,7	9,5	21,0	33,3	42,7	53,7
Dp Heating	kPa	0,7	1,5	2,8	4,3	6,0	7,6	2,2	5,0	8,9	12,2	18,9	22,1	4,0	7,5	15,3	23,1	28,8	35,2
Fan	W	4,5	5,0	10,5	20,9	33,8	53,1	8,1	10,4	18,7	31,7	78,4	108,5	9,0	10,9	23,1	45,1	72,9	105,3
Sound power (Lw)	dB(A)	35	42	54	63	66	68	36	46	57	64	69	71	37	44	57	67	69	70
Sound pressure (Lp) (1)	dB(A)	26	33	45	54	57	59	27	37	48	55	60	62	28	35	48	58	60	61

(1) The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m^3 room and a reverberation time of 0.5 sec.

Note: for the sound pressure levels with available pressure different from 0 Pa, contact the Sabiana technical sales department.

COOLING CAPACITY

3 row coil units

Entering air temperature: 27 °C - R.H.: 50% - Available pressure: 0 Pa

			WT: 7 / 12 °C				WT: 8 / 13 °C				WT: 10 / 15 °C				WT: 12 / 17 °C			
		Qv	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
Model	Vdc	m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
CSS-ECM 13	10	549	3,31	2,45	578	36,7	3,05	2,35	533	31,6	2,51	2,11	441	22,2	2,18	1,98	383	17,1
	8	453	2,86	2,09	498	28,1	2,64	1,98	459	24,1	2,17	1,81	380	17,0	1,87	1,68	327	12,9
	6,5	343	2,30	1,63	398	18,9	2,11	1,56	367	16,2	1,75	1,40	304	11,5	1,48	1,31	259	8,5
	4,7	245	1,74	1,22	302	11,5	1,61	1,16	278	9,9	1,34	1,04	231	7,0	1,11	0,97	193	5,0
	3	154	1,11	0,77	192	5,2	1,09	0,76	188	4,9	0,90	0,69	156	3,5	0,71	0,61	123	1,4
	2	85	0,67	0,45	116	1,4	0,62	0,43	107	1,3	0,54	0,40	93	1,0	0,42	0,35	73	0,7
CSS-ECM 23	10	985	5,81	4,24	1.017	40,1	5,32	4,04	932	34,1	4,32	3,58	761	23,5	3,59	3,27	636	16,9
	8	860	5,14	3,70	897	32,1	4,83	3,62	843	28,5	3,93	3,22	689	19,7	3,22	2,93	567	13,8
	5,7	590	3,85	2,70	667	19,0	3,61	2,64	626	16,8	2,95	2,33	512	11,7	2,39	2,13	416	8,0
	4,5	455	3,13	2,16	542	13,1	2,88	2,07	498	11,2	2,39	1,87	414	8,0	1,93	1,70	335	5,4
	3	289	2,16	1,47	373	6,8	1,96	1,37	339	5,7	1,64	1,25	284	4,1	1,28	1,10	221	2,6
	1,8	155	1,26	0,83	219	1,5	1,15	0,78	199	1,3	0,95	0,71	165	1,0	0,74	0,62	129	0,7
CSS-ECM 33	10	1.057	6,80	4,42	1.186	65,0	6,12	4,10	1.070	53,8	4,70	3,57	825	33,5	3,65	3,06	645	21,4
	8	890	6,00	3,90	1.044	51,9	5,44	3,64	947	43,3	4,21	3,11	735	27,3	3,23	2,68	567	17,1
	6,7	740	5,25	3,36	909	40,6	4,75	3,14	825	33,9	3,70	2,70	644	21,6	2,82	2,34	492	13,3
	4,9	528	4,03	2,58	697	25,4	3,67	2,39	635	21,4	2,88	2,07	499	13,8	2,16	1,77	376	8,3
	3	305	2,57	1,62	444	11,5	2,35	1,50	405	9,7	1,86	1,30	321	6,4	1,39	1,11	241	3,8
	2	190	1,71	1,06	295	5,6	1,57	1,00	271	4,8	1,25	0,86	216	2,5	0,93	0,74	162	1,2

WT: Water temperature
Vdc: Inverter speed signal (Vdc)
Qv: Air flow
Pc: Cooling total capacity
Ps: Cooling sensible capacity
Qw: Water flow rate
Dp(c): Dp Cooling

Note: the power absorption (Watt) at p. 15 must be subtracted from the total and sensible cooling capacity

Entering air temperature: 26 °C - R.H.: 50% - Available pressure: 0 Pa

			WT: 7 / 12 °C				WT: 8 / 13 °C				WT: 10 / 15 °C				WT: 12 / 17 °C			
		Qv	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
Model	Vdc	m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
CSS-ECM 13	10	549	3,02	2,33	528	31,3	2,76	2,21	484	26,6	2,39	2,10	420	20,4	1,94	1,87	343	14,0
	8	453	2,61	1,98	455	23,9	2,39	1,89	417	20,4	2,05	1,79	359	15,4	1,67	1,57	293	10,6
	6,5	343	2,10	1,57	364	16,1	1,92	1,48	334	13,7	1,55	1,34	270	9,3	1,33	1,23	232	7,0
	4,7	245	1,59	1,16	275	9,8	1,46	1,11	253	8,3	1,19	0,99	206	5,7	0,99	0,91	172	4,1
	3	154	1,08	0,76	186	4,9	0,99	0,73	170	4,2	0,80	0,65	139	1,9	0,66	0,59	114	1,3
	2	85	0,61	0,43	105	1,3	0,58	0,42	101	1,2	0,48	0,37	83	0,9	0,38	0,34	66	0,7
CSS-ECM 23	10	985	5,28	4,01	926	34,0	4,79	3,83	841	28,4	3,95	3,47	697	20,1	3,20	3,07	568	13,8
	8	860	4,77	3,63	834	28,2	4,34	3,43	759	23,7	3,56	3,13	625	16,5	2,87	2,72	506	11,3
	5,7	590	3,58	2,65	620	16,7	3,26	2,48	565	14,1	2,61	2,19	454	9,4	2,14	1,99	373	6,6
	4,5	455	2,84	2,07	491	11,0	2,64	1,98	456	9,6	2,12	1,76	367	6,5	1,72	1,58	299	4,5
	3	289	1,94	1,38	335	5,6	1,81	1,32	313	4,9	1,45	1,18	252	3,3	1,16	1,05	202	1,6
	1,8	155	1,14	0,78	196	1,4	1,02	0,74	177	1,2	0,85	0,66	147	0,9	0,66	0,59	115	0,7
CSS-ECM 33	10	1.057	6,08	4,13	1.063	53,5	5,41	3,84	947	43,4	4,13	3,30	727	26,8	3,17	2,85	563	16,8
	8	890	5,37	3,65	936	42,7	4,80	3,36	837	34,8	3,64	2,88	638	21,3	2,79	2,48	492	13,3
	6,7	740	4,69	3,14	814	33,4	4,20	2,94	729	27,3	3,20	2,53	557	16,8	2,44	2,17	427	10,3
	4,9	528	3,62	2,39	626	21,0	3,25	2,25	563	17,3	2,48	1,91	430	10,6	1,87	1,65	325	6,4
	3	305	2,32	1,53	400	9,5	2,09	1,42	361	7,9	1,59	1,21	275	4,8	1,20	1,03	208	2,5
	2	190	1,55	1,00	267	4,7	1,39	0,93	241	3,7	1,08	0,80	187	1,5	0,80	0,68	138	1,0

WT: Water temperature
Vdc: Inverter speed signal (Vdc)
Qv: Air flow
Pc: Cooling total capacity
Ps: Cooling sensible capacity
Qw: Water flow rate
Dp(c): Dp Cooling

Entering air temperature: 25 °C - R.H.: 50% - Available pressure: 0 Pa

			WT: 7 / 12 °C				WT: 8 / 13 °C				WT: 10 / 15 °C				WT: 12 / 17 °C			
		Qv	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
Model	Vdc	m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
CSS-ECM 13	10	549	2,74	2,22	480	26,4	2,48	2,11	435	22,0	2,15	1,96	379	17,0	1,82	1,82	322	12,5
	8	453	2,36	1,89	412	20,1	2,15	1,78	375	16,8	1,85	1,66	324	12,8	1,56	1,56	273	9,4
	6,5	343	1,90	1,48	330	13,5	1,72	1,41	300	11,3	1,47	1,31	256	8,4	1,22	1,22	214	6,1
	4,7	245	1,44	1,10	250	8,3	1,31	1,05	227	6,9	1,11	0,96	192	5,1	0,88	0,86	154	3,4
	3	154	0,98	0,72	169	4,1	0,89	0,68	153	2,8	0,71	0,61	123	1,4	0,59	0,56	102	1,1
	2	85	0,58	0,42	100	1,2	0,53	0,39	91	1,0	0,42	0,35	73	0,8	0,34	0,32	59	0,6
CSS-ECM 23	10	985	4,76	3,81	836	28,3	4,29	3,60	756	23,5	3,55	3,26	628	16,7	2,90	2,90	518	11,7
	8	860	4,32	3,41	755	23,6	3,88	3,22	680	19,5	3,20	2,91	564	13,8	2,62	2,62	464	9,7
	5,7	590	3,22	2,48	560	13,9	2,92	2,33	507	11,6	2,38	2,11	414	8,0	1,92	1,92	336	5,5
	4,5	455	2,62	1,99	454	9,6	2,37	1,87	410	8,0	1,92	1,69	332	5,4	1,52	1,48	265	3,6
	3	289	1,79	1,33	310	4,9	1,62	1,25	280	4,1	1,27	1,09	220	2,2	1,02	0,98	178	1,1
	1,8	155	1,01	0,74	176	1,2	0,94	0,71	163	1,1	0,74	0,62	129	0,8	0,59	0,55	102	0,6
CSS-ECM 33	10	1.057	5,38	3,87	943	43,3	4,71	3,58	827	34,1	3,64	3,09	643	21,6	2,77	2,60	494	13,4
	8	890	4,76	3,38	830	34,5	4,18	3,13	730	27,4	3,20	2,69	562	17,0	2,44	2,30	432	10,6
	6,7	740	4,17	2,96	724	27,2	3,67	2,72	639	21,6	2,79	2,34	487	13,2	2,14	1,99	375	8,2
	4,9	528	3,23	2,26	560	17,2	2,85	2,08	494	13,7	2,15	1,76	374	8,3	1,64	1,51	286	5,1
	3	305	2,07	1,43	357	7,8	1,85	1,31	319	6,4	1,39	1,12	240	3,8	1,04	0,95	181	1,3
	2	190	1,38	0,94	239	3,2	1,23	0,88	213	1,8	0,93	0,73	161	1,2	0,69	0,63	121	0,8

WT: Water temperature
Vdc: Inverter speed signal (Vdc)
Qv: Air flow
Pc: Cooling total capacity
Ps: Cooling sensible capacity
Qw: Water flow rate
Dp(c): Dp Cooling

Note: the power absorption (Watt) at p. 15 must be subtracted from the total and sensible cooling capacity

