

GB

TECHNICAL MANUAL



ESTRO BLDC

ESTRO BLDC FAN COILS - BRUSHLESS TECHNOLOGY

1.5 kW - 9.0 kW

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OPERATING LIMITS

- > thermal carrier fluid: water
- > water temperature: from 5°C to 95°C
- > maximum operating pressure: 10 bar
- > air temperature: from 5°C to 43 °C
- > supply voltage: 230 Vac

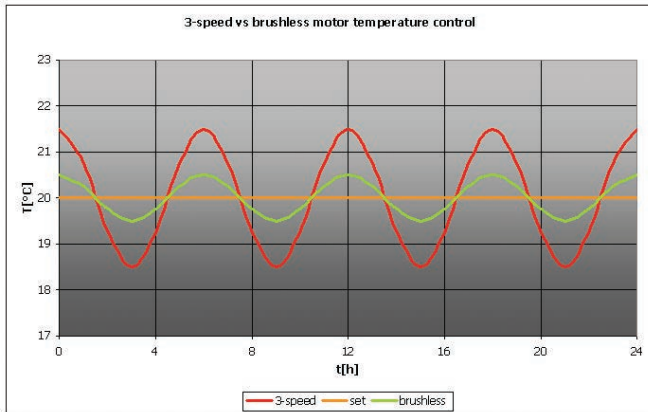
1 GENERALITIES

Backed by thirty years of experience in the manufacture of fan coil units Galletti introduces the new ESTRO BLDC line.

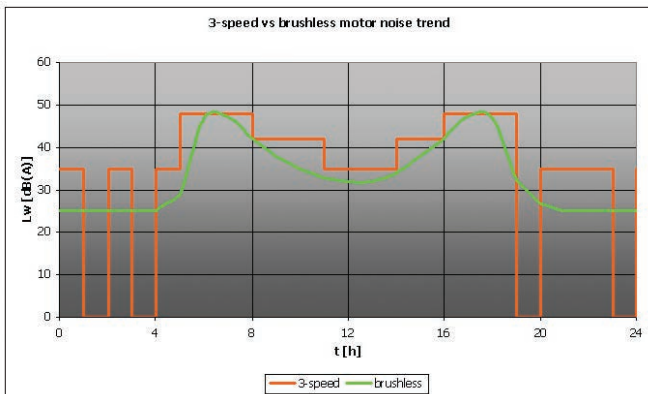
Galletti fan coils can be equipped with a permanent magnet (brushless) electric motor, controlled by an inverter, which enables continuous adjustment in the number of fan revolutions.

The great advantage of brushless motors is the significant reduction in power consumption, which in instant operations reaches up to a $\frac{1}{3}$ of that of conventional motors and at around 50% in integrated operations, with the corresponding reduction in CO₂ emissions!

The DC Inverter technology allows to continuously adjust the air flow to the actual needs of the environment by considerably reducing the fluctuations in room temperature that are typical of step-by-step adjustments.

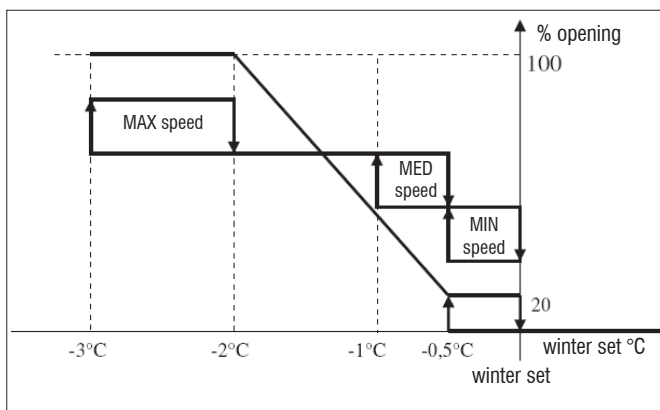


The direct consequence is also the reduction in the noise emission of the fan coil, which is now proportional to the demands of the environment.



THE CONTROL

The operation of the unit with brushless motor is managed by the MYCOMFORT LARGE control panel, using an analogue output (0-10V) which is connected to the inverter.



The Galletti brushless fan coil thus represent the state of the art due to the possibility of regulating the operation, depending on the temperature of the air, its relative humidity, the temperature of the water and based on the programmable time slots. By means of the digital outputs it is possible to switch on and off external units or devices such as chiller, boiler, pumps, water circulation pumps, etc.

Another analog output makes it possible to control the modulating valves.



Permanent magnets electric motor, mounted on vibration damping couplings, complete with winding thermal protection.

The unit is equipped with an inverter board to control the motor, which can be used separately or installed on the motor itself (features below). By means of dials this system makes it possible to precisely set the maximum rotation speed of the motor (the control signal range being always 0-10 V) even when the maximum rotation speed must be controlled to reduce noise levels.

The control inverter is equipped with Hall cells to precisely control the position of the rotor, and thus the rotation even at very low rotation speed (when traditional motors cannot be controlled).

For the ESTRO BLDC project we selected top quality materials which, together with the great care and attention dedicated to the assembly of the main constructive components, make the new Galletti fan coil units highly reliable from a performance standpoint while minimising noise levels.



New construction concept unifying the vertical and horizontal mounted models:

- F L I** Suspended wall installation, with cabinet, with vertical air flow.
- F A I** Wall-mounted, with cabinet, with inclined air flow.
- F U I** Floor or ceiling mounted, with cabinet, with vertical air flow and air intake grille complete with filters.
- F P I** Ceiling mounted, cabinet with air outlet grilles and rear air intake with filter.
- F C I** Vertical or horizontal recess mounted with heat insulated galvanised sheet casing.
- F F I** Vertical and horizontal recess mounted, with front air intake, with heat insulated galvanised sheet casing.

The performance features of Galletti ESTRO BLDC products are certified by EUROVENT which guarantees the reliability of the data shown on this documentation.



2 MODELS AND CONSTRUCTIVE COMPONENTS

FLI Wall mounting

- > Cabinet composed of a thick steel sheet panel (10/10 mm), side panels and air outlet grille (swinging by 180°) built from ABS. The side doors make it possible to access the technical compartments and the control panel (accessory).
- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and air vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Permanent magnets electric synchronous motor (BLDC) mounted on vibration damping supports, complete with sinusoidal inverter board.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations. The filter is secured to the cabinet with ¼-turn screws.



FAI Wall-mounting

- > Cabinet composed of a thick steel sheet panel (10/10 mm), side panels and air outlet grille (swinging by 180°) built from ABS. The side doors make it possible to access the technical compartments and the control panel (accessory).
- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Permanent magnets electric synchronous motor (BLDC) mounted on vibration damping supports, complete with sinusoidal inverter board.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations.



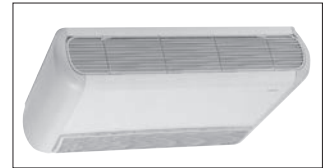
FFI Vertical / horizontal recess mounted

- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels. The unit is supplied complete with a double condensate collection and drainage system; in case of horizontal installation, condensate is collected in a capacious drip tray.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and air vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Permanent magnets electric synchronous motor (BLDC) mounted on vibration damping supports, complete with sinusoidal inverter board.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations. The filter is secured to the cabinet with ¼-turn screws.



FUI Universal: floor/ceiling mounted

- > Cabinet composed of a thick steel sheet panel (10/10 mm), side panels, air outlet grille (swinging by 180°) and back suction grilles built from ABS. The side doors make it possible to access the technical compartments and the control panel (accessory).
- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels. The unit is supplied complete with a double condensate collection and drainage system; in case of horizontal installation, condensate is collected in a capacious drip tray.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Permanent magnets electric synchronous motor (BLDC) mounted on vibration damping supports, complete with sinusoidal inverter board.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, made up of modules fitted onto the air inlet grille situated on the front panel of the cabinet.



2 MODELS AND CONSTRUCTIVE COMPONENTS

FP Ceiling mounted

- > Cabinet composed of a steel sheet panel (thickness 10/10 mm), side panels and air outlet grille (swinging by 180°) built from ABS. The side doors make it possible to access the technical compartments and the control panel (accessory).
- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels. The unit is supplied complete with a double condensate collection and drainage system; in case of horizontal installation, condensate is collected in a capacious drip tray.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and air vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Permanent magnets electric synchronous motor (BLDC) mounted on vibration damping supports, complete with sinusoidal inverter board.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations. The filter is secured to the cabinet with ¼-turn screws.



FC Vertical / horizontal recess mounted

- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels. The unit is supplied complete with a double condensate collection and drainage system; in case of horizontal installation, condensate is collected in a capacious drip tray.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Permanent magnets electric synchronous motor (BLDC) mounted on vibration damping supports, complete with sinusoidal inverter board.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations.



3 ACCESSORIES

A broad and complete range of accessories defines these indoor units and allows them to be tailored to every type of installation requirement. The standard units are supplied without control panel.

REF.	DESCRIPTION	APPLICABLE TO
CONTROL PANELS AND THERMOSTATS		
MCLE	Wall-mounted microprocessor control - GALLETTI model MYCOMFORT LARGE	ALL
KBESTE	KIT for on-board installation on ESTRO (1 air probe + bracket + on-board LCD controller frame + wiring kit)	FLI-FAI-FUI
MCSWE	Water temperature electronic sensor for MYCOMFORT controls	ALL
MCSUE	Humidity sensor for on-board microprocessor controls model MYCOMFORT MEDIUM and MYCOMFORT LARGE .	ALL
ADDITIONAL HEAT EXCHANGERS		
DF	1 row additional heat exchanger for 4-pipe systems (hot water circuit)	FLI-FAI-FUI-FPI-FCI-FFI
SUPPORT COVERING FEET		
ZA	Pair of support covering feet	FAI
ZAG	Pair of support covering feet with front grille	FAI
ZL	Pair of support covering feet	FLI
ZLG	Pair of support covering feet with front grille	FLI
D	Support spacers	FCI
PVL	Rear painted panel for vertical installation fan coils with cabinet	FLI-FUI
PVA	Rear painted panel for vertical installation fan coils with cabinet	FAI
PH	Rear painted panel for horizontal installation fan coils with cabinet	FUI
MOTOR-DRIVEN VALVES AND DRIP TRAYS		
VK S	3-way valve with ON/OFF electrothermal motor and hydraulic kit for standard heat exchanger	ALL
VK DF	3-way valve with ON/OFF electrothermal motor and hydraulic kit for DF heat exchanger	FLI-FAI-FUI-FPI-FCI-FFI
GIVK	Valve body insulation shell	ALL
BV	Auxiliary water drip tray for vertical installation fan coil units	ALL
BH	Auxiliary water drip tray for horizontal installation fan coil units	FUI-FPI-FCI-FFI
KSC	Condensate drainage pump	FCI-FFI
ELECTRICAL HEATING ELEMENTS		
RE	Electric heating element complete with installation kit, safety devices, power relay box, heat resistant grilles	FLI-FUI-FPI-FCI-FFI
AIR INTAKE AND OUTLET GRILLES		
GE+C	Anodised aluminium grille for external air intake, complete with subframe	FLI-FAI-FUI-FPI-FCI-FFI
GEF+C	Anodised aluminium grille for external air intake, complete with filter and subframe	FCI-FFI
GM+C	Anodised aluminium double-row finned air outlet grille, complete with subframe	FCI-FFI
RGCCD	Plenum with circular collars for air outlet grille	FCI-FFI
INLET AND OUTLET CONNECTORS		
RM90	Angular air outlet connector	FCI-FFI
RMD	Straight air outlet connector	FCI-FFI
RA90	Angular air inlet connectors	FCI
RAD	Straight air inlet connectors	FCI
RMCD	Air outlet plenum with circular collars	FCI-FFI
EXTERNAL AIR INTAKE LOUVERS		
S	Manual external air intake louver	FLI-FAI-FPI-FCI
SM	Motor-driven external air intake louver	FLI-FAI-FPI-FCI

4 RATINGS AND TECHNICAL DATA

ESTRO BLDC 1.2			1						3						4						4M					
Motor / speeds	3x		Min	Med	Max				Min	Med	Max				Min	Med	Max				Min	Med	Max			
	6x	no.	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Total cooling capacity (1)		kW	0,8	0,9	1,2	1,3	1,4	1,5	1,2	1,3	1,5	1,7	1,9	2,1	1,3	1,4	1,7	2,0	2,3	2,6	1,4	1,5	1,9	2,2	2,4	2,8
Sensible cooling capacity (1)		kW	0,6	0,7	0,9	1,0	1,0	1,1	0,9	1,0	1,1	1,3	1,4	1,6	0,9	1,0	1,2	1,4	1,7	1,9	1,0	1,1	1,3	1,6	1,7	2,0
Water flow (1)		l/h	132	158	197	228	242	264	206	216	261	298	328	364	221	234	292	337	399	449	242	258	317	384	415	473
Pressure drop (1)		kPa	4	5	7	10	11	12	8	8	11	14	17	20	6	6	9	12	16	20	9	10	14	20	23	28
Heating capacity (2)		kW	1,1	1,3	1,6	1,9	2,0	2,2	1,6	1,7	2,0	2,2	2,6	2,8	1,7	1,8	2,2	2,6	2,8	3,1	1,7	1,8	2,3	2,7	3,0	3,4
Pressure drop (2)		kPa	3	4	6	8	9,00	10	6	7	9	12	14	17	5	5	8	10	13	20	7	8	11	16	18	23
Heating capacity (3)		kW	1,9	2,3	2,7	3,3	3,5	3,8	2,8	2,9	3,5	3,7	4,4	4,9	2,9	3,0	3,7	4,4	4,7	5,2	2,9	3,1	3,8	4,6	5,0	5,7
Water flow (3)		l/h	171	199	235	286	303	331	242	257	307	329	409	429	252	267	322	382	409	456	254	270	333	405	439	500
Pressure drop (3)		kPa	4	6	8	11	12	14	8	8	11	13	13	21	5	6	8	11	13	15	7	8	12	16	19	24
Air flow rate		m ³ /h	149	189	231	342	380	450	196	211	271	344	380	450	196	211	271	344	380	450	196	211	271	344	380	450
Electrical input	EC	W	5	6	7	19	22	31	6	7	9	19	22	31	6	7	9	19	22	31	6	7	9	19	22	31
Speed setting		rpm	1250						1250						1250						1250					
Control voltage		V	2,8	3,6	4,4	6,3	7,0	8,3	3,7	4,0	5,2	6,4	7,0	8,3	3,7	4,0	5,2	6,4	7,0	8,3	3,7	4,0	5,2	6,4	7,0	8,3
Number of fans		no.	1						1						1						1					
Sound power level (4)		dB/A	30	32	40	48	52	55	32	38	44	49	52	55	32	40	44	50	52	55	32	40	44	50	52	55
Sound pressure level (5)		dB/A	25	27	35	43	47	50	27	33	39	44	47	50	27	35	39	45	47	50	27	35	39	45	47	50
Add. heat exch. heating cap.		kW	1,4	1,5	1,7	2,0	2,1	2,3	1,6	1,6	1,8	2,0	2,1	2,3	1,6	1,6	1,8	2,0	2,1	2,3	not available					
Water flow		l/h	118	132	149	178	187	201	136	137	156	177	187	201	136	137	156	177	187	201	not available					
Pressure drop		kPa	3	4	4	6	7	8	5	5	7	8	9	10	5	5	7	8	9	10	not available					
Water connections	std	inches	1 / 2						1 / 2						1 / 2						1 / 2					
	DF	inches	1 / 2						1 / 2						1 / 2						not available					
Water content	std	dm ³	0,5						0,5						0,7						0,9					
	DF	dm ³	0,2						0,2						0,2						not available					

ESTRO BLDC 1.2			5						6						6M						7					
Motor / speeds	3x		Min	Med	Max				Min	Med	Max				Min	Med	Max				Min	Med	Max			
	6x	no.	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Total cooling capacity (1)		kW	1,4	1,6	2,0	2,4	2,7	2,9	1,5	1,8	2,4	2,9	3,4	3,6	1,7	1,9	2,6	3,3	3,8	4,1	2,0	2,6	3,5	4,0	4,2	4,4
Sensible cooling capacity (1)		kW	1,0	1,2	1,6	1,9	2,2	2,4	1,1	1,3	1,7	2,1	2,4	2,6	1,2	1,3	1,8	2,3	2,7	2,9	1,5	2,0	2,8	3,2	3,4	3,6
Water flow (1)		l/h	239	275	348	415	470	498	263	302	408	503	579	619	292	331	453	565	655	706	340	451	602	681	712	755
Pressure drop (1)		kPa	6	8	12	16	20	22	4	5	8	11	15	16	5	7	12	17	23	26	4	7	12	15	16	18
Heating capacity (2)		kW	1,9	2,1	2,7	3,2	3,6	3,8	2,0	2,3	3,1	3,8	4,4	4,7	2,1	2,3	3,2	4,0	4,7	5,1	2,8	3,7	4,8	5,5	5,8	6,1
Pressure drop (2)		kPa	5	6	10	13	16	18	3	4,00	6,00	9	12	13	4	6	10	14	18	21	4	6	10	12,00	13	15
Heating capacity (3)		kW	3,2	3,5	4,6	5,5	6,2	6,5	3,4	3,9	5,2	6,5	7,4	8,0	3,5	3,9	5,4	6,8	7,9	8,6	4,8	6,3	8,2	9,5	10,0	10,6
Water flow (3)		l/h	276	308	401	480	541	574	299	339	458	567	651	697	302	343	473	595	694	750	424	556	720	837	876	929
Pressure drop (3)		kPa	6	7	12	16	20	22	3	4	7	11	14	15	4	6	10	14	19	22	5	8	13	16	18	20
Air flow rate		m ³ /h	211	241	341	442	528	579	211	241	341	442	528	579	211	241	341	442	528	579	320	450	640	798	855	938
Electrical input	EC	W	5	6	8	15	24	29	5	6	8	15	24	29	5	6	8	15	24	29	8	12	18	35	42	52
Speed setting		rpm	950						950						950						1150					
Control voltage		V	2,9	3,4	5,1	6,5	7,7	8,5	2,9	3,4	5,1	6,5	7,7	8,5	2,9	3,4	5,1	6,5	7,7	8,5	2,7	4,0	5,9	7,4	8,0	8,8
Number of fans		no.	2						2						2						2					
Sound power level (4)		dB/A	26	35	43	48	50	52	26	35	42	48	50	52	26	34	42	48	50	52	35	43	52	56	57	60
Sound pressure level (5)		dB/A	21	30	38	43	45	47	21	30	37	43	45	47	21	29	37	43	45	47	30	38	47	51	52	55
Add. heat exch. heating cap.		kW	1,9	2,1	2,5	2,9	3,4	3,5	2,1	2,2	2,7	3,1	3,4	3,5	not available						3,2	4,0	4,8	5,3	5,5	5,8
Water flow		l/h	169	181	222	257	295	308	180	191	235	270	295	308	not available						282	347	421	469	484	506
Pressure drop		kPa	2	2	3	4	6	6	3	3	4	5	6	7	not available						4	6	9	10	11	12
Water connections	std	inches	1 / 2						1 / 2						1 / 2						1 / 2					
	DF	inches	1 / 2						1 / 2						not available						1 / 2					
Water content	std	dm ³	0,7						1,0						1,33						1,0					
	DF	dm ³	0,3						0,3						not available						0,4					

- 1 Water temperature 7-12°C, air temp. 27°C D.B., 19°C W.B. (47% R.H.)
- 2 Water temperature 50°C, water flow rate same as in cooling mode, air inlet temperature 20°C
- 3 Water temperature 70/60°C, air temp. 20°C
- 4 Sound power measured according to standards ISO3741 and ISO3742
- 5 Sound pressure level measured at a distance of 1 m with a directivity factor of 4

4 RATINGS AND TECHNICAL DATA

ESTRO BLDC 1.2		7M						8						8M						9					
Motor / speeds	3x	Min	Med	Max				Min	Med	Max				Min	Med	Max				Min	Med	Max			
	6x	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Total cooling capacity (1)	kW	2,5	3,4	4,6	5,5	5,8	6,2	2,5	3,3	4,0	4,3	4,9	5,3	2,8	3,7	4,6	5,0	5,8	6,2	2,7	3,2	3,9	4,8	5,0	5,3
Sensible cooling capacity (1)	kW	1,7	2,4	3,2	3,9	4,1	4,4	1,8	2,5	3,0	3,2	3,9	4,2	1,9	2,6	3,2	3,5	4,1	4,4	2,0	2,3	2,9	3,7	3,9	4,2
Water flow (1)	l/h	427	582	785	938	991	1.065	431	561	683	743	847	903	477	635	782	850	991	1.065	457	544	664	818	857	914
Pressure drop (1)	kPa	6	11	18	24	27	30	5	8	11	12	16	17	7	12	18	20	27	30	5	7	10	14	16	17
Heating capacity (2)	kW	3,0	4,1	5,5	6,6	6,9	7,4	3,0	3,9	4,8	5,1	6,4	6,9	3,4	4,5	5,5	6,0	6,9	7,4	3,6	4,0	4,9	6,0	6,8	7,2
Pressure drop (2)	kPa	5	9	14	20	22	25	4	6	9	10	13	14	6	10	14	17	22	25	4	6	8	12	13	14
Heating capacity (3)	kW	5,1	6,8	9,2	11,0	11,6	12,5	5,0	6,6	8,0	8,6	11,0	11,7	5,6	7,5	9,2	10,0	11,6	12,5	6,1	6,7	8,3	10,1	11,6	12,4
Water flow (3)	l/h	444	601	808	965	1020	1096	442	576	702	752	962	1025	495	654	805	876	1020	1096	537	588	724	884	1013	1084
Pressure drop (3)	kPa	5	8	14	19	21	24	4	6	8	10	15	16	6	10	14	16	21	24	5	6	9	12	16	18
Air flow rate	m ³ /h	320	450	640	798	855	938	361	497	637	706	855	938	361	497	637	706	855	938	389	470	605	785	855	938
Electrical input	EC W	8	12	18	35	42	52	10	13	18	27	42	52	10	13	18	27	42	52	10	12	16	33	42	52
Speed setting	rpm	1150						1150						1150											
Control voltage	V	2,7	4,0	5,9	7,4	8,0	8,8	3,1	4,4	5,8	6,6	8,0	8,8	3,1	4,4	5,8	6,6	8,0	8,8	3,4	4,2	5,5	7,3	8,0	8,8
Number of fans	no.	2						2						2											
Sound power level (4)	dB/A	35	43	52	56	57	60	35	43	50	53	57	60	35	43	50	53	57	60	39	43	49	56	57	60
Sound pressure level (5)	dB/A	30	38	47	51	52	55	30	38	45	48	52	55	30	38	45	48	52	55	34	38	44	51	52	55
Add. heat exch. heating capacity	kW	not available						3,6	4,3	4,8	5,1	5,5	5,8	not available						3,7	4,0	4,7	5,3	5,5	5,8
Water flow	l/h	not available						316	373	420	443	484	506	not available						322	355	408	465	484	506
Pressure drop	kPa	not available						7	9	11	12	14	16	not available						5	6	8	10	11	12
Water connections	std inches	1 / 2						1 / 2						1 / 2						1 / 2					
	DF inches	not available						1 / 2						not available						1 / 2					
Water content	std dm ³	1,33						1,4						1,8						1,4					
	DF dm ³	not available						0,4						not available						0,4					

ESTRO BLDC 1.2		9M						95						11						11M					
Motor / speeds	3x	Min	Med	Max				Min	Med	Max				Min	Med	Max				Min	Med	Max			
	6x	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Total cooling capacity (1)	kW	3,0	3,5	4,4	5,4	5,8	6,2	2,9	3,4	4,2	5,3	5,8	6,3	3,4	4,1	5,3	6,2	7,5	8,0	3,9	4,7	6,0	7,0	8,4	9,0
Sensible cooling capacity (1)	kW	2,1	2,5	3,1	3,8	4,1	4,4	2,1	2,3	3,0	3,8	4,2	4,5	2,5	3,1	3,9	4,6	5,6	6,0	2,8	3,3	4,2	5,0	6,0	6,4
Water flow (1)	l/h	511	605	750	926	991	1.065	503	587	719	902	998	1.075	577	706	911	1.071	1.287	1.075	668	800	1.022	1.199	1.440	1.541
Pressure drop (1)	kPa	8	11	16	24	27	30	7	9	13	19	23	26	4	6	10	13	18	26	7	9	14	19	26	29
Heating capacity (2)	kW	3,6	4,2	5,2	6,5	6,9	7,4	3,7	4,2	5,2	6,6	7,4	8,0	4,5	5,2	6,7	7,8	9,3	10,0	4,8	5,7	7,2	8,4	10,1	10,8
Pressure drop (2)	kPa	7	9	13	19	22	25	6	7	10	16	19	21	4	5	8	11	15	21	6	8	12	15	21	24
Heating capacity (3)	kW	6,0	7,1	8,8	10,9	11,6	12,5	6,2	7,1	8,7	11,1	12,5	13,5	7,8	8,9	11,4	13,2	15,7	16,9	8,1	9,6	12,1	14,2	17,0	18,2
Water flow (3)	l/h	529	623	772	953	1020	1096	545	623	765	973	1092	1180	680	782	1000	1158	1374	1486	710	840	1063	1242	1489	1593
Pressure drop (3)	kPa	7	9	13	19	21	24	6	8	11	17	20	23	4	6	9	11	15	17	6	8	12	15	21	24
Air flow rate	m ³ /h	389	470	605	785	855	938	389	488	615	814	855	938	530	642	846	1.022	1.280	1.393	530	642	846	1.022	1.280	1.393
Electrical input	EC W	10	12	16	33	42	52	10	13	16	37	42	52	11	13	24	38	69	87	11	13	24	38	69	87
Speed setting	rpm	1150						1150						1250						1250					
Control voltage	V	3,4	4,2	5,5	7,3	8,0	8,8	3,4	4,4	5,6	7,6	8,0	8,8	2,9	3,6	5,0	6,2	7,9	8,7	2,9	3,6	5,0	6,2	7,9	8,7
Number of fans	no.	2						2						2						2					
Sound power level (4)	dB/A	39	43	49	56	57	60	39	44	51	58	58	60	43	49	55	60	64	67	43	49	55	60	64	67
Sound pressure level (5)	dB/A	34	38	44	51	52	55	34	39	46	53	53	55	38	44	50	55	59	52	38	44	50	55	59	52
Add. heat exch. heating capacity	kW	not available						4,0	4,2	4,8	5,5	6,1	6,4	5,0	5,5	6,6	7,1	8,1	8,4	not available					
Water flow	l/h	not available						350	369	419	483	535	560	437	483	575	627	713	733	not available					
Pressure drop	kPa	not available						8	9	11	14	17	19	12	14	18	23	28	30	n.a.					
Water connections	std inches	1 / 2						3 / 4						3 / 4						3 / 4					
	DF inches	not available						3 / 4						1 / 2						not available					
Water content	std dm ³	1,8						1,7						2,1						2,8					
	DF dm ³	not available						0,5						0,6						not available					