HEATING CAPACITY

3 row coil units

Entering air temperature: 20 °C - Available pressure: 0 Pa

			WT: 70 / 60 °C			WT: 60 / 50 °C			WT: 55 / 45 °C			WT: 50 / 40 °C			WT: 50 / 45 °C			WT: 45 / 40 °C		
		Qv	Ph	Qw	Dp(h)	Ph	Qw	Dp(h)	Ph	Qw	Dp(h)	Ph	Qw	Dp(h)	Ph	Qw	Dp(h)	Ph	Qw	Dp(h)
Model	Vdc	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
CSS-ECM 13	10	549	8,06	709	42,3	6,28	550	27,5	5,38	471	21,1	4,47	392	15,4	4,86	852	62,3	3,98	698	44,1
	8	453	6,80	597	30,9	5,30	464	20,2	4,55	398	15,5	3,79	331	11,4	4,10	716	45,5	3,36	586	32,2
	6,5	343	5,28	463	19,5	4,13	361	12,8	3,55	309	9,9	2,96	258	7,3	3,18	554	28,6	2,61	455	20,4
	4,7	245	3,86	338	11,1	3,03	264	7,3	2,61	227	5,7	2,18	190	4,2	2,33	405	16,2	1,92	333	11,6
	3	154	2,49	218	5,0	1,96	171	3,3	1,69	147	2,6	1,42	123	1,9	1,50	260	7,3	1,23	214	5,3
	2	85	1,48	129	2,0	1,10	96	1,2	0,96	83	0,9	0,80	70	0,6	0,84	147	2,6	0,69	121	1,9
CSS-ECM 23	10	985	12,68	1.118	37,2	9,80	861	24,0	8,35	733	18,3	6,89	606	13,3	7,67	1.347	55,3	6,24	1.098	38,9
	8	860	11,31	995	30,2	8,76	768	19,6	7,46	654	14,9	6,17	541	10,8	6,85	1.200	44,9	5,58	979	31,6
	5,7	590	8,18	717	16,7	6,35	555	10,9	5,43	474	8,4	4,51	393	6,1	4,94	862	24,7	4,05	705	17,6
	4,5	455	6,49	569	11,0	5,05	441	7,2	4,33	377	5,6	3,60	313	4,1	3,93	684	16,3	3,21	558	11,6
	3	289	4,29	376	5,3	3,35	292	3,5	2,87	250	2,7	2,40	209	2,0	2,59	451	7,8	2,13	370	5,6
	1,8	155	2,40	210	1,9	1,88	164	1,3	1,62	141	1,0	1,35	118	0,7	1,44	251	2,8	1,19	206	2,0
CSS-ECM 33	10	1.057	15,23	1.340	63,0	11,86	1.040	41,3	10,16	890	31,8	8,45	740	23,3	9,18	1.608	92,8	7,52	1.318	66,2
	8	890	13,09	1.151	47,9	10,21	894	31,4	8,76	766	24,3	7,30	638	17,9	7,89	1.381	70,5	6,47	1.132	50,4
	6,7	740	11,11	975	35,5	8,68	758	23,4	7,45	650	18,1	6,23	543	13,4	6,71	1.170	52,4	5,50	959	37,4
	4,9	528	8,16	715	20,4	6,39	558	13,5	5,50	479	10,6	4,61	401	7,8	4,92	857	30,0	4,05	704	21,5
	3	305	4,88	427	8,1	3,83	334	5,5	3,31	288	4,3	2,78	242	3,2	2,93	510	11,9	2,42	421	8,6
	2	190	3,14	275	3,7	2,44	213	2,5	2,11	184	1,9	1,78	155	1,5	1,86	324	5,3	1,54	267	3,9

WT: Water temperature
Vdc: Inverter speed signal (Vdc)
Qv: Air flow
Ph: Heating capacity
Qw: Water flow rate
Dp(h): Dp Heating

1 row additional coil units

For 3 row versions (3+1 rows)

Entering air temperature: 20 °C - Available pressure: 0 Pa

			WT: 80 / 70 °C			WT: 75 / 65 °C			WT: 70 / 60 °C			WT: 65 / 55 °C			WT: 60 / 50 °C			WT: 55 / 45 °C		
		Qv	Ph	Qw	Dp(h)	Ph	Qw	Dp(h)	Ph	Qw	Dp(h)	Ph	Qw	Dp(h)	Ph	Qw	Dp(h)	Ph	Qw	Dp(h)
Model	Vdc	m^3/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
CSS-ECM 1	10	549	3,77	336	14,1	3,38	301	11,7	3,00	267	9,6	2,61	232	7,6	2,23	198	5,8	1,84	165	4,3
	8	453	3,33	296	11,2	2,99	265	9,3	2,65	235	7,6	2,31	205	6,0	1,98	175	4,7	1,64	145	3,4
	6,5	343	2,76	244	7,9	2,48	219	6,6	2,20	194	5,4	1,92	170	4,3	1,64	145	3,3	1,37	120	2,5
	4,7	245	2,18	192	5,2	1,96	172	4,3	1,74	153	3,5	1,52	133	2,8	1,30	114	2,2	1,09	95	1,6
	3	154	1,54	136	2,8	1,39	122	2,3	1,23	108	1,9	1,08	95	1,5	0,93	81	1,2	0,78	68	0,9
	2	85	0,96	85	1,2	0,87	77	1,0	0,77	68	0,8	0,68	60	0,7	0,58	51	0,5	0,49	43	0,4
CSS-ECM 2	10	985	5,85	524	40,1	5,27	471	33,6	4,68	419	27,6	4,09	366	22,1	3,50	313	17,0	2,91	262	12,6
	8	860	5,40	481	34,4	4,85	432	28,8	4,32	384	23,7	3,77	336	18,9	3,24	288	14,7	2,70	241	10,8
	5,7	590	4,24	375	22,0	3,82	338	18,5	3,40	300	15,2	2,98	262	12,2	2,57	226	9,5	2,14	189	7,0
	4,5	455	3,56	314	16,0	3,21	283	13,4	2,85	251	11,0	2,51	220	8,9	2,16	189	6,9	1,81	158	5,2
	3	289	2,57	227	8,9	2,32	204	7,5	2,07	182	6,2	1,82	159	5,0	1,57	137	3,9	1,32	115	2,9
	1,8	155	1,61	142	3,9	1,45	128	3,3	1,29	114	2,7	1,14	100	2,2	0,98	86	1,7	0,83	72	1,3
CSS-ECM 3	10	1.057	6,79	606	63,4	6,11	545	53,2	5,44	484	43,8	4,78	425	35,2	4,11	366	27,4	3,43	307	20,4
	8	890	6,08	541	51,7	5,49	487	43,5	4,88	433	35,8	4,29	380	28,8	3,70	328	22,5	3,10	275	16,8
	6,7	740	5,39	478	41,4	4,87	431	34,9	4,34	383	28,7	3,81	336	23,1	3,29	290	18,1	2,76	243	13,5
	4,9	528	4,29	379	27,2	3,87	341	22,9	3,45	304	19,0	3,04	267	15,3	2,62	230	12,0	2,20	193	9,0
	3	305	2,88	254	13,3	2,60	229	11,3	2,32	204	9,3	2,04	179	7,5	1,77	155	5,9	1,49	130	4,5
	2	190	2,00	177	7,0	1,81	159	5,9	1,62	142	4,9	1,43	125	4,0	1,23	108	3,1	1,04	91	2,4

WT: Water temperature
Vdc: Inverter speed signal (Vdc)
Qv: Air flow
Ph: Heating capacity
Qw: Water flow rate
Dp(h): Dp Heating

CORRECTION FACTOR TABLES

Air flow depending on speed and requested available pressure

Air flow (m^3/h)

Model	Vdc	Available pressure (Pa)											
		0	5	25	50	70	85	100	125	150	250	350	400
1	10	549	547	530	501	476	458	441	416	391	266	145	58
	9,5	542	539	522	493	469	452	436	411	386	260	145	-
	9	496	491	476	460	447	435	422	397	369	257	34	-
	8,5	482	477	461	443	428	417	404	381	356	225	-	-
	8	453	448	431	412	396	383	369	343	314	123	-	-
	7,5	422	416	398	379	362	347	330	301	270	-	-	-
	7	392	386	368	346	326	308	290	257	221	-	-	-
	6,5	343	337	317	294	272	254	235	198	146	-	-	-
	6	335	328	306	278	251	229	205	151	43	-	-	-
	5,5	303	296	274	242	210	183	149	45	-	-	-	-
	5	272	265	240	201	162	122	50	-	-	-	-	-
	4,7	245	237	211	168	119	50	-	-	-	-	-	-
	4,5	233	224	198	153	98	-	-	-	-	-	-	-
	4	214	205	173	110	-	-	-	-	-	-	-	-
	3,5	182	173	132	-	-	-	-	-	-	-	-	-
	3	154	143	86	-	-	-	-	-	-	-	-	-
	2,5	124	111	-	-	-	-	-	-	-	-	-	-
	2	85	69	-	-	-	-	-	-	-	-	-	-
	1,5	68	38	-	-	-	-	-	-	-	-	-	-
2	10	976	974	948	896	852	821	793	748	706	490	281	94
	9,5	968	965	937	886	843	813	785	742	700	486	246	-
	9	936	929	898	858	823	796	768	721	675	485	44	-
	8,5	888	883	860	822	788	763	739	700	664	438	-	-
	8	858	853	827	786	750	723	697	656	616	231	-	-
	7,5	799	794	764	720	684	657	630	585	531	-	-	-
	7	743	737	704	657	619	592	564	512	438	-	-	-
	6,5	686	678	642	593	555	526	493	420	301	-	-	-
	6	631	620	579	528	487	451	404	281	61	-	-	-
	5,7	591	580	538	486	439	392	329	162	-	-	-	-
	5,5	562	554	511	454	401	346	267	60	-	-	-	-
	5	518	507	458	393	317	224	86	-	-	-	-	-
	4,5	454	444	389	307	179	-	-	-	-	-	-	-
	4	405	390	329	202	-	-	-	-	-	-	-	-
	3,5	348	332	254	-	-	-	-	-	-	-	-	-
	3	289	272	163	-	-	-	-	-	-	-	-	-
	2,5	234	210	-	-	-	-	-	-	-	-	-	-
	2	179	146	-	-	-	-	-	-	-	-	-	-
	1,8	155	116	-	-	-	-	-	-	-	-	-	-
	1,5	126	-	-	-	-	-	-	-	-	-	-	-
3	10	1049	1044	1010	955	910	878	848	801	754	529	299	126
	9,5	1008	1001	967	916	875	845	817	772	725	509	289	15
	9	969	963	935	897	864	838	810	762	711	509	52	-
	8,5	927	921	893	853	822	799	776	735	690	436	-	-
	8	889	881	849	808	775	749	723	676	624	273	-	-
	7,5	832	821	786	744	709	680	650	596	535	-	-	-
	7	773	763	726	681	642	610	575	512	436	-	-	-
	6,7	740	730	692	644	602	567	530	459	366	-	-	-
	6,5	714	703	664	615	571	534	495	418	310	-	-	-
	6	654	642	601	546	493	449	398	284	70	-	-	-
	5,5	594	583	538	474	414	359	286	73	-	-	-	-
	5	546	533	482	405	326	240	97	-	-	-	-	-
	4,9	528	515	463	385	302	206	-	-	-	-	-	-
	4,5	477	462	406	314	199	-	-	-	-	-	-	-
	4	418	402	335	210	-	-	-	-	-	-	-	-
	3,5	358	344	259	-	-	-	-	-	-	-	-	-
	3	302	282	170	-	-	-	-	-	-	-	-	-
	2,5	244	220	-	-	-	-	-	-	-	-	-	-
	2	190	154	-	-	-	-	-	-	-	-	-	-
	1,5	127	-	-	-	-	-	-	-	-	-	-	-

Power absorption depending on air flow and available pressure

Power absorbed (Watt)