- 1 Water temperature 7-12°C, air temp. 27°C D.B., 19°C W.B. (47% R.H.)
- 2 Water temperature 50°C, water flow rate same as in cooling mode, air inlet temperature 20°C
- 3 Water temperature 70/60°C, air temp. 20°C
- 4 Sound power measured according to standards ISO3741 and ISO3742
- 5 Sound pressure level measured at a distance of 1 m with a directivity factor of 4

4.1 WEIGHTS

ESTRO BLDC 1.2		1	3	4	5	6	7	8	9	95	11	12
FLI	kg	19,1	20,1	20,1	24,8	24,8	30,4	30,4	30,9	31,0	41,3	50,4
FAI	kg	18,1	19,1	19,1	23,3	23,3	28,4	28,4	28,9	-	38,8	47,9
FCI	kg	14,1	15,1	15,1	18,8	18,8	22,9	22,9	23,4	24,0	31,8	38,8
FUI	kg	20,1	21,1	21,1	26,8	26,8	32,4	32,4	32,9	33,0	43,8	53,0
FFI	kg	14,1	15,1	15,1	18,8	18,8	22,9	22,9	23,4	-	31,8	38,8
FPI	kg	20,1	21,1	21,1	26,8	26,8	32,4	32,4	32,9	-	43,8	53,0

5 PERFORMANCES

5.1 COOLING MODE: MODELS WITH 1 HEAT EXCHANGER

- Tbs₁** Air inlet temperature (dry bulb)
- Tbu₁** Air inlet temperature (wet bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PFT** Total cooling capacity
- PFS** Sensible cooling capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs ₁ / Tbu ₁ (UR%)				25 °C / 18 °C (51%)															
Tw ₁ / Tw ₂				6 / 11 °C				7 / 12 °C				8 / 13 °C				9 / 14 °C			
Model	Vin	Qa	Lw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw
	V	m ³ /h	dB(A)	W	W	l/h	kPa	W	W	l/h	kPa	W	W	l/h	kPa	W	W	l/h	kPa
1	2,8	149	30	730	550	126	3	640	510	111	3	560	480	97	2	490	450	84	2
	3,6	189	32	880	650	150	5	730	590	126	3	620	550	107	3	570	570	98	2
	4,4	231	40	1100	810	188	7	930	740	159	5	730	670	126	3	680	680	117	3
	6,3	342	48	1270	910	217	9	1070	830	183	6	850	760	146	4	800	800	137	4
	7,0	380	52	1340	960	231	10	1130	880	195	7	900	800	155	5	850	850	145	4
3	8,3	450	55	1470	1030	252	11	1240	950	213	8	990	860	170	6	930	930	159	5
	3,7	196	32	1150	830	197	7	980	770	168	5	790	690	135	4	710	700	121	3
	4,0	211	38	1210	880	207	8	1030	810	176	6	830	740	142	4	740	740	128	3
	5,2	271	44	1450	1060	250	11	1240	980	213	8	1010	890	173	5	900	900	155	4
	6,4	344	49	1660	1210	285	13	1420	1110	243	10	1150	1010	198	7	1040	1040	178	6
4	7,0	380	52	1830	1330	314	16	1560	1230	268	12	1270	1120	218	8	1140	1140	195	7
	8,3	450	55	2030	1470	348	19	1730	1360	298	14	1410	1240	242	10	1270	1270	218	8
	3,7	196	32	1230	880	212	5	1060	810	182	4	890	740	152	3	760	690	130	2
	4,0	211	40	1310	930	224	6	1120	860	193	5	920	780	158	3	780	720	134	2
	5,2	271	44	1630	1160	280	9	1410	1070	242	7	1170	970	200	5	980	970	169	4
4M	6,4	344	50	1880	1320	323	11	1620	1220	279	9	1340	1110	231	6	1140	1140	196	5
	7,0	380	52	2230	1580	383	15	1940	1460	332	12	1610	1330	277	8	1350	1350	232	6
	8,3	450	55	2510	1780	431	19	2180	1640	373	14	1810	1500	311	10	1520	1520	262	8
	3,7	196	33	1360	940	233	8	1200	870	206	7	1030	800	177	5	850	730	147	4
	4,0	211	41	1450	1000	248	9	1280	930	219	7	1100	850	188	6	890	770	153	4
5	5,2	271	45	1780	1240	305	13	1570	1150	270	11	1350	1060	232	8	1110	960	190	6
	6,4	344	51	2160	1500	370	19	1910	1400	327	15	1640	1290	281	11	1340	1180	230	8
	7,0	380	53	2330	1630	400	21	2060	1520	354	17	1770	1400	304	13	1450	1280	249	9
	8,3	450	56	2660	1870	456	27	2350	1740	403	21	2010	1610	346	16	1650	1470	284	11
	2,9	211	26	1330	970	228	6	1130	890	194	4	940	810	161	3	820	760	140	2
6	3,4	241	35	1530	1100	262	7	1310	1010	225	6	1050	910	180	4	920	880	157	3
	5,1	341	43	1940	1460	333	11	1670	1350	287	9	1370	1230	235	6	1160	1160	199	4
	6,5	442	48	2320	1750	398	15	2000	1620	343	12	1650	1490	283	8	1390	1390	238	6
	7,7	528	50	2620	2070	450	19	2270	1930	389	14	1720	1720	294	9	1580	1580	271	8
	8,5	579	52	2780	2220	477	21	2400	2070	412	16	1820	1820	313	10	1670	1670	287	8
6M	2,9	211	26	1490	1040	256	3	1350	980	232	3	1200	920	207	2	1050	860	181	2
	3,4	241	34	1680	1180	288	4	1460	1080	250	3	1300	1020	223	3	1130	950	195	2
	5,1	341	42	2280	1590	391	7	1960	1460	336	6	1570	1300	270	4	1310	1200	225	3
	6,5	442	48	2810	1970	482	11	2420	1810	416	8	1990	1640	341	6	1660	1600	285	4
	7,7	528	50	3230	2240	555	14	2800	2060	480	10	2310	1870	397	7	1920	1890	329	5
7	8,5	579	52	3460	2380	594	15	3000	2200	514	12	2480	1990	426	8	1870	1770	322	5
	2,9	211	27	1630	1100	280	5	1460	1030	250	4	1310	960	225	3	1150	900	198	3
	3,4	241	35	1860	1250	318	6	1640	1160	281	5	1420	1070	244	4	1250	1000	214	3
	5,1	341	43	2540	1730	436	11	2250	1600	387	9	1930	1470	332	7	1560	1320	268	5
	6,5	442	49	3180	2170	545	16	2820	2020	484	13	2430	1850	417	10	1990	1680	342	7
7	7,7	528	51	3680	2520	631	21	3270	2350	561	17	2820	2160	484	13	2320	1970	398	9
	8,5	579	53	3960	2720	680	24	3520	2530	604	20	3040	2340	521	15	2500	2130	430	11
	2,7	320	35	1860	1340	320	4	1550	1210	266	3	1370	1140	236	2	1190	1080	204	2
	4,0	450	43	2500	1890	429	7	2080	1720	357	5	1630	1610	280	3	1500	1500	257	3
	5,9	640	52	3350	2550	575	11	2840	2350	488	8	2260	2130	387	6	2010	2010	346	5
7	7,4	798	56	3790	2980	650	14	3230	2760	554	10	2510	2510	430	7	2290	2290	394	6
	8,0	855	57	3970	3140	680	15	3380	2910	580	11	2620	2620	450	7	2400	2400	412	6
	8,8	938	60	4210	3360	722	17	3590	3120	616	13	2790	2790	479	8	2550	2550	438	7

5 PERFORMANCES

5.1 COOLING MODE: MODELS WITH 1 HEAT EXCHANGER

- Tbs₁** Air inlet temperature (dry bulb)
- Tbu₁** Air inlet temperature (wet bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PFT** Total cooling capacity
- PFS** Sensible cooling capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs ₁ / Tbu ₁ (UR%)				25 °C / 18 °C (51%)															
Tw ₁ / Tw ₂				6 / 11 °C				7 / 12 °C				8 / 13 °C				9 / 14 °C			
Model	Vin	Qa	Lw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw
	V	m ³ /h	dB(A)	W	W	l/h	kPa	W	W	l/h	kPa	W	W	l/h	kPa	W	W	l/h	kPa
7M	2,7	320	36	2380	1630	408	6	2090	1500	359	5	1870	1410	322	4	1650	1320	283	3
	4,0	450	44	3260	2230	560	10	2880	2060	493	8	2440	1880	419	6	1970	1700	339	4
	5,9	640	53	4410	3030	756	17	3900	2810	670	13	3350	2590	575	10	2710	2340	466	7
	7,4	798	57	5260	3630	903	23	4660	3380	801	18	4010	3120	689	14	3280	2830	564	10
	8,0	855	58	5560	3840	954	25	4930	3580	845	20	4240	3300	728	16	3480	3000	597	11
	8,8	938	61	5980	4140	1026	29	5300	3850	909	23	4560	3560	784	18	3750	3250	644	12
8	3,1	361	35	2380	1670	407	4	2050	1540	352	3	1820	1450	313	3	1590	1350	273	2
	4,4	497	43	3120	2280	535	7	2650	2090	454	5	2070	1860	355	3	1880	1800	323	3
	5,8	637	50	3810	2830	653	10	3270	2610	561	8	2630	2370	452	5	2230	2230	383	4
	6,6	706	53	4140	2940	711	11	3570	2700	612	9	2910	2450	499	6	2440	2440	418	4
	8,0	855	57	4730	3620	811	14	4080	3360	700	11	3350	3080	576	8	2800	2800	480	6
	8,8	938	60	5040	3910	865	16	4350	3630	747	12	3590	3340	616	9	2990	2990	513	6
8M	3,1	361	36	2670	1820	458	7	2340	1680	401	5	2010	1540	345	4	1760	1440	302	3
	4,4	497	44	3560	2430	610	12	3140	2260	539	9	2680	2070	460	7	2110	1840	363	5
	5,8	637	51	4390	3010	753	17	3890	2800	667	13	3330	2580	572	10	2700	2330	464	7
	6,6	706	54	4770	3290	819	19	4230	3060	726	16	3630	2810	624	12	2960	2550	509	8
	8,0	855	58	5560	3840	954	25	4930	3580	845	20	4240	3300	728	16	3480	3000	597	11
	8,8	938	61	5980	4140	1026	29	5300	3850	909	23	4560	3560	784	18	3750	3250	644	12
9	3,4	389	39	2530	1830	434	5	2120	1650	363	3	1880	1560	322	3	1630	1460	281	2
	4,2	470	43	3020	2160	519	6	2560	1970	439	5	2040	1770	351	3	1770	1660	304	3
	5,5	605	49	3700	2720	635	9	3170	2510	545	7	2550	2260	438	5	2160	2150	371	4
	7,3	785	56	4570	3400	784	13	3950	3150	677	10	3240	2880	557	7	2690	2690	463	5
	8,0	855	57	4790	3630	821	15	4130	3360	709	11	3400	3080	584	8	2830	2830	486	6
	8,8	938	60	5110	3910	876	16	4410	3630	757	13	3650	3340	626	9	3030	3030	520	6
9M	3,4	389	40	2860	1950	491	8	2510	1800	431	6	2110	1630	361	5	1830	1530	315	4
	4,2	470	44	3390	2320	581	11	2990	2150	513	8	2540	1960	436	6	2020	1750	346	4
	5,5	605	50	4200	2890	722	15	3720	2680	639	12	3190	2460	548	9	2570	2220	442	6
	7,3	785	57	5200	3580	892	22	4610	3340	791	18	3960	3080	680	14	3240	2790	556	10
	8,0	855	58	5560	3840	954	25	4930	3580	845	20	4240	3300	728	16	3480	3000	597	11
	8,8	938	61	5980	4140	1026	29	5300	3850	909	23	4560	3560	784	18	3750	3250	644	12
95	3,4	389	39	2810	1940	482	6	2440	1780	419	5	2050	1620	351	4	1790	1510	307	3
	4,4	488	44	3280	2200	563	8	2860	2020	491	7	2380	1820	408	5	1930	1650	331	3
	5,6	615	51	4030	2810	690	12	3530	2610	606	10	2980	2380	511	7	2310	2130	396	4
	7,6	814	58	5060	3580	868	18	4450	3330	763	14	3780	3060	649	11	3020	2770	518	7
	8,0	855	58	5600	3900	960	21	4940	3620	847	17	4220	3330	725	13	3410	3020	586	9
	8,8	938	60	6030	4210	1035	24	5320	3920	914	20	4560	3610	782	15	3700	3270	635	10
11	2,9	530	43	3270	2380	561	4	2950	2250	507	3	2630	2120	451	3	2290	1990	393	2
	3,6	642	49	3890	2820	666	6	3260	2570	559	4	2890	2420	496	3	2510	2280	431	3
	5,0	846	55	5060	3660	868	9	4290	3350	737	7	3280	2960	564	4	3000	3000	515	4
	6,2	1022	60	5970	4320	1023	12	5110	3970	878	9	4110	3590	706	6	3460	3460	595	5
	7,9	1280	64	7180	5210	1232	17	6200	4820	1064	13	5090	4390	874	9	4210	4210	724	6
	8,7	1393	67	7680	5560	1318	19	6640	5140	1140	14	5480	4700	941	10	4520	4520	776	7
11M	2,9	530	44	3720	2570	638	6	3250	2370	558	5	2900	2230	499	4	2540	2090	437	3
	3,6	642	50	4470	3080	766	9	3900	2840	669	7	3240	2570	556	5	2820	2410	485	4
	5,0	846	56	5720	3950	981	13	5040	3660	864	11	4270	3350	734	8	3330	2980	571	5
	6,2	1022	61	6720	4640	1152	18	5930	4310	1018	14	5070	3970	870	11	4060	3580	698	7
	7,9	1280	65	8080	5600	1386	25	7150	5210	1227	20	6140	4810	1053	15	5000	4370	858	10
	8,7	1393	68	8650	6000	1484	28	7660	5590	1313	22	6580	5160	1129	17	5370	4700	923	12

5 PERFORMANCES

5.1 COOLING MODE: MODELS WITH 1 HEAT EXCHANGER

- Tbs₁** Air inlet temperature (dry bulb)
- Tbu₁** Air inlet temperature (wet bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PFT** Total cooling capacity
- PFS** Sensible cooling capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs ₁ / Tbu ₁ (UR%)				27 °C / 19 °C (47%)															
Model	Tw ₁ / Tw ₂			6 / 11 °C				7 / 12 °C				8 / 13 °C				9 / 14 °C			
	Vin	Qa	Lw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw
	V	m ³ /h	dB(A)	W	W	l/h	kPa	W	W	l/h	kPa	W	W	l/h	kPa	W	W	l/h	kPa
1	2,8	149	30	880	630	151	5	770	590	132	4	660	550	113	3	570	520	99	2
	3,6	189	32	1050	750	181	6	920	700	158	5	770	650	133	4	640	600	109	3
	4,4	231	40	1310	930	225	9	1150	870	197	7	980	800	167	5	780	730	134	4
	6,3	342	48	1520	1050	260	12	1330	980	228	10	1120	910	193	7	900	830	155	5
	7,0	380	52	1610	1100	276	13	1410	1030	242	11	1190	950	205	8	960	870	165	5
	8,3	450	55	1760	1190	302	16	1540	1110	264	12	1310	1030	224	9	1050	940	181	6
3	3,7	196	32	1360	960	233	9	1200	900	206	8	1030	830	176	6	830	760	143	4
	4,0	211	38	1430	1020	245	10	1260	950	216	8	1080	880	185	6	880	800	151	4
	5,2	271	44	1720	1220	296	14	1520	1140	261	11	1300	1060	223	9	1060	970	182	6
	6,4	344	49	1980	1390	339	18	1740	1300	298	14	1490	1210	256	11	1210	1110	209	8
	7,0	380	52	2170	1530	372	21	1910	1430	328	17	1630	1330	281	13	1340	1220	230	9
	8,3	450	55	2410	1690	413	26	2120	1580	364	20	1820	1470	312	15	1490	1350	255	11
4	3,7	196	32	1450	1010	249	7	1290	940	221	6	1110	870	191	4	920	800	158	3
	4,0	211	40	1530	1070	263	8	1360	1000	234	6	1180	930	202	5	970	850	167	3
	5,2	271	44	1910	1330	328	12	1700	1240	292	9	1480	1150	253	7	1230	1060	211	5
	6,4	344	50	2210	1510	379	15	1960	1420	337	12	1700	1320	292	9	1410	1210	242	7
	7,0	380	52	2610	1810	448	20	2330	1690	399	16	2020	1570	347	13	1690	1450	291	9
	8,3	450	55	2940	2030	504	24	2620	1900	449	20	2270	1770	390	15	1900	1630	326	11
4M	3,7	196	33	1560	1060	268	11	1410	1000	242	9	1250	930	215	7	1080	860	185	5
	4,0	211	41	1660	1130	285	12	1500	1060	258	10	1330	990	228	8	1140	920	196	6
	5,2	271	45	2050	1400	351	17	1850	1320	317	14	1640	1230	281	11	1410	1140	242	9
	6,4	344	51	2480	1700	426	24	2240	1600	384	20	1980	1500	340	16	1700	1400	293	12
	7,0	380	53	2680	1850	461	27	2420	1740	415	23	2140	1630	368	18	1840	1520	317	14
	8,3	450	56	3060	2110	525	34	2760	1990	473	28	2440	1870	419	23	2100	1740	361	17
5	2,9	211	26	1570	1110	270	8	1400	1040	239	6	1190	960	205	5	960	870	164	3
	3,4	241	35	1800	1260	309	10	1600	1180	275	8	1380	1090	237	6	1120	990	193	4
	5,1	341	43	2290	1670	392	15	2030	1570	348	12	1760	1460	301	9	1450	1350	249	7
	6,5	442	48	2720	2000	467	20	2420	1880	415	16	2100	1760	360	13	1740	1620	299	9
	7,7	528	50	3080	2360	528	25	2740	2230	470	20	2370	2090	407	16	1870	1870	320	10
	8,5	579	52	3260	2530	560	28	2900	2390	498	22	2510	2250	431	17	1980	1980	340	11
6	2,9	211	26	1740	1190	299	5	1530	1100	263	4	1380	1030	236	3	1230	980	211	2
	3,4	241	34	1990	1360	341	6	1760	1260	302	5	1500	1150	258	4	1320	1080	227	3
	5,1	341	42	2670	1820	459	10	2380	1700	408	8	2060	1570	353	6	1680	1420	289	4
	6,5	442	48	3290	2260	564	14	2930	2110	503	11	2540	1950	436	9	2110	1790	362	6
	7,7	528	50	3780	2560	648	18	3370	2390	579	15	2930	2210	503	11	2440	2030	419	8
	8,5	579	52	4050	2730	694	20	3610	2550	619	16	3140	2360	538	13	2620	2170	450	9
6M	2,9	211	27	1880	1250	323	7	1700	1170	292	5	1500	1090	258	4	1340	1020	230	4
	3,4	241	35	2130	1420	366	8	1930	1330	331	7	1710	1240	293	5	1460	1140	250	4
	5,1	341	43	2910	1950	499	14	2640	1830	453	12	2340	1710	403	10	2020	1580	347	7
	6,5	442	49	3640	2450	624	21	3290	2300	565	17	2930	2150	503	14	2530	1990	435	11
	7,7	528	51	4210	2850	723	27	3820	2680	655	23	3390	2510	583	18	2940	2330	505	14
	8,5	579	53	4540	3080	779	31	4110	2900	706	26	3660	2710	628	21	3160	2510	544	16
7	2,7	320	35	2280	1570	391	6	1980	1450	340	4	1610	1310	277	3	1400	1230	240	2
	4,0	450	43	3000	2190	514	9	2630	2040	451	7	2220	1880	381	5	1800	1790	309	4
	5,9	640	52	3980	2930	682	15	3510	2750	602	12	3000	2560	515	9	2410	2410	414	6
	7,4	798	56	4500	3420	772	19	3970	3220	681	15	3400	3000	583	11	2740	2740	471	8
	8,0	855	57	4700	3600	807	20	4150	3390	712	16	3550	3170	610	12	2870	2870	493	8
	8,8	938	60	4990	3850	855	23	4400	3630	755	18	3770	3400	648	14	3050	3050	524	9

5 PERFORMANCES

5.1 COOLING MODE: MODELS WITH 1 HEAT EXCHANGER

- Tbs₁** Air inlet temperature (dry bulb)
- Tbu₁** Air inlet temperature (wet bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PFT** Total cooling capacity
- PFS** Sensible cooling capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs1 / Tbu1 (UR%)				27 °C / 19 °C (47%)															
Tw1 / Tw2				6 / 11 °C				7 / 12 °C				8 / 13 °C				9 / 14 °C			
Model	Vin	Qa	Lw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw	PFT	PFS	Qw	DPw
	V	m3/h	dB(A)	W	W	l/h	kPa	W	W	l/h	kPa	W	W	l/h	kPa	W	W	l/h	kPa
7M	2,7	320	36	2760	1850	473	7	2480	1730	427	6	2180	1600	374	5	1920	1500	329	4
	4,0	450	44	3750	2530	644	13	3390	2370	582	11	3000	2210	515	8	2560	2030	441	6
	5,9	640	53	5060	3430	868	21	4580	3220	785	18	4060	3010	697	14	3500	2790	601	11
	7,4	798	57	6040	4110	1036	29	5460	3870	938	24	4850	3620	833	20	4190	3360	719	15
	8,0	855	58	6380	4340	1094	32	5770	4090	991	27	5120	3830	879	22	4420	3550	760	17
	8,8	938	61	6860	4680	1177	36	6200	4400	1065	30	5510	4120	946	24	4760	3830	817	19
8	3,1	361	35	2850	1950	489	6	2510	1800	431	5	2100	1640	361	3	1860	1540	319	3
	4,4	497	43	3690	2620	632	9	3270	2450	561	8	2800	2260	481	6	2230	2050	383	4
	5,8	637	50	4480	3250	769	13	3980	3040	683	11	3440	2830	590	8	2810	2590	483	6
	6,6	706	53	4870	3370	835	15	4330	3150	743	12	3750	2920	643	10	3090	2670	530	7
	8,0	855	57	5550	4140	951	19	4930	3900	847	16	4280	3640	734	12	3320	3320	570	8
	8,8	938	60	5910	4460	1014	21	5260	4200	903	17	4560	3930	783	13	3540	3540	609	9
8M	3,1	361	36	3080	2070	529	9	2780	1940	477	7	2450	1800	421	6	2060	1650	355	4
	4,4	497	44	4090	2760	702	15	3700	2590	635	12	3280	2420	563	10	2810	2230	482	7
	5,8	637	51	5040	3410	864	21	4560	3210	782	18	4040	3000	695	14	3480	2780	598	11
	6,6	706	54	5480	3720	940	25	4960	3500	850	20	4400	3270	755	17	3790	3030	652	13
	8,0	855	58	6380	4340	1094	32	5770	4090	991	27	5120	3830	879	22	4420	3550	760	17
	8,8	938	61	6860	4680	1177	36	6200	4400	1065	30	5510	4120	946	24	4760	3830	817	19
9	3,4	389	39	3020	2110	518	6	2670	1960	457	5	2250	1800	386	4	1910	1670	329	3
	4,2	470	43	3570	2490	613	9	3170	2320	544	7	2710	2140	466	5	2150	1920	370	4
	5,5	605	49	4350	3120	747	12	3870	2920	664	10	3340	2710	574	8	2730	2480	469	5
	7,3	785	56	5360	3890	919	18	4770	3650	818	14	4140	3400	710	11	3430	3140	589	8
	8,0	855	57	5610	4140	963	19	5000	3900	857	16	4330	3640	744	12	3600	3360	618	9
	8,8	938	60	5990	4460	1027	21	5330	4200	914	17	4620	3930	794	14	3850	3640	661	10
9M	3,4	389	40	3300	2220	566	10	2980	2080	511	8	2630	1930	451	7	2230	1770	383	5
	4,2	470	44	3900	2630	669	14	3520	2470	605	11	3120	2300	536	9	2670	2120	459	7
	5,5	605	50	4830	3270	828	20	4370	3070	750	16	3870	2870	665	13	3340	2650	573	10
	7,3	785	57	5960	4050	1023	28	5400	3820	926	24	4790	3570	822	19	4140	3310	710	15
	8,0	855	58	6380	4340	1094	32	5770	4090	991	27	5120	3830	879	22	4420	3550	760	17
	8,8	938	61	6860	4680	1177	36	6200	4400	1065	30	5510	4120	946	24	4760	3830	817	19
95	3,4	389	39	3260	2210	560	8	2930	2070	503	7	2570	1910	441	5	2140	1740	367	4
	4,4	488	44	3810	2500	654	11	3420	2340	587	9	3000	2170	515	7	2520	1980	433	5
	5,6	615	51	4660	3200	799	16	4190	3000	719	13	3690	2800	633	10	3130	2580	537	8
	7,6	814	58	5840	4060	1002	23	5260	3820	902	19	4640	3580	796	15	3960	3320	680	11
	8,0	855	58	6440	4410	1105	27	5810	4150	998	23	5140	3880	883	18	4410	3600	758	14
	8,8	938	60	6950	4770	1191	31	6270	4490	1075	26	5540	4200	952	21	4760	3890	818	16
11	2,9	530	43	3900	2750	668	6	3360	2530	577	4	3010	2390	518	4	2680	2260	460	3
	3,6	642	49	4690	3290	804	8	4110	3050	706	6	3430	2780	588	5	2940	2600	505	3
	5,0	846	55	5990	4220	1029	12	5310	3940	911	10	4550	3640	781	7	3620	3290	621	5
	6,2	1022	60	7020	4950	1204	16	6240	4630	1071	13	5390	4300	924	10	4400	3930	756	7
	7,9	1280	64	8420	5960	1444	22	7500	5590	1287	18	6500	5200	1116	14	5390	4790	926	10
	8,7	1393	67	9000	6350	1544	25	8020	5960	1376	20	6960	5560	1196	16	5800	5120	995	11
11M	2,9	530	44	4340	2940	745	8	3890	2750	668	7	3380	2540	581	5	2970	2380	510	4
	3,6	642	50	5180	3510	888	11	4660	3290	800	9	4090	3060	703	7	3430	2800	590	5
	5,0	846	56	6590	4480	1131	17	5950	4210	1022	14	5260	3920	903	11	4490	3620	771	9
	6,2	1022	61	7730	5260	1326	23	6980	4950	1199	19	6180	4620	1061	15	5310	4280	911	12
	7,9	1280	65	9290	6340	1594	31	8400	5970	1440	26	7440	5590	1278	21	6410	5190	1101	16
	8,7	1393	68	9940	6790	1705	35	8980	6390	1541	29	7960	5990	1368	24	6870	5570	1180	18