Model	Vdc	Available pressure (Pa)											
		0	5	25	50	70	85	100	125	150	250	350	400
1	10	54	54	53	53	54	54	54	55	54	53	54	46
	9,5	53	53	52	52	53	54	54	54	54	52	53	-
	9	45	45	47	49	50	51	52	52	52	52	36	-
	8,5	40	40	41	43	45	46	47	48	48	48	-	-
	8	34	34	35	37	39	40	40	41	42	37	-	-
	7,5	29	29	30	32	33	33	34	34	35	-	-	-
	7	24	24	25	27	28	28	28	29	29	-	-	-
	6,5	21	21	22	24	25	25	25	25	24	-	-	-
	6	17	17	17	19	19	19	19	18	14	-	-	-
	5,5	13	14	14	15	15	15	15	12	-	-	-	-
	5	12	12	13	13	13	13	11	-	-	-	-	-
	4,7	11	11	12	12	12	10	-	-	-	-	-	-
	4,5	9	9	10	10	9	-	-	-	-	-	-	-
	4	7	7	8	8	-	-	-	-	-	-	-	-
	3,5	6	6	6	-	-	-	-	-	-	-	-	-
	3	5	5	5	-	-	-	-	-	-	-	-	-
	2,5	5	5	-	-	-	-	-	-	-	-	-	-
	2	4	4	-	-	-	-	-	-	-	-	-	-
	1,5	3	3	-	-	-	-	-	-	-	-	-	-
2	10	107	109	110	109	107	106	106	107	108	107	113	99
	9,5	107	108	109	107	106	106	106	106	107	106	108	-
	9	104	104	104	105	105	105	105	105	104	106	68	-
	8,5	89	90	92	94	95	96	97	99	101	98	-	-
	8	78	79	80	82	84	85	86	88	89	67	-	-
	7,5	65	65	67	69	70	71	72	73	73	-	-	-
	7	54	54	56	58	59	60	60	61	60	-	-	-
	6,5	44	45	46	48	49	50	50	50	45	-	-	-
	6	36	37	38	39	40	41	40	37	27	-	-	-
	5,7	32	32	33	34	35	35	34	28	-	-	-	-
	5,5	29	30	31	32	32	32	30	22	-	-	-	-
	5	24	24	25	26	25	23	19	-	-	-	-	-
	4,5	19	19	20	20	18	-	-	-	-	-	-	-
	4	16	16	16	16	-	-	-	-	-	-	-	-
	3,5	13	13	13	-	-	-	-	-	-	-	-	-
	3	10	10	10	-	-	-	-	-	-	-	-	-
	2,5	9	9	-	-	-	-	-	-	-	-	-	-
	2	8	8	-	-	-	-	-	-	-	-	-	-
	1,8	8	8	-	-	-	-	-	-	-	-	-	-
	1,5	7	7	-	-	-	-	-	-	-	-	-	-
3	10	107	107	105	106	107	107	108	108	108	105	109	95
	9,5	105	105	104	104	105	105	106	105	105	104	106	79
	9	96	97	99	102	103	104	104	103	103	104	70	-
	8,5	85	86	89	91	92	94	95	98	99	92	-	-
	8	73	74	76	78	80	81	82	83	84	71	-	-
	7,5	61	62	63	66	68	69	70	70	70	-	-	-
	7	51	51	53	56	57	57	58	58	57	-	-	-
	6,7	45	45	47	49	50	51	51	51	49	-	-	-
	6,5	42	42	44	46	47	47	47	47	44	-	-	-
	6	35	35	37	38	38	38	38	36	29	-	-	-
	5,5	28	28	30	31	31	31	30	24	-	-	-	-
	5	24	24	25	26	26	25	21	-	-	-	-	-
	4,9	23	23	25	25	25	23	-	-	-	-	-	-
	4,5	18	19	19	20	19	-	-	-	-	-	-	-
	4	15	15	16	16	-	-	-	-	-	-	-	-
	3,5	12	13	13	11	-	-	-	-	-	-	-	-
	3	10	10	10	-	-	-	-	-	-	-	-	-
	2,5	9	9	8	-	-	-	-	-	-	-	-	-
	2	9	9	-	-	-	-	-	-	-	-	-	-
	1,5	7	7	-	-	-	-	-	-	-	-	-	-

Correction factors for Total cooling capacity

Values in %

Capacity correction factors for high speed figures at 10 V signal

Model	Vdc	Available pressure (Pa)											
		0	5	25	50	70	85	100	125	150	250	350	400
1	10	1,00	0,99	0,97	0,93	0,90	0,87	0,85	0,80	0,76	0,55	0,31	0,13
	9	0,93	0,92	0,90	0,87	0,85	0,83	0,81	0,77	0,73	0,53	0,18	-
	8	0,86	0,86	0,83	0,80	0,77	0,75	0,73	0,69	0,64	0,28	-	-
	7,5	0,82	0,81	0,78	0,75	0,72	0,69	0,67	0,62	0,56	-	-	-
	7	0,77	0,76	0,74	0,69	0,66	0,63	0,60	0,54	0,48	-	-	-
	6,5	0,69	0,68	0,65	0,61	0,57	0,54	0,52	0,44	0,33	-	-	-
	6	0,68	0,67	0,63	0,58	0,54	0,49	0,45	0,34	0,11	-	-	-
	5,5	0,63	0,62	0,58	0,52	0,46	0,41	0,34	0,11	0,05	-	-	-
	5	0,58	0,56	0,51	0,44	0,37	0,29	0,12	0,05	-	-	-	-
	4,7	0,53	0,51	0,46	0,39	0,28	0,12	0,05	-	-	-	-	-
	4,5	0,51	0,49	0,44	0,35	0,25	0,05	0,05	-	-	-	-	-
	4	0,47	0,45	0,39	0,26	0,05	-	-	-	-	-	-	-
	3,5	0,41	0,39	0,31	-	-	-	-	-	-	-	-	-
	3	0,35	0,33	-	-	-	-	-	-	-	-	-	-
	2,5	0,29	0,27	-	-	-	-	-	-	-	-	-	-
	2	0,21	0,17	-	-	-	-	-	-	-	-	-	-
	1,5	0,17	0,09	-	-	-	-	-	-	-	-	-	-
2	10	1,00	0,99	0,96	0,92	0,90	0,87	0,85	0,81	0,76	0,57	0,33	0,12
	9	0,96	0,96	0,93	0,90	0,87	0,85	0,82	0,78	0,74	0,56	0,06	-
	8	0,91	0,90	0,87	0,84	0,81	0,79	0,77	0,73	0,68	-	-	-
	7	0,81	0,80	0,77	0,73	0,70	0,68	0,65	0,59	0,52	-	-	-
	6,5	0,76	0,75	0,72	0,68	0,64	0,61	0,58	0,51	0,37	-	-	-
	6	0,71	0,70	0,67	0,62	0,57	0,53	0,48	0,36	0,07	-	-	-
	5,7	0,68	0,67	0,63	0,58	0,53	0,48	0,42	0,26	-	-	-	-
	5	0,61	0,60	0,55	0,48	0,39	0,29	0,12	0,46	-	-	-	-
	4,5	0,55	0,54	0,48	0,38	0,27	-	-	-	-	-	-	-
	4	0,49	0,48	0,40	0,27	-	-	-	-	-	-	-	-
	3,5	0,42	0,41	0,33	-	-	-	-	-	-	-	-	-
	3	0,36	0,35	0,22	-	-	-	-	-	-	-	-	-
	2,5	0,33	0,28	-	-	-	-	-	-	-	-	-	-
	2	0,26	0,19	-	-	-	-	-	-	-	-	-	-
	1,8	0,21	0,16	-	-	-	-	-	-	-	-	-	-
	1,5	0,18	0,11	-	-	-	-	-	-	-	-	-	-
3	10	1,00	0,99	0,96	0,93	0,90	0,87	0,85	0,81	0,77	0,59	0,35	0,17
	9	0,94	0,94	0,92	0,89	0,86	0,84	0,82	0,78	0,74	0,56	0,07	-
	8	0,89	0,88	0,85	0,82	0,80	0,78	0,75	0,72	0,67	0,34	-	-
	7,5	0,84	0,83	0,81	0,77	0,74	0,72	0,70	0,65	0,59	0,19	-	-
	7	0,80	0,79	0,76	0,72	0,69	0,66	0,63	0,58	0,51	-	-	-
	6,7	0,77	0,76	0,73	0,69	0,66	0,63	0,59	0,53	0,44	-	-	-
	6	0,71	0,70	0,66	0,61	0,56	0,52	0,47	0,35	0,10	-	-	-
	5,5	0,65	0,65	0,60	0,55	0,49	0,43	0,36	0,10	-	-	-	-
	5	0,61	0,60	0,55	0,48	0,40	0,31	0,14	-	-	-	-	-
	4,9	0,60	0,58	0,54	0,46	0,38	0,27	0,07	-	-	-	-	-
	4,5	0,55	0,54	0,48	0,39	0,27	-	-	-	-	-	-	-
	4	0,49	0,48	0,41	0,28	-	-	-	-	-	-	-	-
	3,5	0,44	0,42	0,33	-	-	-	-	-	-	-	-	-
	3	0,38	0,36	0,23	-	-	-	-	-	-	-	-	-
	2,5	0,32	0,29	-	-	-	-	-	-	-	-	-	-
	2	0,25	0,21	-	-	-	-	-	-	-	-	-	-
	1,5	0,17	0,10	-	-	-	-	-	-	-	-	-	-