5 PERFORMANCES

5.2 HEATING MODE: MODELS WITH 1 HEAT EXCHANGER

- Tbs₁** Air inlet temperature (dry bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PT** Heating capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs1				20 °C											
Model	Tw1 / Tw2			45 / 40 °C			60 / 50 °C			70 / 60 °C			90 / 70 °C		
	Vin	Qa	Lw	PT	Qw	DPw	PFT	Qw	DPw	PFT	Qw	DPw	PFT	Qw	DPw
	V	m3/h	dB(A)	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa
1	2,8	149	30	950	166	5	1490	130	3	1940	171	4	2600	115	2
	3,6	189	32	1110	194	6	1740	152	4	2270	199	6	3020	134	3
	4,4	231	40	1320	229	8	2050	179	5	2680	235	8	3570	157	4
	6,3	342	48	1600	278	11	2490	217	7	3260	286	11	4310	190	5
	7,0	380	52	1700	295	12	2630	230	8	3450	303	12	4560	201	6
	8,3	450	55	1850	322	14	2870	251	9	3770	331	14	4970	219	6
3	3,7	196	32	1360	236	8	2130	186	5	2760	242	8	3720	164	4
	4,0	211	38	1450	252	9	2270	198	6	2930	257	8	3950	174	4
	5,2	271	44	1720	300	12	2700	236	7	3500	307	11	4690	207	5
	6,4	344	49	1840	320	14	2870	251	8	3740	329	13	4970	219	6
	7,0	380	52	2160	376	18	3370	294	11	4400	386	17	5850	258	8
	8,3	450	55	2400	418	21	3740	327	13	4890	429	21	6480	286	10
4	3,7	196	32	1410	246	6	2220	194	4	2870	252	5	3880	171	3
	4,0	211	40	1500	260	6	2350	206	4	3040	267	6	4110	181	3
	5,2	271	44	1810	315	9	2840	248	6	3670	322	8	4940	218	4
	6,4	344	50	2150	373	12	3360	293	7	4350	382	11	5830	257	5
	7,0	380	52	2300	399	13	3590	314	8	4660	409	13	6230	275	6
	8,3	450	55	2560	445	16	3990	349	10	5190	456	15	6920	306	7
4M	3,7	196	33	1430	249	8	2260	197	5	2900	254	7	3930	174	4
	4,0	211	41	1530	265	9	2400	210	5	3080	270	8	4180	185	4
	5,2	271	45	1880	328	12	2960	259	8	3800	333	12	5140	227	6
	6,4	344	51	2290	397	17	3590	313	11	4620	405	16	6220	275	8
	7,0	380	53	2480	430	20	3880	339	12	5000	439	19	6730	297	9
	8,3	450	56	2820	490	25	4420	386	16	5700	500	24	7660	338	11
5	2,9	211	26	1550	270	6	2450	214	4	3150	276	6	4270	189	3
	3,4	241	35	1740	302	8	2730	239	5	3520	308	7	4760	210	4
	5,1	341	43	2260	393	12	3540	309	8	4570	401	12	6150	271	6
	6,5	442	48	2700	469	17	4220	369	10	5470	480	16	7320	323	8
	7,7	528	50	3040	529	21	4750	415	13	6170	541	20	8230	363	9
	8,5	579	52	3220	561	23	5030	439	14	6540	574	22	8710	385	10
6	2,9	211	26	1690	293	4	2670	233	2	3410	299	3	4680	206	2
	3,4	241	34	1910	332	5	3020	264	3	3860	339	4	5290	233	2
	5,1	341	42	2580	449	8	4070	356	5	5220	458	7	7110	314	4
	6,5	442	48	3200	556	11	5030	439	7	6460	567	11	8760	386	5
	7,7	528	50	3670	637	14	5760	503	9	7410	651	14	10010	442	7
	8,5	579	52	3920	683	16	6160	538	10	7950	697	15	10700	472	7
6M	2,9	211	27	1710	298	5	2720	238	3	3450	302	4	4760	210	2
	3,4	241	35	1940	338	6	3080	269	4	3910	343	6	5390	238	3
	5,1	341	43	2680	466	10	4240	370	7	5390	473	10	7390	326	5
	6,5	442	49	3370	586	15	5320	465	10	6790	595	14	9270	409	7
	7,7	528	51	3930	683	20	6200	541	13	7910	694	19	10780	476	9
	8,5	579	53	4250	738	23	6690	584	15	8550	750	22	11630	513	11
7	2,7	320	35	2390	415	5	3760	328	3	4830	424	5	6570	290	2
	4,0	450	43	3130	545	8	4920	430	5	6340	556	8	8550	378	4
	5,9	640	52	4050	704	13	6330	553	8	8210	720	13	11000	486	6
	7,4	798	56	4700	818	17	7340	641	11	9540	837	16	12730	562	8
	8,0	855	57	4920	855	19	7670	670	12	9980	876	18	13300	587	8
	8,8	938	60	5220	907	21	8130	710	13	10600	929	20	14100	622	9

5 PERFORMANCES

5.2 HEATING MODE: MODELS WITH 1 HEAT EXCHANGER

- Tbs₁** Air inlet temperature (dry bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PT** Heating capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs ₁				20 °C											
Tw ₁ / Tw ₂		45 / 40 °C					60 / 50 °C			70 / 60 °C			90 / 70 °C		
Model	Vin	Qa	Lw	PT	Qw	DPw	PFT	Qw	DPw	PFT	Qw	DPw	PFT	Qw	DPw
	V	m ³ /h	dB(A)	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa
7M	2,7	320	36	2510	436	5	3970	347	3	5060	444	5	6930	306	2
	4,0	450	44	3400	591	9	5360	468	6	6840	601	8	9340	412	4
	5,9	640	53	4570	795	15	7200	629	10	9220	808	14	12500	552	7
	7,4	798	57	5460	949	21	8570	749	13	11000	965	19	14880	657	9
	8,0	855	58	5760	1002	23	9040	790	14	11620	1020	21	15700	693	10
	8,8	938	61	6190	1076	26	9710	849	16	12490	1096	24	16850	744	12
8	3,1	361	35	2470	430	4	3880	339	2	5030	442	4	6770	299	2
	4,4	497	43	3240	563	6	5070	443	4	6570	576	6	8840	390	3
	5,8	637	50	3950	688	9	6190	541	6	8000	702	8	10730	474	4
	6,6	706	53	4240	736	10	6620	578	6	8570	752	10	11480	507	5
	8,0	855	57	5410	941	16	8470	740	10	10960	962	15	14710	649	7
	8,8	938	60	5770	1003	17	9020	788	11	11690	1025	16	15650	691	8
8M	3,1	361	36	2800	486	6	4420	386	4	5640	495	6	7720	341	3
	4,4	497	44	3700	644	10	5840	510	7	7460	654	10	10160	448	5
	5,8	637	51	4550	792	15	7170	626	9	9170	805	14	12460	550	7
	6,6	706	54	4950	861	17	7790	680	11	9980	876	16	13520	597	8
	8,0	855	58	5760	1002	23	9040	790	14	11620	1020	21	15700	693	10
	8,8	938	61	6190	1076	26	9710	849	16	12490	1096	24	16850	744	12
9	3,4	389	39	3030	526	6	4790	418	3	6120	537	5	8370	369	3
	4,2	470	43	3310	575	6	5190	454	4	6690	588	6	9060	400	3
	5,5	605	49	4080	709	9	6400	559	6	8250	724	9	11120	491	4
	7,3	785	56	4980	866	13	7790	681	8	10080	884	12	13530	597	6
	8,0	855	57	5700	992	17	8940	782	10	11550	1013	16	15540	686	8
	8,8	938	60	6100	1061	19	9550	835	12	12350	1084	18	16590	732	9
9M	3,4	389	40	2990	520	7	4720	413	5	6020	529	7	8240	364	3
	4,2	470	44	3530	613	10	5570	486	6	7110	623	9	9700	428	4
	5,5	605	50	4370	759	14	6870	601	9	8790	772	13	11950	527	6
	7,3	785	57	5390	937	20	8470	740	13	10870	953	19	14690	649	9
	8,0	855	58	5760	1002	23	9040	790	14	11620	1020	21	15700	693	10
	8,8	938	61	6190	1076	26	9710	849	16	12490	1096	24	16850	744	12
95	3,4	389	39	3080	536	6	4880	426	4	6210	545	6	8530	376	3
	4,4	488	44	3520	612	8	5540	484	5	7100	623	8	9640	426	4
	5,6	615	51	4320	752	12	6790	594	7	8720	765	11	11810	521	5
	7,6	814	58	5490	955	18	8620	753	11	11090	973	17	14960	660	8
	8,0	855	58	6170	1072	21	9710	848	14	12450	1092	20	16880	745	10
	8,8	938	60	6670	1159	25	10480	916	15	13450	1180	23	18220	804	11
11	2,9	530	43	3820	664	5	6010	525	3	7760	680	4	10490	463	2
	3,6	642	49	4390	764	6	6890	602	4	8910	782	6	12020	531	3
	5,0	846	55	5640	980	9	8830	772	6	11390	1000	9	15350	678	4
	6,2	1022	60	6530	1135	12	10220	893	7	13200	1158	11	17740	783	5
	7,9	1280	64	7730	1344	16	12090	1056	10	15650	1374	15	20970	925	7
	8,7	1393	67	8370	1455	18	13080	1143	11	16940	1486	17	22680	1001	8
11M	2,9	530	44	4010	697	6	6320	553	4	8100	710	6	11030	487	3
	3,6	642	50	4750	825	8	7480	654	5	9570	840	8	13040	576	4
	5,0	846	56	6010	1046	12	9470	827	8	12120	1063	12	16440	726	6
	6,2	1022	61	7020	1222	16	11040	965	10	14160	1242	15	19170	846	7
	7,9	1280	65	8420	1463	22	13200	1154	14	16980	1489	21	22900	1011	10
	8,7	1393	68	9000	1564	25	14110	1233	16	18150	1593	24	24460	1079	11