Correction factors for Sensible cooling capacity and Heating capacity

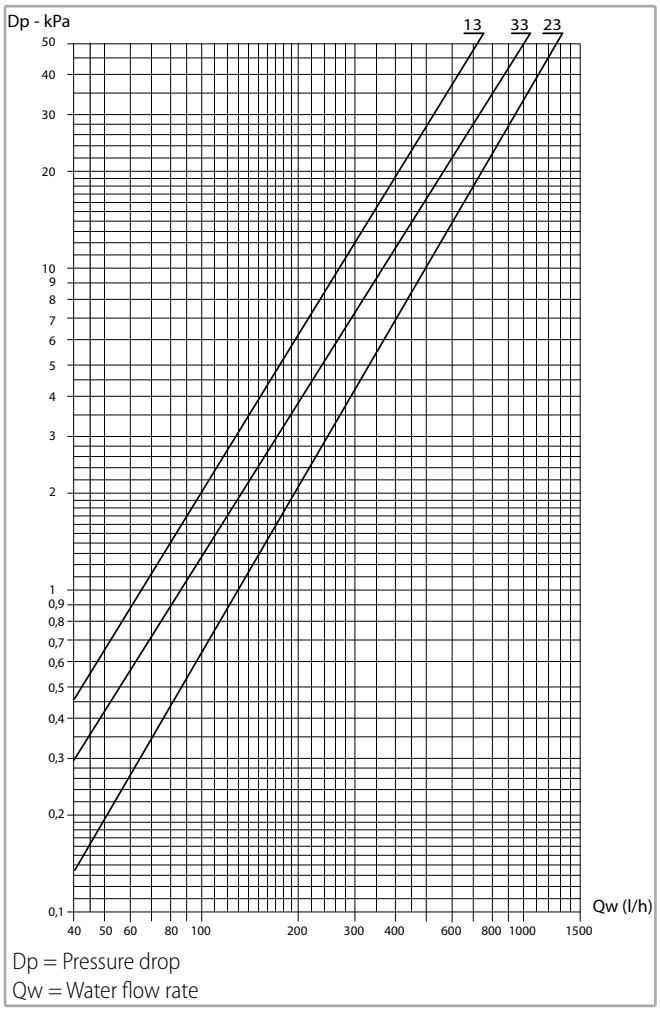
Values in %

Capacity correction factors for high speed figures at 10 V signal

Model	Vdc	Available pressure (Pa)											
		0	5	25	50	70	85	100	125	150	250	350	400
1	10	1,00	0,99	0,96	0,92	0,88	0,85	0,82	0,78	0,73	0,51	0,27	0,11
	9	0,91	0,91	0,88	0,85	0,83	0,81	0,78	0,74	0,69	0,49	0,15	-
	8	0,84	0,84	0,81	0,77	0,74	0,72	0,69	0,65	0,60	0,24	-	-
	7,5	0,79	0,78	0,75	0,71	0,68	0,65	0,63	0,58	0,52	-	-	-
	7	0,74	0,73	0,70	0,66	0,62	0,59	0,56	0,50	0,43	-	-	-
	6,5	0,66	0,64	0,61	0,56	0,53	0,49	0,45	0,39	0,29	-	-	-
	6	0,64	0,63	0,59	0,54	0,49	0,45	0,40	0,30	0,09	-	-	-
	5,5	0,59	0,57	0,53	0,47	0,42	0,36	0,30	0,09	0,04	-	-	-
	5	0,53	0,52	0,47	0,40	0,32	0,25	0,10	0,04	-	-	-	-
	4,7	0,48	0,47	0,41	0,33	0,24	0,10	0,04	-	-	-	-	-
	4,5	0,46	0,44	0,39	0,31	0,21	0,04	0,04	-	-	-	-	-
	4	0,42	0,41	0,34	0,22	0,04	-	-	-	-	-	-	-
	3,5	0,36	0,35	0,27	-	-	-	-	-	-	-	-	-
	3	0,31	0,29	-	-	-	-	-	-	-	-	-	-
	2,5	0,25	0,23	-	-	-	-	-	-	-	-	-	-
	2	0,17	0,14	-	-	-	-	-	-	-	-	-	-
	1,5	0,14	0,07	-	-	-	-	-	-	-	-	-	-
2	10	1,00	0,99	0,96	0,92	0,89	0,86	0,83	0,79	0,74	0,54	0,31	0.11
	9	0,96	0,95	0,92	0,89	0,86	0,83	0,81	0,76	0,72	0,53	0,05	-
	8	0,89	0,89	0,86	0,82	0,79	0,77	0,75	0,70	0,66	-	-	-
	7	0,79	0,78	0,75	0,71	0,68	0,65	0,62	0,56	0,49	-	-	-
	6,5	0,74	0,73	0,69	0,65	0,61	0,58	0,55	0,48	0,35	-	-	-
	6	0,68	0,68	0,64	0,59	0,54	0,50	0,45	0,34	0,06	-	-	-
	5,7	0,65	0,64	0,60	0,54	0,50	0,45	0,40	0,24	-	-	-	-
	5	0,58	0,57	0,52	0,45	0,37	0,27	0,11	-	-	-	-	-
	4,5	0,51	0,50	0,45	0,36	0,25	-	-	-	-	-	-	-
	4	0,46	0,45	0,38	0,24	-	-	-	-	-	-	-	-
	3,5	0,40	0,39	0,30	-	-	-	-	-	-	-	-	-
	3	0,34	0,32	0,20	-	-	-	-	-	-	-	-	-
	2,5	0,31	0,26	-	-	-	-	-	-	-	-	-	-
	2	0,23	0,17	-	-	-	-	-	-	-	-	-	-
	1,8	0,19	0,14	-	-	-	-	-	-	-	-	-	-
	1,5	0,16	0,09	-	-	-	-	-	-	-	-	-	-
3	10	1,00	0,99	0,95	0,91	0,88	0,85	0,82	0,78	0,73	0,53	0,29	0,13
	9	0,93	0,92	0,90	0,86	0,83	0,81	0,78	0,74	0,70	0,51	0,05	-
	8	0,86	0,85	0,83	0,79	0,76	0,74	0,71	0,67	0,62	0,28	-	-
	7,5	0,81	0,80	0,77	0,73	0,70	0,67	0,65	0,60	0,54	0,15	-	-
	7	0,76	0,75	0,72	0,68	0,64	0,61	0,58	0,52	0,44	-	-	-
	6,7	0,73	0,72	0,69	0,64	0,60	0,57	0,54	0,47	0,38	-	-	-
	6	0,66	0,65	0,61	0,55	0,50	0,46	0,41	0,30	0,07	-	-	-
	5,5	0,60	0,59	0,55	0,49	0,43	0,37	0,30	0,08	-	-	-	-
	5	0,55	0,54	0,49	0,42	0,34	0,25	0,10	-	-	-	-	-
	4,9	0,54	0,53	0,48	0,40	0,32	0,22	0,05	-	-	-	-	-
	4,5	0,49	0,48	0,42	0,33	0,22	-	-	-	-	-	-	-
	4	0,43	0,42	0,35	0,22	-	-	-	-	-	-	-	-
	3,5	0,38	0,36	0,27	-	-	-	-	-	-	-	-	-
	3	0,32	0,30	0,19	-	-	-	-	-	-	-	-	-
	2,5	0,26	0,23	-	-	-	-	-	-	-	-	-	-
	2	0,20	0,17	-	-	-	-	-	-	-	-	-	-
	1,5	0,14	0,08	-	-	-	-	-	-	-	-	-	-

WATER SIDE PRESSURE DROP

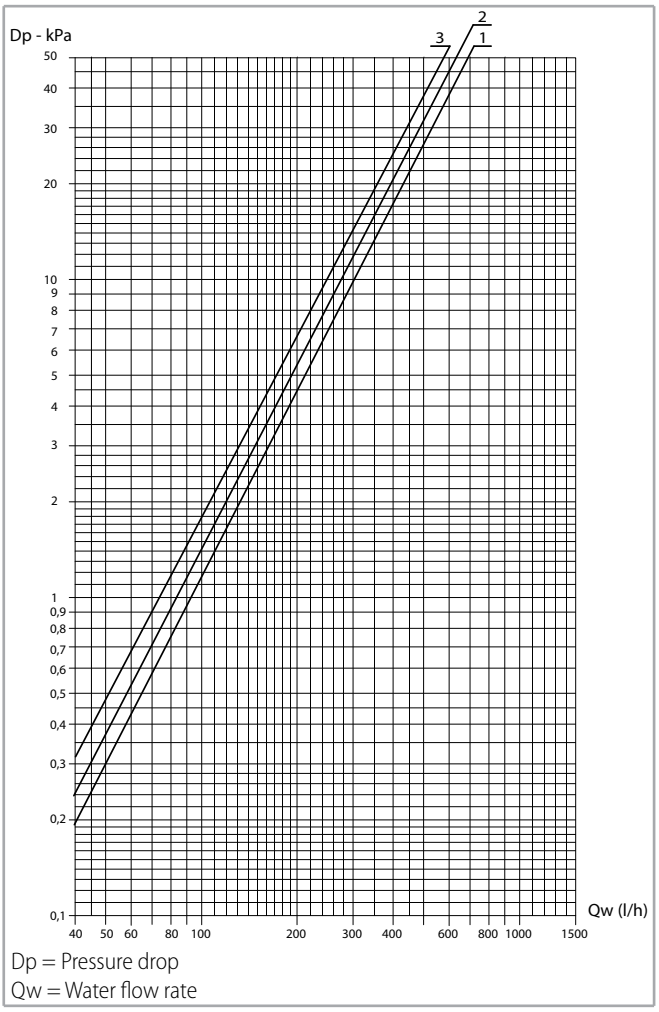
3 row coil



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

	Mean water temperature (°C)						
	20	30	40	50	60	70	80
K correction factor	0,94	0,90	0,86	0,82	0,78	0,74	0,70

1 row additional coil



The water pressure drop figures refer to a mean water temperature of 60 °C; for different temperatures, multiply the pressure drop figures by the correction factors K.

	Mean water temperature (°C)			
	40	50	70	80
K correction factor	1,12	1,06	0,94	0,88

OPERATION LIMITS

Description		UoM	Value
Water flow	Coil maximum working pressure	bars	16
		kPa	1600
	Lowest water inlet temperature (1)	°C	+6
	Highest water inlet temperature	°C	+85
Power supply	Power supply voltage	V/Hz/Ph	230/50-60/1

(1) for entering water temperatures below +6 °C, contact the technical department

Electric heater operation limits

Description		UoM	Value
Ambient air	Maximum temperature (1)	°C	+25
Power supply	Power supply voltage	Vac/Ph/Hz	230/1/50

(1) with electric heating coil

Coils water flow limits

3 row coil

Model		CSS-ECM 13	CSS-ECM 23	CSS-ECM 33
Water flow rate Min.	l/h	100	150	200
Water flow rate Max.	l/h	750	1.150	1.400

1 row additional coil

Model		CSS-ECM 13+1	CSS-ECM 23+1	CSS-ECM 33+1
Water flow rate Min.	l/h	50	70	100
Water flow rate Max.	l/h	350	550	650

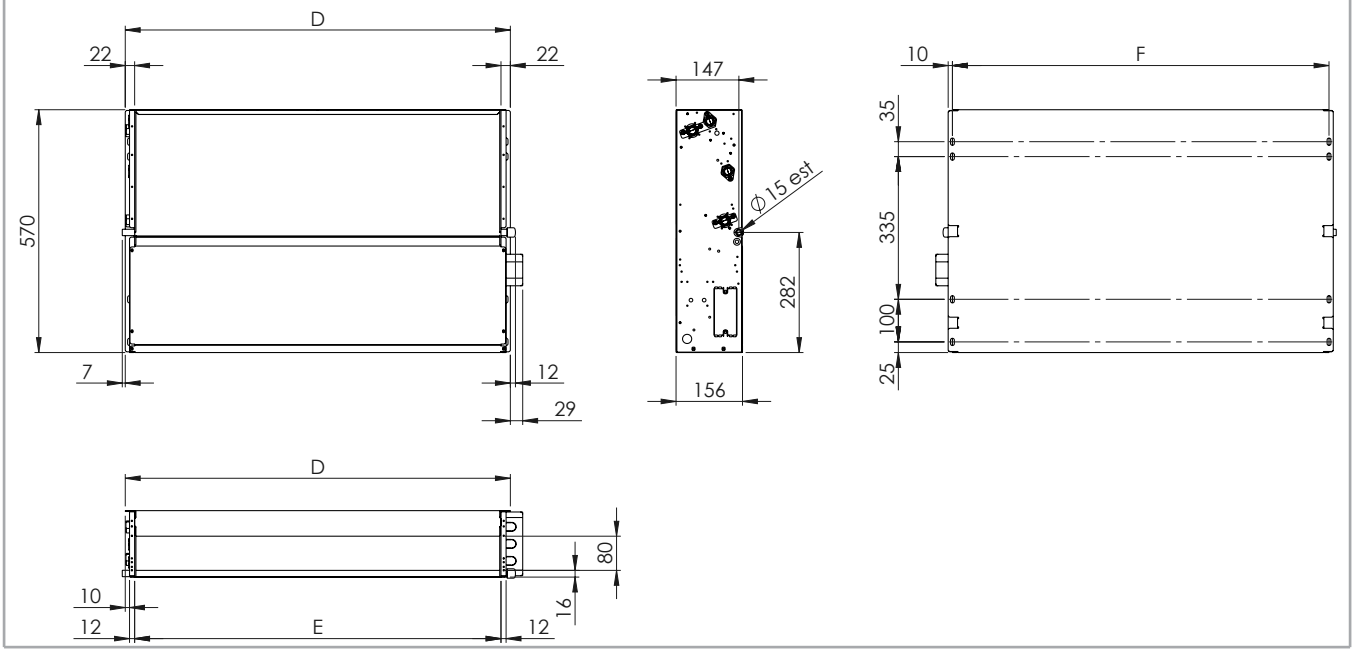
Motor electrical data - max. absorption

Model		CSS-ECM 1	CSS-ECM 2	CSS-ECM 3
Motor power input current	W	55,0	110,0	
Power input current_	A	0,45	0,90	

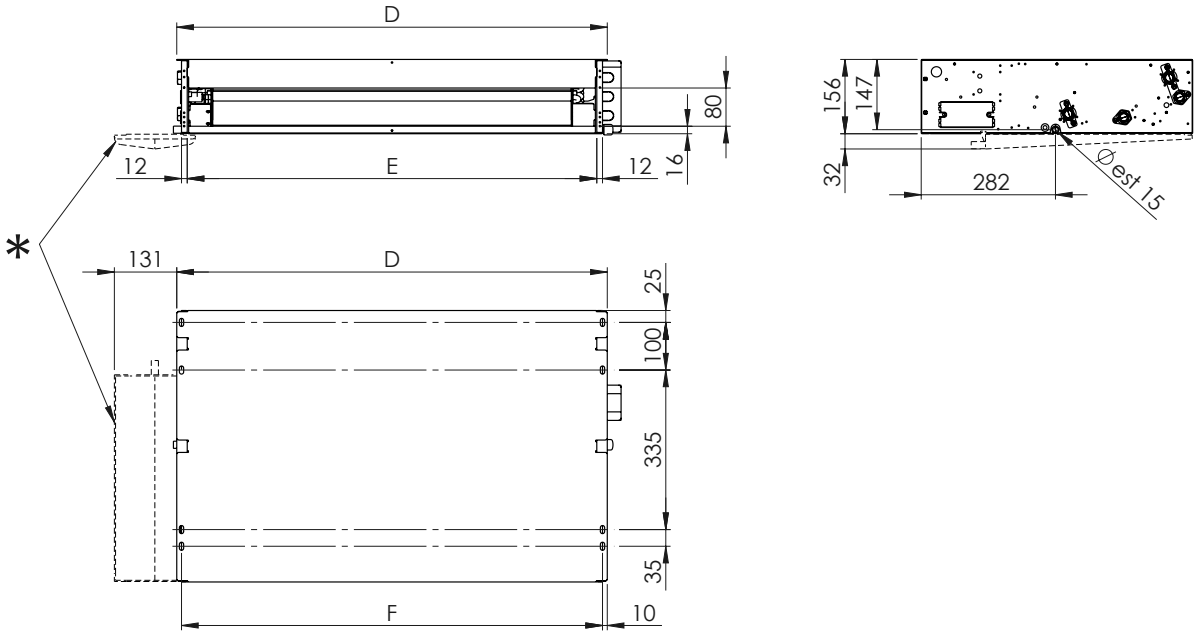
DIMENSION, WEIGHT AND WATER CONTENT

Dimensions

Vertical version



Horizontal version

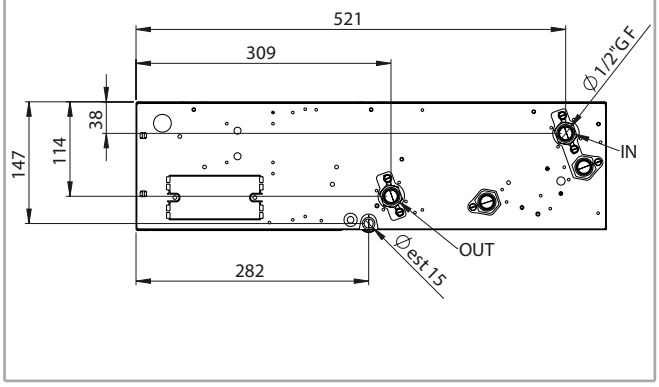


* Condensate collection tray (optional)

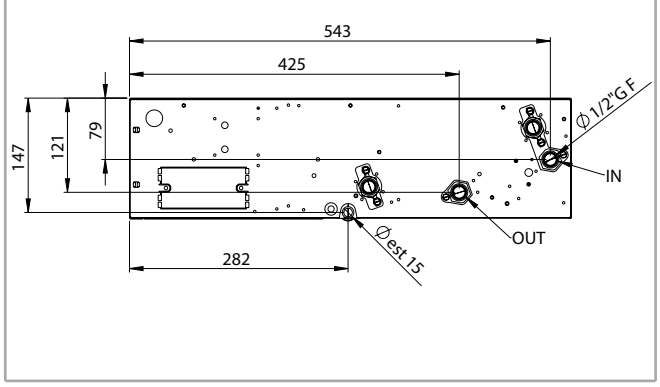
Model		CSS-ECM 1	CSS-ECM 2	CSS-ECM 3
D	mm	689	904	1.119
E	mm	645	860	1.075
F	mm	669	884	1.099

Hydraulic connections

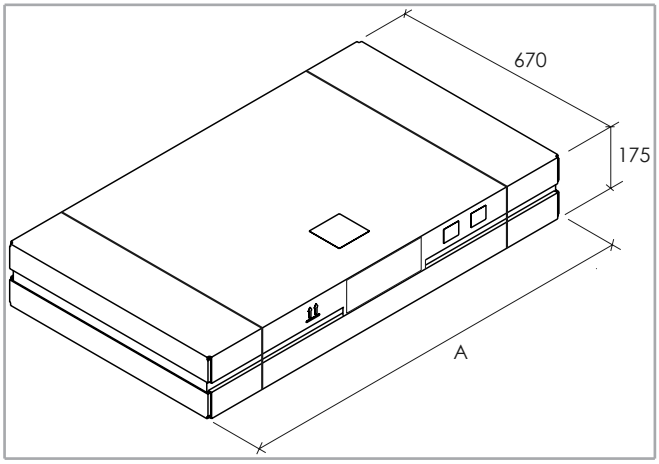
Main coil



Additional coil



Packed unit



Model		CSS-ECM 1	CSS-ECM 2	CSS-ECM 3
A	mm	950	1.160	1.380

Weights

Weights with packaging

Model		CSS-ECM 1	CSS-ECM 2	CSS-ECM 3
3 rows	kg	17,8	23,5	27,9
3+1 rows	kg	18,8	24,6	29,1

Weights without packaging

Model		CSS-ECM 1	CSS-ECM 2	CSS-ECM 3
3 rows	kg	15,9	21,3	25,5
3+1 rows	kg	16,9	22,4	26,7

Water content

Model		CSS-ECM 1	CSS-ECM 2	CSS-ECM 3
2 pipe unit	l	0,9	1,6	1,9
4 pipe unit	l	0,2	0.4	0,5

CONFIGURATION AND ELECTRONIC WALL CONTROLS

All the **CSS-ECM** units can be supplied with a wide range of electronic wall controls that allows managing one single unit or several units (by using the power units).
The room temperature can be controlled through wall electronic room thermostats, with different solutions according to every ambient conditions.

The **WM-AU**, **WM-Touch**(***), **T-MB2**, **WM-503-AC-EC** and **WM-S-ECM** electronic thermostats regulate the room temperature precisely and are suitable when the user wants to set the fan speed.
Note: all the controls are described in detail in the "Fan Coil Control Range literature".

Configuration

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

Fan coil control signal
- Fan OFF = 0 Vdc
- Fan ON > 1 Vdc
- Max. speed = 10 Vdc

ECM Blac inverter board
- 0÷10 Vdc Circuit Input Impedance Value = 68 kOhm

Controls

WM-AU control (*)

230 V 50-60 Hz

WM-503-AC-EC control (**)

230 V 50 Hz

WM-Touch programmable thermostat (***)

230 V 50-60 Hz

WM-S-ECM control

230 V 50 Hz

T-MB2 control (*)

230 V 50-60 Hz

(*) To be used with UPM-AU or UP-AU.
(**) To be used with UP-503-AC-EC only
(***) Available from May 2026

CONTROLS AND UNITS MB VERSION

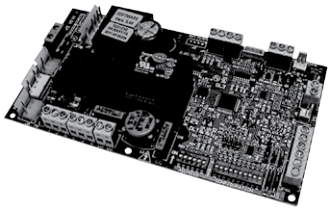
All the **CSS-ECM** units can be supplied with a wide range of controls, which allows managing one single unit or several units by using the Modbus RTU - RS 485. The groups of units can be managed according to the Master/Slave logic (up to 20 units) or by supervisory components.

The system consists of a MB board and a series of controls, such as the **T-MB2** wall control, the **infra-red remote control**, the **PSM-DI** multifunction control panel, the **Sabianet** supervisory program, the **T-DI** Touch screen multifunction panel and the Web Gateway for **Sabiana Cloud SabWeb**.

Note: all the controls are described in detail in the "Fan Coil Control Range literature".

Controls

MB electronic board



RT04 remote control

T-MB2 control

PC and Sabianet screenshot

T-DI Touch screen multifunction control panel

The T-DI multifunction control panel lets supervise and control more units with MB or SIOS boards; the panel is equipped with a 7 inches touch screen display and a serie of graphical pages that allows an easy reading of the data sent by the fan coils and the management of up to 60 units (max. 60 units: SIOS + MB).
With the T-DI multifunction control panel it is also possible to control the units at a distance with the specific Sabiana Cloud App for Android and iOS.
The Sabiana Cloud application is simple to use and lets have complete control of all the connected units.

T-DI Touch screen multifunction control panel

Web gateway for Cloud

With the Web gateway for "Sabiana Cloud" it is possible to control at a distance up to 60 units, equipped with MB or SIOS boards (max. 60 units: SIOS + MB), with the specific APP for Android and iOS.
The "Sabiana Cloud" APP is simple to use and lets have complete control of all the connected units.

SabWeb gateway for Sabiana Cloud

PSM-DI Multifunction control panel

With the PSM-DI multifunction control panel it is possible to control remotely up to 60 units, equipped with MB or SIOS boards (max. 60 units: SIOS + MB).
The PSM-DI multifunction control panel supervises via Bus network all the connected units.
The remote connection (stand-alone) is not possible.

PSM-DI multifunction control panel

KNX BUS SYSTEM

The KNX bus system is a building automation standard for controlling, managing and monitoring a wide range of products for:

- Heating, cooling, ventilation.
- Lighting.
- Alarm systems.
- Audio and video systems.
- Electricity and gas.

Since 2016, Sabiana is a certified member of the KNX association and the certified products can be added to this system in compliance with the tests carried out at KNX laboratories.

KNX devices

The Sabiana WM-KNX room thermostat controls and adjusts the temperature of a room or area in a building. In combination with one or several UP-KNX power units, the thermostat is able to control the operation of terminal units such as fan coils. The appliance consists of an LCD display with adjustable backlight and a sensor for measuring the room temperature.
WM-KNX is suitable for installation in a wall recessed box (to be used with UP-KNX and with PL mounting plate only).

Note: all the controls are described in detail in the "Fan Coil Control Range literature".

Recessed thermostat WM-KNX

Power unit UP-KNX

WM-KNX with rectangular plate

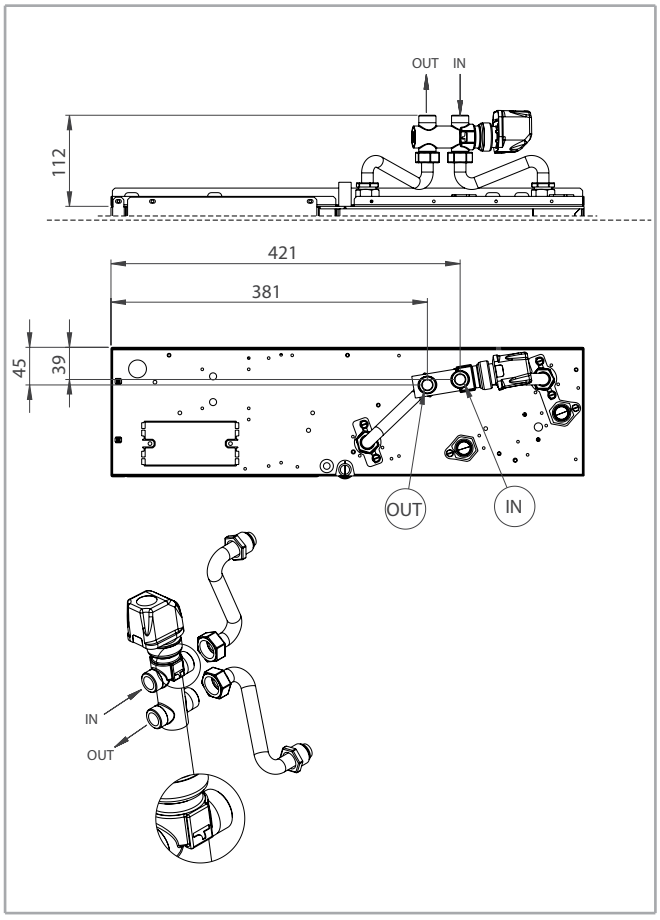
WM-KNX with square plate

ACCESSORIES

Simplified 3 way valve for VS main coil

3 way valve, ON-OFF 230 V and mounting kit without micrometric lockshield valve. Valve with flat connection.

	Valve			Fitted	Not mounted
Mod.	DN	(Ø)	Kvs	Code	
1	15	1/2"	1,7	9059080W	9059070W
2-3	20	3/4"	2,8	9059081W	9059071W

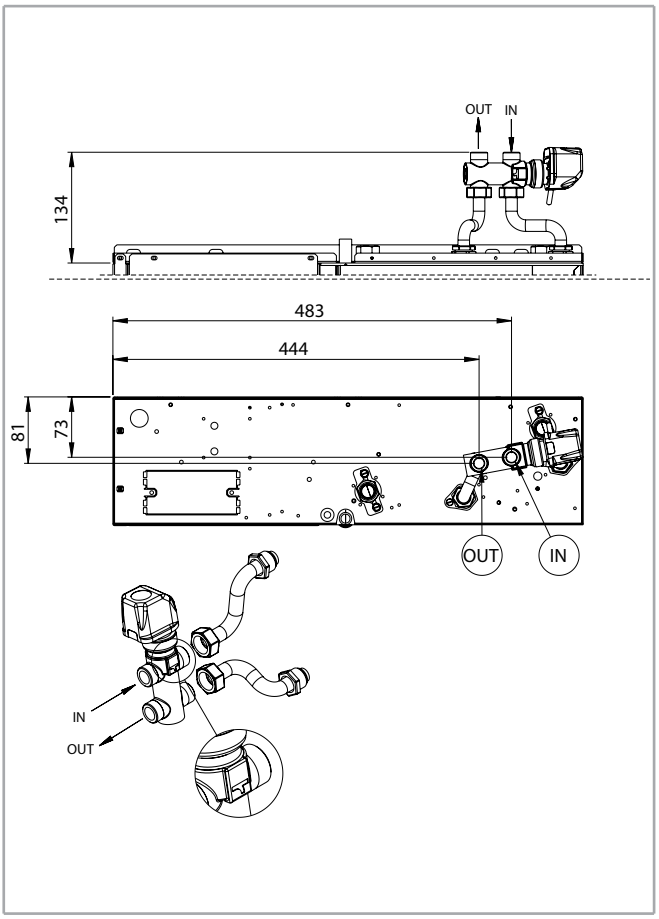


Water side pressure drop (Kvs) diagrams to p. 28

Simplified 3 way valve for VS additional coil

3 way valve, ON-OFF 230 V and mounting kit without micrometric lockshield valve. Valve with flat connection.