5 PERFORMANCES

5.2 HEATING MODE: MODELS WITH 1 HEAT EXCHANGER

- Tbs₁** Air inlet temperature (dry bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PT** Heating capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs ₁				22 °C											
Model	Tw ₁ / Tw ₂			45 / 40 °C			60 / 50 °C			70 / 60 °C			90 / 70 °C		
	Vin V	Qa m ³ /h	Lw dB(A)	PT W	Qw l/h	DPw kPa	PT W	Qw l/h	DPw kPa	PT W	Qw l/h	DPw kPa	PT W	Qw l/h	DPw kPa
1	2,8	149	30	860	150	4	1390	122	3	1850	162	4	2500	110	2
	3,6	189	32	1010	175	5	1630	142	3	2160	190	5	2910	128	3
	4,4	231	40	1190	207	7	1920	168	4	2550	223	7	3430	151	3
	6,3	342	48	1450	252	9	2330	204	6	3100	272	10	4150	183	5
	7,0	380	52	1530	267	10	2470	216	7	3280	288	11	4390	194	5
	8,3	450	55	1670	291	12	2690	235	8	3590	315	13	4780	211	6
3	3,7	196	32	1230	214	7	2000	175	4	2620	230	7	3580	158	3
	4,0	211	38	1310	228	7	2130	186	5	2790	245	8	3800	168	4
	5,2	271	44	1560	272	10	2530	221	7	3330	292	11	4510	199	5
	6,4	344	49	1670	290	11	2690	235	7	3560	313	12	4790	211	6
	7,0	380	52	1960	340	15	3160	276	10	4190	367	16	5630	249	8
	8,3	450	55	2170	378	18	3500	306	12	4650	408	19	6240	275	9
4	3,7	196	32	1280	223	5	2080	182	3	2730	240	5	3730	165	2
	4,0	211	40	1360	236	5	2210	193	4	2890	254	6	3950	174	3
	5,2	271	44	1640	285	7	2660	233	5	3500	307	8	4760	210	4
	6,4	344	50	1950	338	10	3150	275	7	4140	363	10	5610	248	5
	7,0	380	52	2080	362	11	3370	294	7	4430	389	12	5990	265	6
	8,3	450	55	2320	403	14	3750	327	9	4940	434	14	6670	294	7
4M	3,7	196	33	1300	226	6	2120	185	4	2760	242	7	3790	167	3
	4,0	211	41	1390	241	7	2260	197	5	2930	258	7	4030	178	4
	5,2	271	45	1710	297	10	2780	243	7	3620	318	11	4960	219	5
	6,4	344	51	2080	361	15	3370	294	10	4390	386	15	5990	265	7
	7,0	380	53	2250	391	17	3650	318	11	4760	417	17	6480	286	9
	8,3	450	56	2560	445	21	4150	362	14	5430	476	22	7370	326	11
5	2,9	211	26	1410	245	5	2300	201	4	2990	263	6	4110	182	3
	3,4	241	35	1580	274	7	2560	224	4	3350	294	7	4590	203	3
	5,1	341	43	2050	356	10	3320	290	7	4350	381	11	5920	261	5
	6,5	442	48	2450	425	14	3960	346	9	5210	457	15	7050	311	7
	7,7	528	50	2760	479	17	4450	389	11	5870	515	18	7930	350	9
	8,5	579	52	2920	508	19	4720	412	13	6220	546	20	8390	370	10
6	2,9	211	26	1530	266	3	2510	219	2	3240	284	3	4500	199	2
	3,4	241	34	1730	302	4	2840	248	3	3670	322	4	5090	225	2
	5,1	341	42	2340	407	7	3820	334	4	4970	436	7	6840	302	3
	6,5	442	48	2900	505	9	4730	413	6	6150	540	10	8430	372	5
	7,7	528	50	3330	578	12	5400	472	8	7060	619	12	9640	425	6
	8,5	579	52	3560	619	14	5780	505	9	7560	663	14	10300	455	7
6M	2,9	211	27	1560	271	4	2560	224	3	3280	288	4	4580	202	2
	3,4	241	35	1770	308	5	2900	254	3	3730	327	5	5200	229	3
	5,1	341	43	2440	423	9	3990	348	6	5130	450	9	7120	314	5
	6,5	442	49	3070	533	13	5010	438	9	6460	567	13	8930	394	7
	7,7	528	51	3570	621	17	5820	509	11	7530	661	17	10380	458	9
	8,5	579	53	3860	671	19	6290	549	13	8150	715	20	11200	495	10
7	2,7	320	35	2160	376	4	3520	308	3	4600	404	5	6330	279	2
	4,0	450	43	2840	494	7	4620	403	5	6040	529	7	8240	364	4
	5,9	640	52	3670	638	11	5940	519	7	7820	686	12	10590	467	6
	7,4	798	56	4260	740	14	6880	601	10	9080	797	15	12260	541	7
	8,0	855	57	4450	774	16	7190	628	10	9500	834	16	12810	565	8
	8,8	938	60	4720	821	17	7620	666	11	10080	885	18	13570	599	9

5 PERFORMANCES

5.2 HEATING MODE: MODELS WITH 1 HEAT EXCHANGER

- Tbs₁** Air inlet temperature (dry bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PT** Heating capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs ₁				22 °C											
Tw ₁ / Tw ₂		45 / 40 °C			60 / 50 °C			70 / 60 °C			90 / 70 °C				
Model	Vin	Qa	Lw	PT	Qw	DPw	PFT	Qw	DPw	PFT	Qw	DPw	PFT	Qw	DPw
	V	m ³ /h	dB(A)	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa
7M	2,7	320	36	2280	396	4	3730	326	3	4820	423	5	6680	295	2
	4,0	450	44	3090	537	8	5040	440	5	6520	572	8	9000	397	4
	5,9	640	53	4150	722	13	6770	591	9	8770	770	13	12050	532	7
	7,4	798	57	4960	862	17	8050	704	12	10480	919	18	14340	633	9
	8,0	855	58	5230	909	19	8500	743	13	11060	971	20	15120	667	10
	8,8	938	61	5620	977	22	9120	798	14	11900	1044	22	16230	717	11
8	3,1	361	35	2240	389	3	3640	318	2	4790	420	3	6520	288	2
	4,4	497	43	2930	510	5	4750	415	4	6250	548	6	8500	376	3
	5,8	637	50	3580	623	8	5800	507	5	7620	668	8	10340	456	4
	6,6	706	53	3840	668	9	6210	543	6	8160	716	9	11050	488	4
	8,0	855	57	4910	853	13	7950	695	9	10430	915	14	14160	625	7
	8,8	938	60	5230	909	15	8460	740	10	11120	976	15	15070	665	7
8M	3,1	361	36	2540	442	5	4160	363	4	5370	471	6	7430	328	3
	4,4	497	44	3360	585	9	5490	479	6	7100	623	9	9790	432	5
	5,8	637	51	4140	720	13	6740	589	8	8740	767	13	12000	530	7
	6,6	706	54	4500	782	15	7320	639	10	9500	834	15	13030	575	8
	8,0	855	58	5230	909	19	8500	743	13	11060	971	20	15120	667	10
	8,8	938	61	5620	977	22	9120	798	14	11900	1044	22	16230	717	11
9	3,4	389	39	2750	478	5	4490	393	3	5830	511	5	8050	356	2
	4,2	470	43	3000	521	5	4870	426	4	6370	559	6	8720	385	3
	5,5	605	49	3700	643	8	6010	525	5	7850	689	8	10710	473	4
	7,3	785	56	4510	785	11	7320	639	7	9590	842	11	13030	575	6
	8,0	855	57	5180	900	14	8400	734	9	10990	964	15	14960	661	7
	8,8	938	60	5530	962	16	8970	784	10	11760	1031	16	15970	705	8
9M	3,4	389	40	2720	472	6	4440	388	4	5740	504	6	7940	350	3
	4,2	470	44	3200	557	8	5230	457	5	6770	594	8	9340	412	4
	5,5	605	50	3970	690	12	6460	565	8	8380	735	12	11510	508	6
	7,3	785	57	4890	851	17	7960	695	11	10350	908	17	14160	625	9
	8,0	855	58	5230	909	19	8500	743	13	11060	971	20	15120	667	10
	8,8	938	61	5620	977	22	9120	798	14	11900	1044	22	16230	717	11
95	3,4	389	39	2800	487	5	4590	401	4	5920	519	6	8210	363	3
	4,4	488	44	3190	555	7	5200	454	5	6760	593	7	9290	410	3
	5,6	615	51	3920	683	10	6390	558	6	8300	728	10	11370	502	5
	7,6	814	58	4980	867	15	8100	707	10	10560	926	15	14410	636	8
	8,0	855	58	5600	974	18	9120	797	12	11850	1040	19	16260	718	9
	8,8	938	60	6050	1052	21	9850	861	14	12810	1124	21	17550	775	11
11	2,9	530	43	3460	602	4	5640	492	3	7380	648	4	10100	446	2
	3,6	642	49	3980	692	5	6460	565	3	8490	744	5	11570	511	3
	5,0	846	55	5100	887	8	8280	724	5	10850	952	8	14780	653	4
	6,2	1022	60	5920	1029	10	9600	839	7	12570	1102	10	17080	754	5
	7,9	1280	64	7010	1219	13	11350	991	9	14900	1307	14	20190	891	7
	8,7	1393	67	7580	1319	15	12280	1072	10	16120	1415	16	21840	964	8
11M	2,9	530	44	3640	633	5	5940	519	3	7710	676	5	10630	469	3
	3,6	642	50	4310	749	7	7030	614	5	9120	800	7	12560	555	4
	5,0	846	56	5460	950	10	8890	777	7	11540	1013	11	15840	699	5
	6,2	1022	61	6380	1109	14	10380	907	9	13480	1183	14	18460	815	7
	7,9	1280	65	7640	1329	19	12410	1084	13	16170	1418	19	22070	974	10
	8,7	1393	68	8170	1420	21	13260	1158	14	17290	1517	22	23560	1040	11

5 PERFORMANCES

5.3 HEATING MODE: MODELS WITH 2 HEAT EXCHANGERS (4 PIPE SYSTEMS)

- Tbs₁** Air inlet temperature (dry bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PT** Heating capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs ₁				20 °C											
Tw ₁ / Tw ₂				45 / 40 °C			60 / 50 °C			70 / 60 °C			90 / 70 °C		
Model	Vin	Qa	Lw	PT	Qw	DPw	PT	Qw	DPw	PT	Qw	DPw	PT	Qw	DPw
	V	m ³ /h	dB(A)	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa
1DF	2,8	149	30	650	113	3	1000	87	2	1350	118	3	1750	77	1
	3,6	189	32	720	126	4	1110	97	2	1500	132	4	1950	86	2
	4,4	231	40	820	143	5	1270	111	3	1700	149	4	2220	98	2
	6,3	342	48	990	171	6	1520	132	4	2030	178	6	2630	116	3
	7,0	380	52	1030	180	7	1590	139	4	2130	187	7	2760	122	3
3DF	8,3	450	55	1110	193	8	1710	149	5	2290	201	8	2960	131	3
	3,7	196	32	750	130	5	1150	101	3	1550	136	5	2020	89	2
	4,0	211	38	750	131	5	1160	101	3	1560	137	5	2030	89	2
	5,2	271	44	860	150	7	1330	116	4	1780	156	7	2320	102	3
	6,4	344	49	980	170	8	1510	132	5	2020	177	8	2620	115	4
4DF	7,0	380	52	1030	180	9	1590	139	6	2130	187	9	2760	122	4
	8,3	450	55	1110	193	11	1710	149	6	2290	201	10	2960	131	5
	3,7	196	32	740	128	5	1130	99	3	1530	134	5	1980	87	2
	4,0	211	40	750	131	5	1160	101	3	1560	137	5	2020	89	2
	5,2	271	44	860	150	6	1330	116	4	1780	156	6	2310	102	3
5DF	6,4	344	50	980	170	8	1500	131	5	2010	176	7	2600	115	3
	7,0	380	52	1030	180	8	1590	139	5	2130	187	8	2760	122	4
	8,3	450	55	1110	193	10	1710	149	6	2290	201	9	2960	131	4
	2,9	211	26	900	157	2	1380	121	1	1920	169	2	2450	108	1
	3,4	241	35	970	169	2	1480	130	1	2060	181	2	2630	116	1
6DF	5,1	341	43	1190	208	3	1820	159	2	2530	222	3	3220	142	2
	6,5	442	48	1390	241	4	2120	185	3	2920	257	4	3740	165	2
	7,7	528	50	1610	280	6	2460	215	3	3370	295	6	4330	191	3
	8,5	579	52	1680	292	6	2570	225	4	3510	308	6	4520	199	3
	2,9	211	26	970	168	3	1480	130	2	2060	180	3	2630	116	1
3,4	241	34	1030	179	3	1570	137	2	2180	191	3	2780	123	1	
5,1	341	42	1260	220	4	1930	169	2	2680	235	4	3420	151	2	
6,5	442	48	1470	255	5	2240	196	3	3080	270	5	3960	175	2	
7,7	528	50	1610	280	6	2460	215	4	3370	295	6	4330	191	3	
8,5	579	52	1680	292	7	2570	225	4	3510	308	7	4520	199	3	

5 PERFORMANCES

5.3 HEATING MODE: MODELS WITH 2 HEAT EXCHANGERS (4 PIPE SYSTEMS)

- Tbs₁** Air inlet temperature (dry bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PT** Heating capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs1			20 °C												
Tw1 / Tw2			45 / 40 °C			60 / 50 °C			70 / 60 °C			90 / 70 °C			
Model	Vin	Qa	Lw	PT	Qw	DPw	PT	Qw	DPw	PT	Qw	DPw	PT	Qw	DPw
	V	m3/h	dB(A)	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa
7DF	2,7	320	35	1560	270	4	2410	210	3	3210	282	4	4220	186	2
	4,0	450	43	1930	336	6	2980	260	4	3960	347	6	5180	229	3
	5,9	640	52	2340	406	9	3610	315	5	4800	421	9	6250	276	4
	7,4	798	56	2600	452	11	4000	350	6	5340	469	10	6950	307	5
	8,0	855	57	2680	467	11	4130	361	7	5520	484	11	7170	317	5
8DF	8,8	938	60	2800	487	12	4310	377	7	5770	506	12	7480	330	5
	3,1	361	35	1750	304	7	2710	237	4	3600	316	7	4730	209	3
	4,4	497	43	2070	360	9	3200	280	6	4250	373	9	5560	245	4
	5,8	637	50	2330	405	12	3590	314	7	4790	420	11	6240	275	5
	6,6	706	53	2460	427	13	3790	331	8	5050	443	12	6580	290	6
9DF	8,0	855	57	2680	467	15	4130	361	9	5520	484	14	7170	317	7
	8,8	938	60	2800	487	16	4310	377	10	5770	506	16	7480	330	7
	3,4	389	39	1790	311	5	2760	241	3	3670	322	5	4820	213	2
	4,2	470	43	1970	343	6	3050	266	4	4040	355	6	5290	234	3
	5,5	605	49	2260	393	8	3490	305	5	4650	408	8	6060	268	4
95DF	7,3	785	56	2580	448	10	3970	347	6	5300	465	10	6890	304	5
	8,0	855	57	2680	467	11	4130	361	7	5520	484	11	7170	317	5
	8,8	938	60	2800	487	12	4310	377	7	5770	506	12	7480	330	5
	3,4	389	39	1950	340	9	3030	265	5	3980	350	8	5260	232	4
	4,4	488	44	2060	359	9	3200	279	6	4210	369	9	5540	245	4
11DF	5,6	615	51	2340	407	12	3620	317	7	4780	419	11	6270	277	5
	7,6	814	58	2690	468	15	4160	364	9	5510	483	14	7210	318	7
	8,0	855	58	2980	519	18	4610	403	11	6100	535	17	7980	352	8
	8,8	938	60	3120	542	19	4820	421	12	6380	560	19	8340	368	9
	2,9	530	43	2450	426	13	3810	332	8	4980	437	12	6590	291	6
11DF	3,6	642	49	2710	471	15	4200	367	9	5500	483	14	7270	321	7
	5,0	846	55	3220	560	20	4990	436	12	6550	575	19	8630	381	9
	6,2	1022	60	3510	610	24	5430	475	14	7140	627	23	9390	414	10
	7,9	1280	64	3990	693	29	6160	539	18	8120	713	28	10650	470	13
	8,7	1393	67	4100	713	31	6340	554	19	8350	733	30	10950	484	14