	Valve			Fitted	Not mounted
Mod.	DN	(Ø)	Kvs	Code	
1÷3	15	1/2"	1,7	9059082W	9059072W

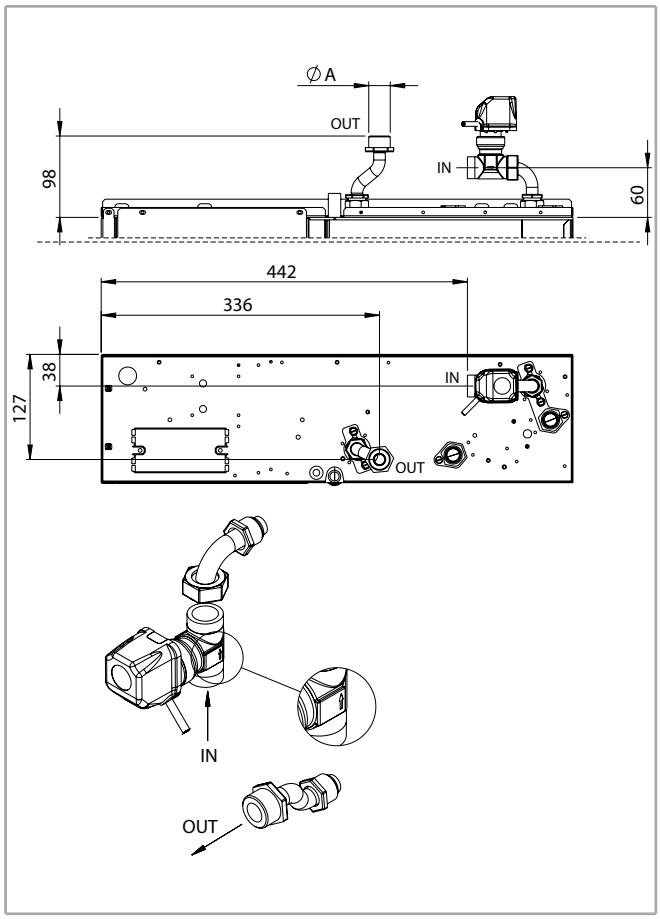


Water side pressure drop (Kvs) diagrams to p. 28

2 way valve for V2 main coil

2 way valve ON-OFF 230 V

	Valve				Fitted	Not mounted
Mod.	A	DN	(Ø)	Kvs	Code	
1	1/2" GM	15	1/2"	1,7	9059083W	9059073W
2-3	3/4" GM	20	3/4"	2,8	9059084W	9059074W

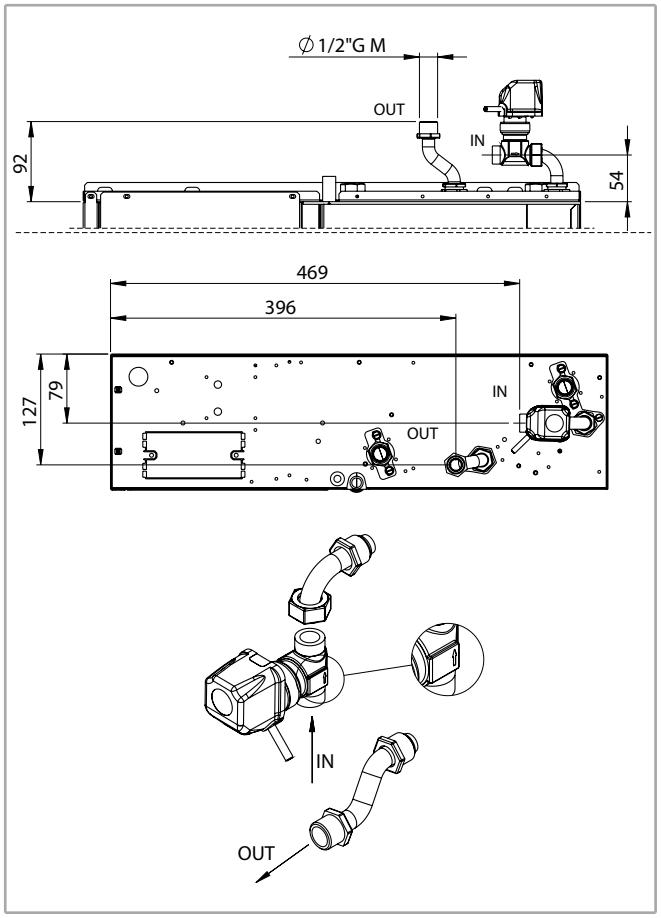


Water side pressure drop (Kvs) diagrams to p. 28

2 way valve for V2 additional coil

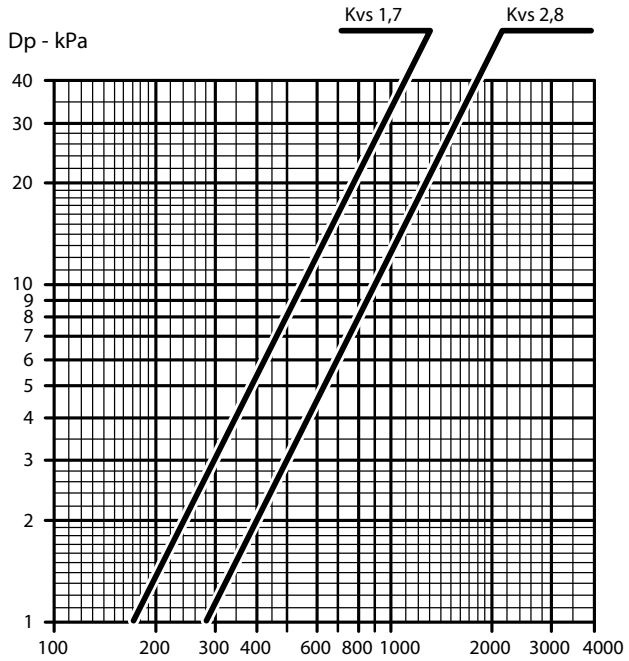
2 way valve ON-OFF 230 V

	Valve			Fitted	Not mounted
Mod.	DN	(Ø)	Kvs	Code	
1÷3	15	1/2"	1,7	9059083W	9059073W



Water side pressure drop (Kvs) diagrams to p. 28

Water side pressure drop VS - V2



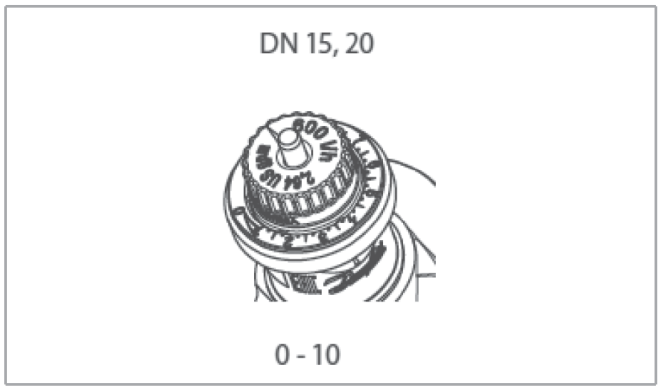
Water flow rate (l/h)

Kit with DANFOSS valve

The flow rate can be calculated without any special tools. In order to modify the presetting (the factory value is 100%), go ahead as follow:

1. Remove the blue protective cover or the actuator fitted on the unit
2. Lift up the indicator (DN 25-32)
3. Turn (clockwise to decrease) on the new value
4. Set off the grey indicator again into the closed position (DN 25-32)

The presetting range shows flow rate values between 10-0 (DN 15-20). The clockwise rotation reduces the requested flow rate value whereas the counterclockwise rotation increases it.



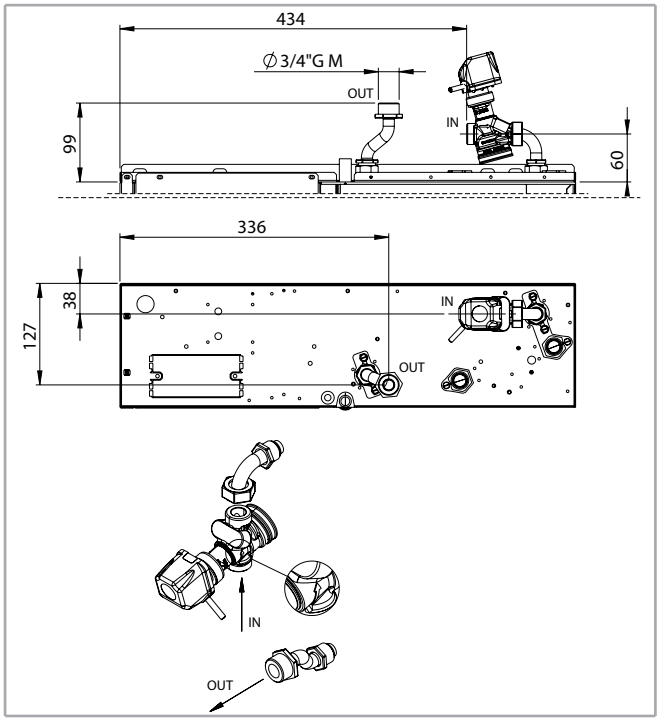
DANFOSS technical characteristics

Nominal diameter		DN	15	15HF	20HF
Flow rate range		l/h	650	1200	1900
Adjustment range		%	10-100		
Differential pressure	Dp min.	kPa	16	25	25
	Dp max.		600		
Nominal pressure		PN	25		

Operation limits of the DANFOSS balancing valves

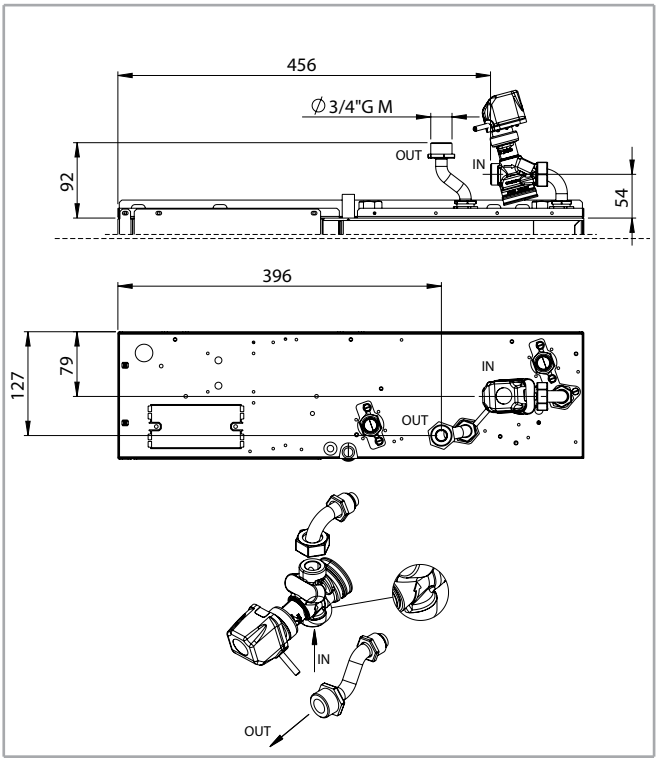
- Maximum operating temperature: 120 °C
- Maximum % of water/glycol mixture: 50%
- Minimum operating temperature: -10 °C

Danfoss valve for main coil - horizontal version



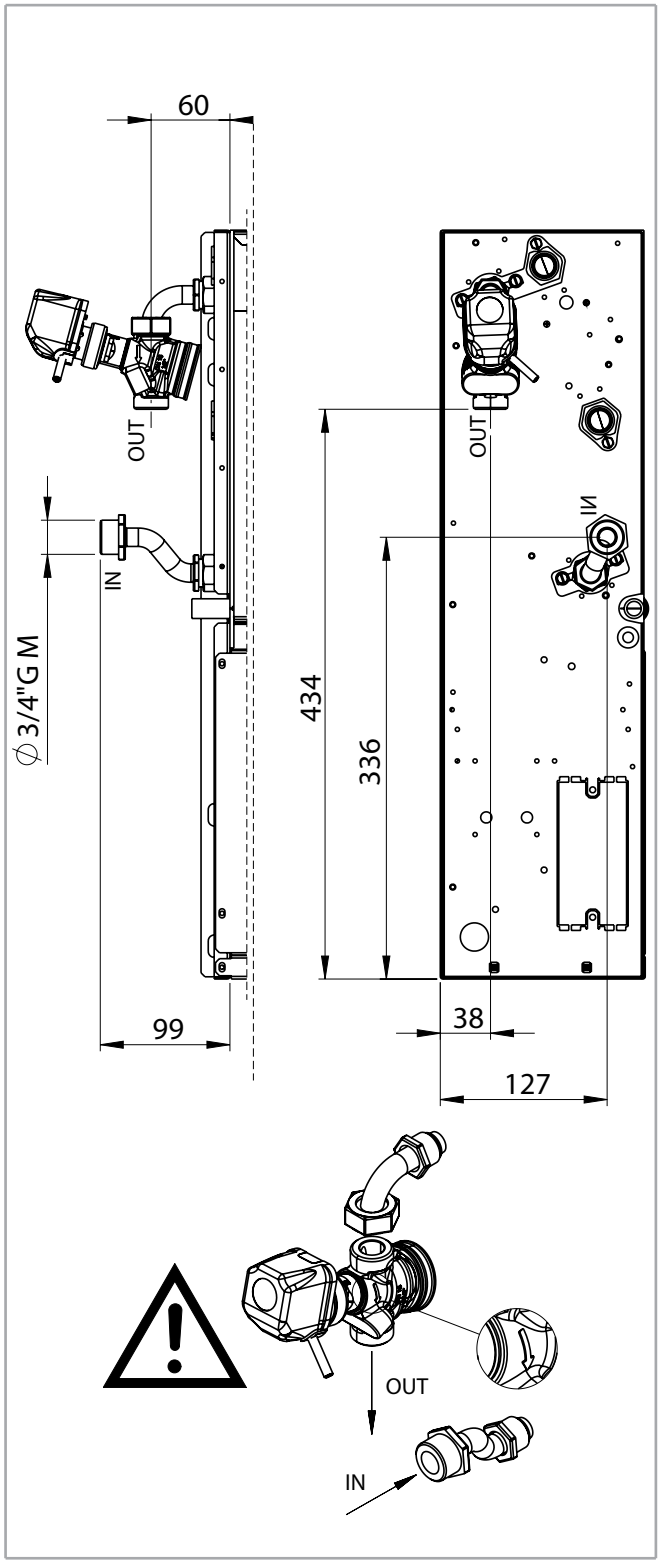
	Valve			Fitted	Not mounted
Mod.	DN	(Ø)	Range	Code	
1	15	3/4"	65-650	9059085	9059075
2-3			120-1200	9059086	9059076

Danfoss valve for additional coil - horizontal version



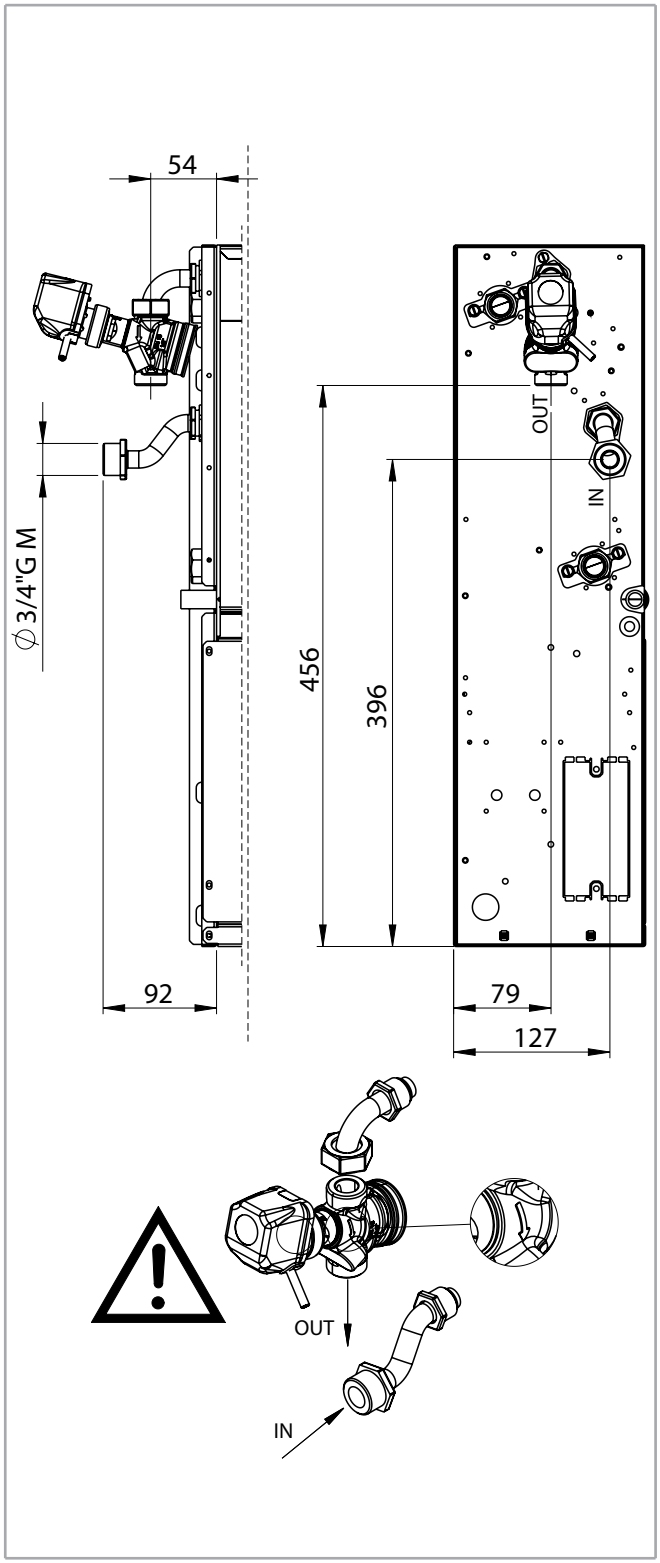
	Valve			Fitted	Not mounted
Mod.	DN	(Ø)	Range	Code	
1÷3	15	3/4"	65-650	9059085	9059075

Danfoss valve for main coil - vertical version



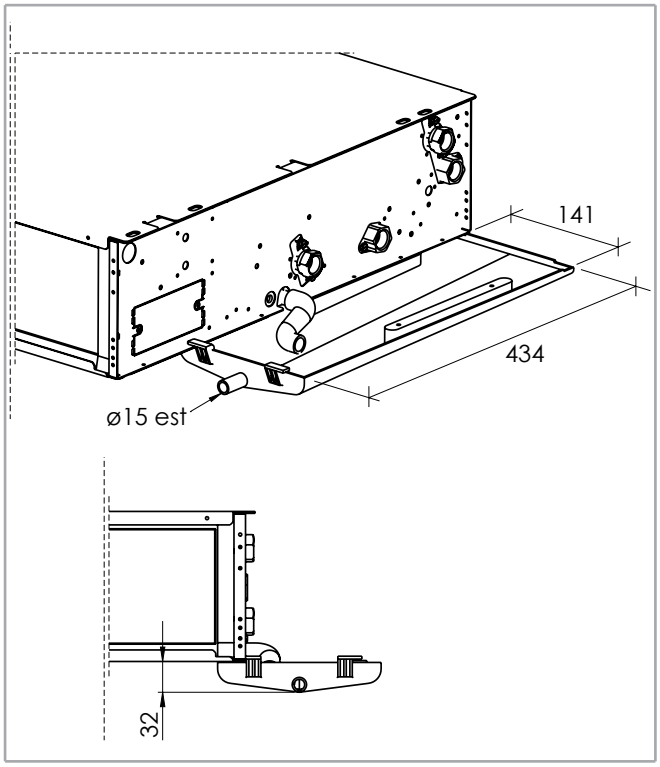
Mod.	Valve DN	Valve (Ø)	Valve Range	Fitted Code	Not mounted Code
1	15	3/4"	65-650	9059085	9059075
2-3			120-1200	9059086	9059076

Danfoss valve for additional coil - vertical version



Mod.	Valve DN	Valve (Ø)	Valve Range	Fitted Code	Not mounted Code
1÷3	15	3/4"	65-650	9059085	9059075

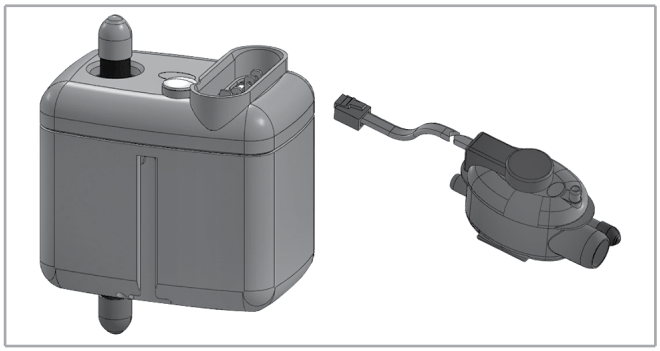
BSI-C auxiliary condensate collection tray to cover valve assembly



Model	ID	Code
1 ÷ 3	BSI-C	6066039

DRPI-C condensate pump

(for horizontal units)

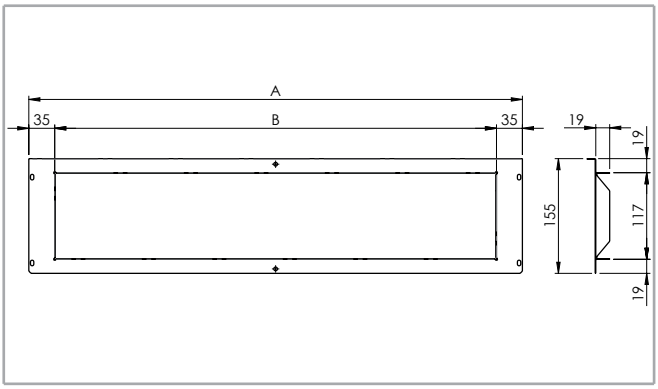


Model	FITTED		NOT FITTED	
	ID	Code	ID	Code
0 ÷ 8	DRPI-C-M	9066298	DRPI-C-S	9066180

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

FD-CSS straight inlet flange

Made of galvanized steel.



Model	ID	Code	A mm	B mm
1	FD-CSS 1	9059101	667	597
2	FD-CSS 2	9059102	882	812
3	FD-CSS 3	9059103	1097	1027

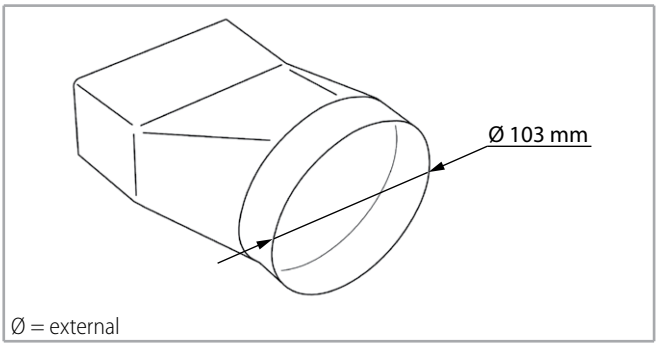
CAP fresh air connection

The Carisma CSS-ECM fan coils are fitted with inlets for fresh air to be mixed with return air inside the unit; it is possible to supply max. 100 m^3/h of fresh air.
The fresh air is conveyed into the radial fan and mixed to the return air.

Note: the fresh air must be filtered.