5 PERFORMANCES

5.3 HEATING MODE: MODELS WITH 2 HEAT EXCHANGERS (4 PIPE SYSTEMS)

- Tbs₁** Air inlet temperature (dry bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PT** Heating capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs ₁				22 °C											
Tw ₁ / Tw ₂				45 / 40 °C			60 / 50 °C			70 / 60 °C			90 / 70 °C		
Model	Vin	Qa	Lw	PT	Qw	DPw	PT	Qw	DPw	PT	Qw	DPw	PT	Qw	DPw
	V	m ³ /h	dB(A)	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa
1DF	2,8	149	30	580	101	2	930	81	2	1280	112	3	1680	74	1
	3,6	189	32	650	113	3	1040	91	2	1430	125	3	1870	83	2
	4,4	231	40	740	128	4	1180	103	2	1620	142	4	2130	94	2
	6,3	342	48	880	154	5	1410	123	3	1930	169	6	2530	112	3
	7,0	380	52	930	161	6	1480	129	4	2020	177	6	2650	117	3
3DF	8,3	450	55	1000	174	6	1590	139	4	2180	191	7	2840	126	3
	3,7	196	32	670	117	4	1070	94	3	1470	129	5	1930	85	2
	4,0	211	38	670	117	4	1080	94	3	1480	130	5	1940	86	2
	5,2	271	44	770	134	6	1240	108	4	1690	149	6	2230	98	3
	6,4	344	49	880	153	7	1400	123	4	1920	168	8	2510	111	3
4DF	7,0	380	52	930	161	8	1480	129	5	2020	177	8	2650	117	4
	8,3	450	55	1000	174	9	1590	139	6	2180	191	9	2840	126	4
	3,7	196	32	660	114	4	1050	92	2	1450	127	4	1900	84	2
	4,0	211	40	670	117	4	1080	94	3	1480	130	4	1940	86	2
	5,2	271	44	770	134	5	1230	108	3	1690	148	6	2220	98	3
5DF	6,4	344	50	870	152	6	1400	122	4	1910	167	7	2500	110	3
	7,0	380	52	930	161	7	1480	129	4	2020	177	8	2650	117	3
	8,3	450	55	1000	174	8	1590	139	5	2180	191	9	2840	126	4
	2,9	211	26	800	139	2	1280	112	1	1820	160	2	2350	104	1
	3,4	241	35	860	150	2	1370	120	1	1950	171	2	2510	111	1
6DF	5,1	341	43	1060	184	3	1690	148	2	2400	210	3	3090	136	1
	6,5	442	48	1230	214	4	1960	171	2	2770	244	4	3580	158	2
	7,7	528	50	1430	249	5	2280	199	3	3190	280	5	4150	183	2
	8,5	579	52	1500	260	5	2380	208	3	3330	292	6	4330	191	3
	2,9	211	26	860	149	2	1370	120	1	1950	171	2	2520	111	1
3,4	241	34	910	158	2	1450	127	1	2060	181	3	2660	118	1	
5,1	341	42	1120	195	3	1790	156	2	2530	222	4	3270	144	2	
6,5	442	48	1300	227	4	2080	181	3	2930	257	5	3790	167	2	
7,7	528	50	1430	249	5	2280	199	3	3190	280	6	4150	183	3	
8,5	579	52	1500	260	5	2380	208	3	3330	292	6	4330	191	3	

5 PERFORMANCES

5.3 HEATING MODE: MODELS WITH 2 HEAT EXCHANGERS (4 PIPE SYSTEMS)

- Tbs₁** Air inlet temperature (dry bulb)
- Tw₁** Water inlet temperature
- Tw₂** Outlet water temperature
- PT** Heating capacity
- Qw** Water flow rate
- Dpw** Pressure drop, water side
- Vin** Inverter control voltage
- Qa** Air flow rate
- Lw** Sound power level

Tbs1			22 °C												
Tw1 / Tw2			45 / 40 °C			60 / 50 °C			70 / 60 °C			90 / 70 °C			
Model	Vin	Qa	Lw	PT	Qw	DPw	PT	Qw	DPw	PT	Qw	DPw	PT	Qw	DPw
	V	m ³ /h	dB(A)	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa	W	l/h	kPa
7DF	2,7	320	35	1390	242	4	2240	196	2	3050	268	4	4050	179	2
	4,0	450	43	1730	301	5	2780	243	3	3760	330	6	4980	220	3
	5,9	640	52	2100	366	7	3370	294	5	4560	400	8	6010	265	4
	7,4	798	56	2340	407	9	3740	327	6	5080	445	10	6680	295	4
	8,0	855	57	2420	420	9	3860	338	6	5250	460	10	6890	304	5
8DF	8,8	938	60	2520	438	10	4030	352	7	5480	480	11	7190	317	5
	3,1	361	35	1570	273	6	2520	220	4	3420	300	6	4550	201	3
	4,4	497	43	1860	324	8	2990	261	5	4040	354	8	5340	236	4
	5,8	637	50	2100	365	10	3360	294	6	4550	399	10	6000	265	5
	6,6	706	53	2210	385	11	3540	310	7	4800	421	11	6320	279	5
9DF	8,0	855	57	2420	420	12	3860	338	8	5250	460	13	6890	304	6
	8,8	938	60	2520	438	13	4030	352	9	5480	480	14	7190	317	7
	3,4	389	39	1600	279	4	2570	225	3	3490	306	5	4630	204	2
	4,2	470	43	1770	308	5	2840	248	3	3840	337	6	5090	225	3
	5,5	605	49	2040	354	7	3260	285	4	4420	387	7	5830	257	3
95DF	7,3	785	56	2320	403	9	3710	324	6	5040	442	9	6630	292	4
	8,0	855	57	2420	420	9	3860	338	6	5250	460	10	6890	304	5
	8,8	938	60	2520	438	10	4030	352	6	5480	480	11	7190	317	5
	3,4	389	39	1760	306	7	2830	248	5	3790	332	8	5060	224	4
	4,4	488	44	1860	324	8	2990	261	5	4000	351	8	5330	235	4
11DF	5,6	615	51	2110	367	10	3390	296	6	4550	399	10	6040	266	5
	7,6	814	58	2430	423	12	3900	341	8	5240	460	13	6930	306	6
	8,0	855	58	2690	468	15	4310	377	10	5800	509	16	7680	339	7
	8,8	938	60	2810	489	16	4510	394	10	6070	532	17	8020	354	8
	2,9	530	43	2220	385	11	3570	312	7	4740	416	11	6340	280	5
11DF	3,6	642	49	2450	426	13	3940	344	8	5240	460	13	7000	309	6
	5,0	846	55	2910	506	17	4680	409	11	6240	547	18	8310	367	8
	6,2	1022	60	3170	551	20	5090	445	13	6800	596	21	9040	399	10
	7,9	1280	64	3600	626	25	5780	505	16	7730	678	26	10250	453	12
	8,7	1393	67	3700	644	26	5940	519	17	7950	697	27	10540	465	13

5 PERFORMANCES

5.4 SOUND LEVEL

- Lw** Sound power level by octave band, not weighted
- Vin** Inverter control voltage
- Qa** Air flow rate
- Speed Setting** Speed selection

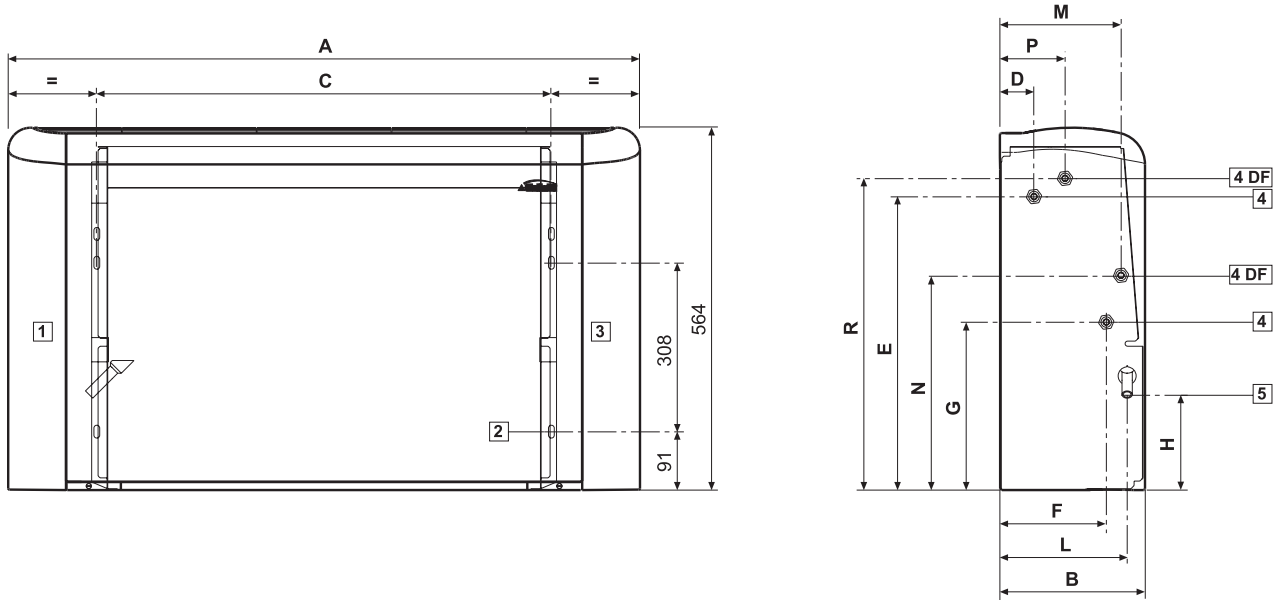
Octave band		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	GLOBAL		
Model	Speed setting	Vin V	Qa m3/h	Lw dB	Lw dB	Lw dB	Lw dB	Lw dB	Lw dB(A)		
1	1250	2,8	149	28,50	35,20	28,00	18,00	13,20	13,50	14,40	30
		3,6	189	31,70	38,20	34,80	26,70	20,40	12,70	11,50	35
		4,4	231	36,70	43,20	39,80	31,70	25,40	17,70	16,50	40
		6,3	342	46,70	53,20	49,80	41,70	35,40	27,70	26,50	50
		7,0	380	49,70	56,20	52,80	44,70	38,40	30,70	29,50	53
		8,3	450	53,70	60,20	56,80	48,70	42,40	34,70	33,50	57
3	1250	3,7	196	16,50	31,40	32,80	26,90	21,30	13,80	13,60	36
		4,0	211	18,50	33,40	34,80	28,90	23,30	15,80	15,60	38
		5,2	271	39,70	46,40	43,70	36,20	9,70	20,70	18,50	44
		6,4	344	45,50	52,20	49,80	44,10	38,80	29,20	19,50	50
		7,0	380	48,50	55,20	52,80	47,10	41,80	32,20	22,50	53
		8,3	450	52,50	59,20	56,80	51,10	45,80	36,20	26,50	57
4	1250	3,7	196	15,80	30,90	33,20	26,90	20,50	13,30	13,10	36
		4,0	211	17,80	32,90	35,20	28,90	22,50	15,30	15,10	38
		5,2	271	39,00	46,40	43,90	36,20	29,10	18,60	16,50	44
		6,4	344	44,90	51,30	49,00	43,60	38,10	28,90	18,30	50
		7,0	380	47,90	54,30	52,00	46,60	41,10	31,90	21,30	53
		8,3	450	51,90	58,30	56,00	50,60	45,10	35,90	25,30	57
4M	1250	3,7	196	15,80	30,90	33,20	26,90	20,50	13,30	13,10	36
		4,0	211	17,80	32,90	35,20	28,90	22,50	15,30	15,10	38
		5,2	271	39,00	46,40	43,90	36,20	29,10	18,60	16,50	44
		6,4	344	44,90	51,30	49,00	43,60	38,10	28,90	18,30	50
		7,0	380	47,90	54,30	52,00	46,60	41,10	31,90	21,30	53
		8,3	450	51,90	58,30	56,00	50,60	45,10	35,90	25,30	57
5	950	2,9	211	29,10	35,70	30,20	21,40	14,20	13,90	17,90	31
		3,4	241	32,10	38,70	33,20	24,40	17,20	16,90	20,90	34
		5,1	341	40,70	46,10	42,30	34,50	25,70	15,50	17,20	42
		6,5	442	43,10	49,00	45,90	40,00	34,50	28,80	30,20	47
		7,7	528	46,10	52,00	48,90	43,00	37,50	31,80	33,20	50
		8,5	579	48,10	54,00	50,90	45,00	39,50	33,80	35,20	52
6	950	2,9	211	29,70	35,40	30,00	20,00	14,00	13,00	14,70	31
		3,4	241	32,70	38,40	33,00	23,00	17,00	16,00	17,70	34
		5,1	341	40,10	45,60	42,10	34,00	25,50	18,40	18,70	42
		6,5	442	43,90	49,50	46,70	40,40	32,80	22,40	19,10	47
		7,7	528	46,90	52,50	49,70	43,40	35,80	25,40	22,10	50
		8,5	579	48,90	54,50	51,70	45,40	37,80	27,40	24,10	52
6M	950	2,9	211	29,70	35,40	30,00	20,00	14,00	13,00	14,70	31
		3,4	241	32,70	38,40	33,00	23,00	17,00	16,00	17,70	34
		5,1	341	40,10	45,60	42,10	34,00	25,50	18,40	18,70	42
		6,5	442	43,90	49,50	46,70	40,40	32,80	22,40	19,10	47
		7,7	528	46,90	52,50	49,70	43,40	35,80	25,40	22,10	50
		8,5	579	48,90	54,50	51,70	45,40	37,80	27,40	24,10	52
7	1150	2,7	320	28,70	37,20	32,00	19,40	14,60	17,30	14,70	32
		4,0	450	35,50	43,30	40,50	30,10	23,40	18,20	14,60	40
		5,9	640	45,00	51,20	48,50	42,50	37,90	28,50	18,40	49
		7,4	798	51,00	57,20	54,50	48,50	43,90	34,50	24,40	55
		8,0	855	53,00	59,20	56,50	50,50	45,90	36,50	26,40	57
		8,8	938	55,00	61,20	58,50	52,50	47,90	38,50	28,40	59