Fresh air connection

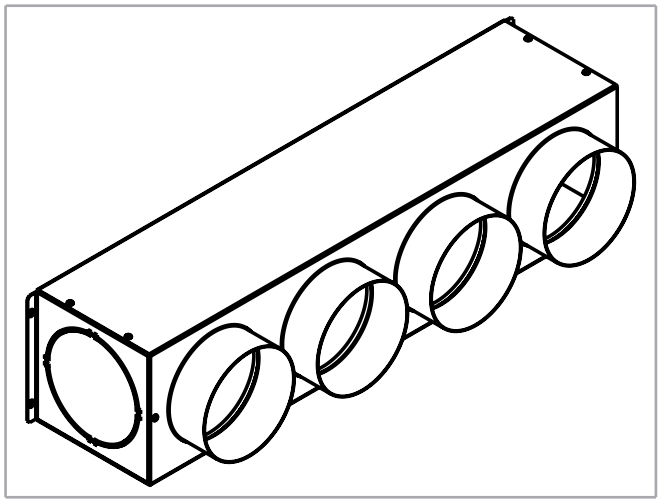
Model	ID	Code
0-1-2-3	CAP	6078005

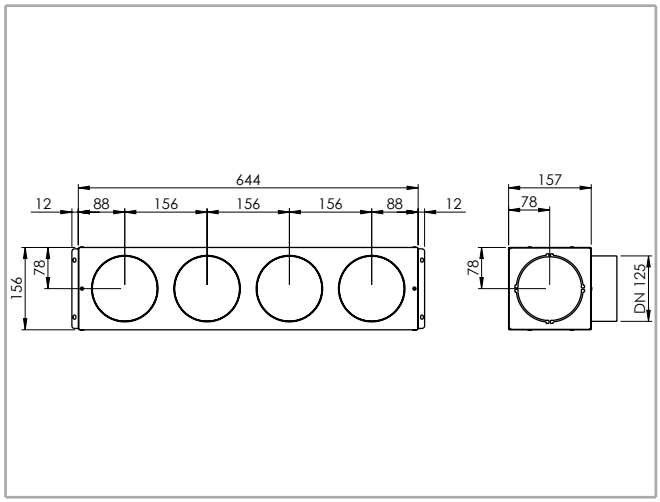


The air duct is connected quickly and easily. After removing the blank and the insulation inside the unit, the mounting plate is rolled back and the air duct with its V-shaped section must be pushed into the unit. The duct is then fixed to the mounting plate.

Air outlet/inlet plenum with PC-CSS 1 spigots

Made of a galvanized steel box insulated inside with polyolefin foam.
All the plenums are supplied with circular spigots for the connection of flexible ducts for the air distribution.
Notes:
The plenum has got a pre-punched hole on each side, in order to let the installation of further DN 125 spigots (accessory).
To be used for both, outlet/inlet.
Use the plenum in CSS ECM E version for the air outlet with only 4 preinstalled spigots without adding further ones.

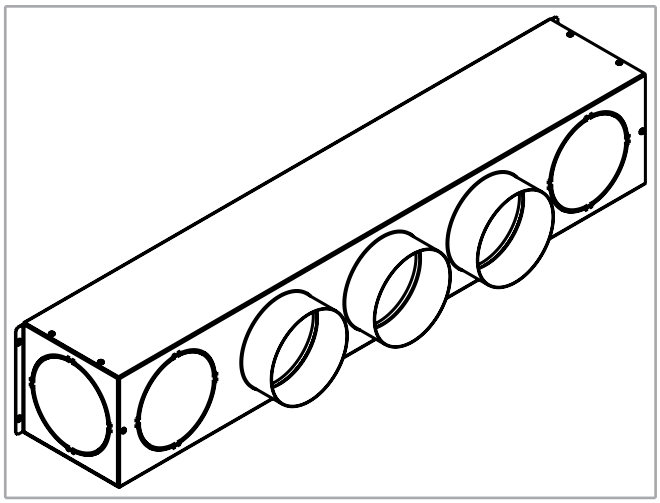


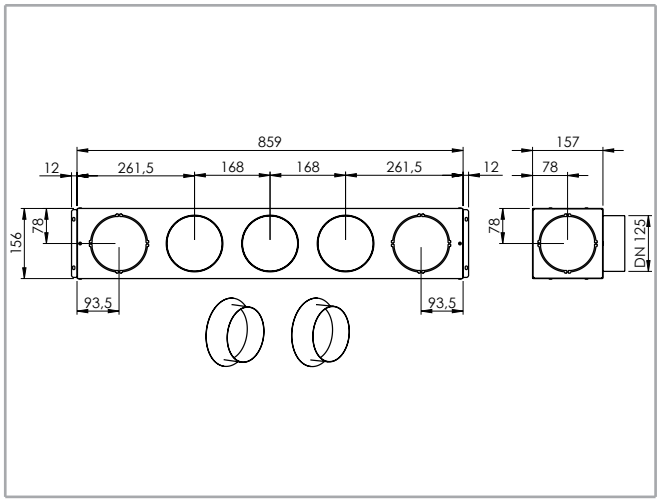


Model	ID	Code
1	PC-CSS 1	9059111

Air outlet/inlet plenum with PC-CSS 2 spigots

Made of a galvanized steel box insulated inside with polyolefin foam.
All the plenums are supplied with circular spigots for the connection of flexible ducts for the air distribution.
Notes:
The plenum has got 4 pre-punched holes, two frontally and two laterally, in order to let the installation of further DN 125 spigots.
Equipped with two single DN 125 spigots to position laterally and frontally in accordance with the needs (further DN125 spigots can be supplied as accessory).
To be used for both, outlet/inlet.
Use the plenum in CSS ECM E version for the air outlet with only 3 preinstalled spigots without adding further ones.

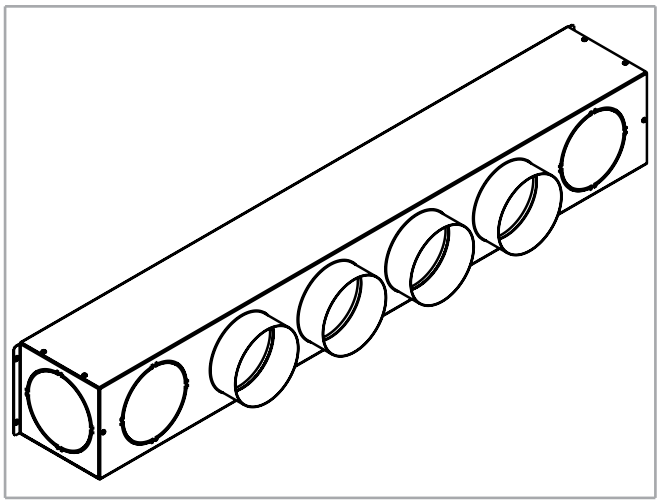


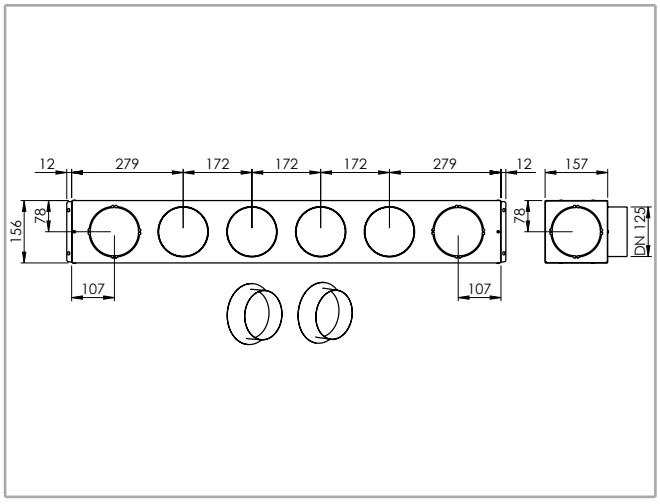


Model	ID	Code
2	PC-CSS 2	9059112

Air outlet/inlet plenum with PC-CSS 3 spigots

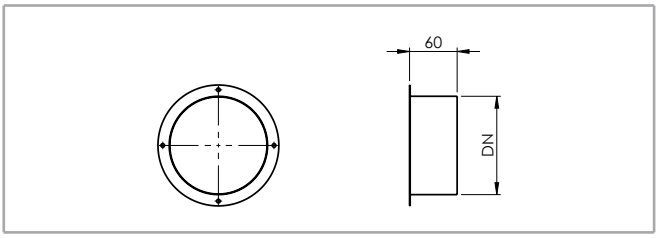
Made of a galvanized steel box insulated inside with polyolefin foam.
All the plenums are supplied with circular spigots for the connection of flexible ducts for the air distribution.
Notes:
The plenum has got 4 pre-punched holes, two frontally and two laterally, in order to let the installation of further DN 125 spigots.
Equipped with two single DN 125 spigots to position laterally and frontally in accordance with the needs (further DN125 spigots can be supplied as accessory).
To be used for both, outlet/inlet.
Use the plenum in CSS ECM E version for the air outlet with only 4 preinstalled spigots without adding further ones.





Model	ID	Code
3	PC-CSS 3	9059113

DN 125 spigot



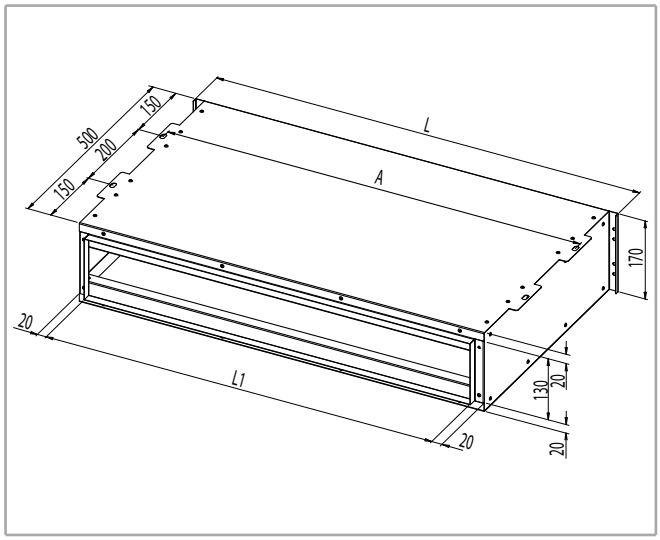
ID	Code	DN
FR-FL 125	6069321	125

BXS air outlet silencer plenum

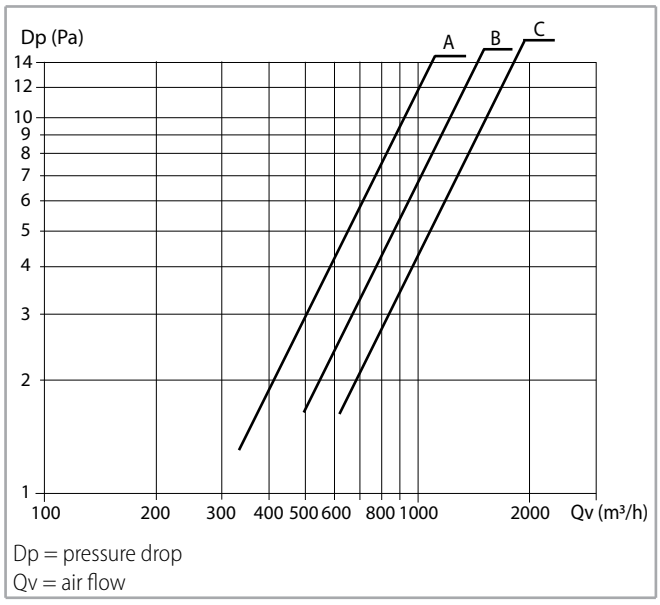
Sound attenuator module made of galvanised steel metal sheet, lined internally with a reinforced glass wool mat on both sides with a black glass coating; the 50 mm and 30 kg/m ^{3} density lining ensures high noise reduction with very low pressure drops.

Frequency	Hz	125	250	500	1000	2000	4000	8000
Sound attenuation	dB	2,5	5,0	11,5	14,0	13,5	12,0	11,0

NOTE: the silencer plenum reduces the sound levels only on the supply side; the sound levels on the return side are not affected by the silencer.



Model	ID	Code	A mm	L mm	L1 mm
1	BXS-A	9069081	653	675	597
2	BXS-B	9069082	868	890	812
3	BXS-C	9069083	1083	1105	1027



Dp = pressure drop
Qv = air flow

Follow us on

Sabiana app

99A4590100 04/2026

SABIANA SpA
Società a socio unico
via Piave 53 - 20011 Corbetta (MI) Italy
Direzione e coordinamento Midea Group Co. Ltd.
T. +39 02 97203 1 r.a. - F. +39 02 9777282
info@sabiana.it
www.sabiana.it

MBT Climate

Sabiana 2 and Sabiana 3 - Operative unit “via Virgilio 2 - Magenta (MI)”
Sabiana 4 - Operative unit “via Zanella 27 - Corbetta (MI)”