Octave band		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	GLOBAL		
Model	Speed setting	Vin V	Qa m3/h	Lw dB	Lw dB	Lw dB	Lw dB	Lw dB	Lw dB(A)		
7M	1150	2,7	320	28,70	37,20	32,00	19,40	14,60	17,30	14,70	32
		4,0	450	35,50	43,30	40,50	30,10	23,40	18,20	14,60	40
		5,9	640	45,00	51,20	48,50	42,50	37,90	28,50	18,40	49
		7,4	798	51,00	57,20	54,50	48,50	43,90	34,50	24,40	55
		8,0	855	53,00	59,20	56,50	50,50	45,90	36,50	26,40	57
		8,8	938	55,00	61,20	58,50	52,50	47,90	38,50	28,40	59
8	1150	3,1	361	34,90	41,40	35,70	25,40	17,00	16,50	17,50	35
		4,4	497	38,70	45,20	42,00	33,20	26,50	19,60	16,60	42
		5,8	637	44,80	51,00	47,90	42,40	37,50	28,00	17,30	48
		6,6	706	48,80	55,00	51,90	46,40	41,50	32,00	21,30	52
		8,0	855	53,80	60,00	56,90	51,40	46,50	37,00	26,30	57
		8,8	938	55,80	62,00	58,90	53,40	48,50	39,00	28,30	59
8M	1150	3,1	361	34,90	41,40	35,70	25,40	17,00	16,50	17,50	35
		4,4	497	38,70	45,20	42,00	33,20	26,50	19,60	16,60	42
		5,8	637	44,80	51,00	47,90	42,40	37,50	28,00	17,30	48
		6,6	706	48,80	55,00	51,90	46,40	41,50	32,00	21,30	52
		8,0	855	53,80	60,00	56,90	51,40	46,50	37,00	26,30	57
		8,8	938	55,80	62,00	58,90	53,40	48,50	39,00	28,30	59
9	1150	3,4	389	33,80	40,00	37,00	28,40	21,40	14,90	11,90	37
		4,2	470	37,80	44,00	41,00	32,40	25,40	18,90	15,90	41
		5,5	605	43,00	49,60	46,40	40,30	34,90	25,10	17,00	47
		7,3	785	51,20	56,90	53,60	49,60	45,20	37,10	24,80	55
		8,0	855	53,20	58,90	55,60	51,60	47,20	39,10	26,80	57
		8,8	938	55,20	60,90	57,60	53,60	49,20	41,10	28,80	59
9M	1150	3,4	389	33,80	40,00	37,00	28,40	21,40	14,90	11,90	37
		4,2	470	37,80	44,00	41,00	32,40	25,40	18,90	15,90	41
		5,5	605	43,00	49,60	46,40	40,30	34,90	25,10	17,00	47
		7,3	785	51,20	56,90	53,60	49,60	45,20	37,10	24,80	55
		8,0	855	53,20	58,90	55,60	51,60	47,20	39,10	26,80	57
		8,8	938	55,20	60,90	57,60	53,60	49,20	41,10	28,80	59
95	1150	3,4	389	35,70	42,10	38,90	30,70	23,60	17,00	13,90	39
		4,4	488	40,70	47,10	43,90	35,70	28,60	22,00	18,90	44
		5,6	615	46,20	52,20	49,60	43,50	37,80	28,50	20,20	50
		7,6	814	54,30	59,80	56,70	52,40	48,00	40,20	27,70	58
		8,0	855	55,30	60,80	57,70	53,40	49,00	41,20	28,70	59
		8,8	938	57,30	62,80	59,70	55,40	51,00	43,20	30,70	61
11	1250	2,9	530	39,90	46,80	43,00	37,60	32,90	23,60	18,00	44
		3,6	642	44,90	51,80	48,00	42,60	37,90	28,60	23,00	49
		5,0	846	49,60	55,30	53,00	48,50	45,30	39,30	30,80	54
		6,2	1.022	53,60	59,30	57,00	52,50	49,30	43,30	34,80	58
		7,9	1.280	58,60	64,60	61,30	58,40	55,20	50,60	45,40	64
		8,7	1.396	60,60	66,60	63,30	60,40	57,20	52,60	47,40	66
11M	1250	2,9	530	39,90	46,80	43,00	37,60	32,90	23,60	18,00	44
		3,6	642	44,90	51,80	48,00	42,60	37,90	28,60	23,00	49
		5,0	846	49,60	55,30	53,00	48,50	45,30	39,30	30,80	54
		6,2	1.022	53,60	59,30	57,00	52,50	49,30	43,30	34,80	58
		7,9	1.280	58,60	64,60	61,30	58,40	55,20	50,60	45,40	64
		8,7	1.396	60,60	66,60	63,30	60,40	57,20	52,60	47,40	66

6 OVERALL DIMENSIONS

Overall dimensions of CLI, wall-mounted with cabinet, vertical air flow

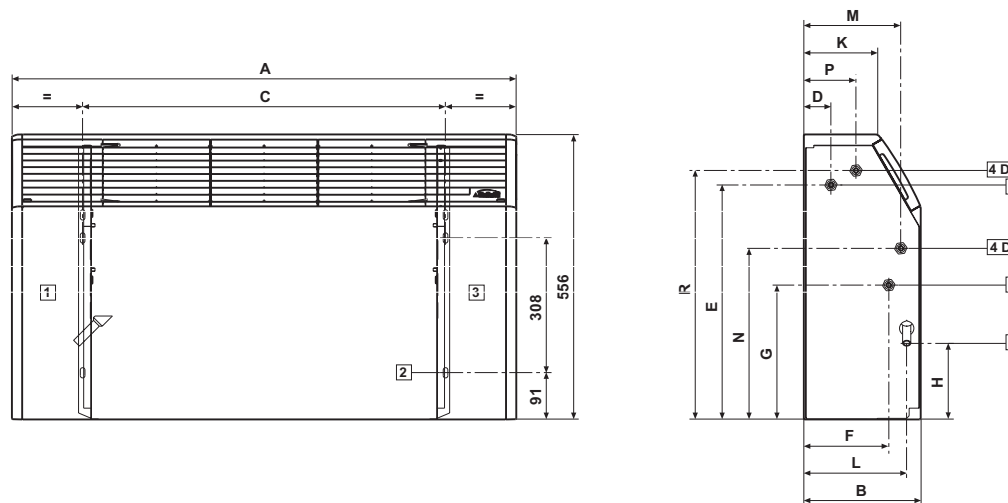
- 1 Clearance for water connection
- 2 Slots for installation on the wall
- 3 Clearance for electrical connections
- 4 Standard heat exchanger water connections
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet



FLI	A	B	C	D	E	F	G	H	L	M	N	P	R
1 - 4	774	226	498	51	458	163	263	149	198	187	335	99	486
5 - 6	984	226	708	51	458	163	263	149	198	187	335	99	486
7 - 9	1194	226	918	51	458	163	263	149	198	187	335	99	486
95	1194	251	918	48	497	185	259	155	220	195	348	120	478
11	1404	251	1128	48	497	185	259	155	220	195	348	120	478

Overall dimensions of FA, wall-mounted with cabinet, inclined front air flow

- 1 Clearance for water connections
- 2 Slots for installation on the wall
- 3 Clearance for electrical connections
- 4 Standard heat exchanger water connections
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet

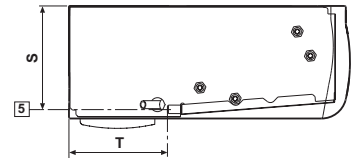
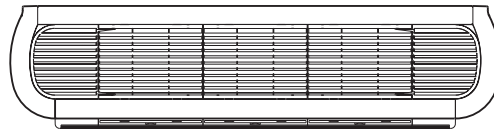
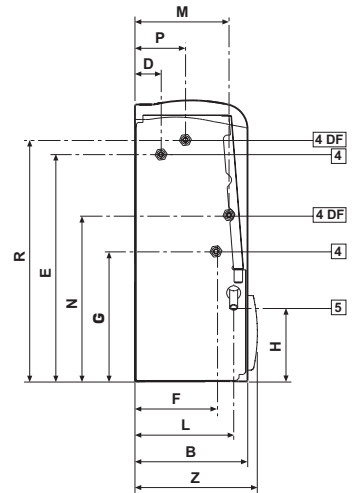
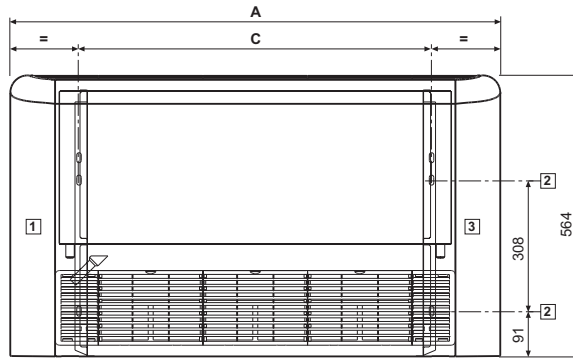


FAI	A	B	C	D	E	F	G	H	K	L	M	N	P	R
1 - 4	774	228	498	53	458	166	263	149	145	201	189	334	102	486
5 - 6	984	228	708	53	458	166	263	149	145	201	189	334	102	486
7 - 9	1194	228	918	53	458	166	263	149	145	201	189	334	102	486
11	1404	253	1128	50	497	188	259	155	170	223	196	348	121	478

6 OVERALL DIMENSIONS

Overall dimensions of FU, floor/ceiling mounted

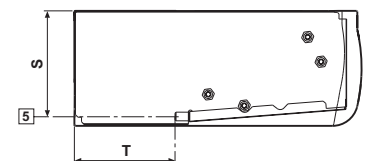
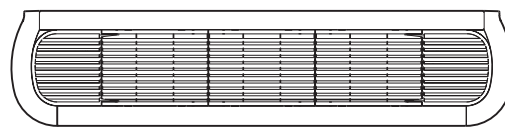
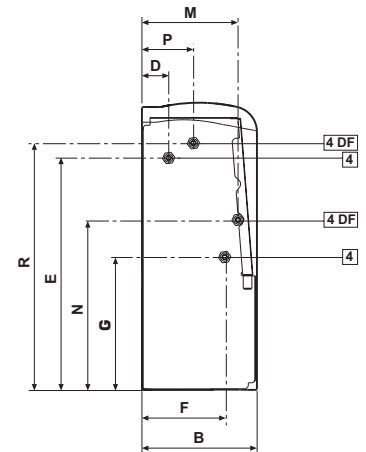
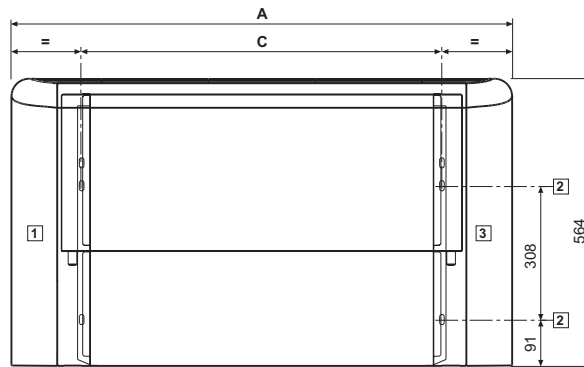
- 1 Clearance for water connection
- 2 Slots for installation on the wall
- 3 Clearance for electrical connections
- 4 Standard heat exchanger water connections
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet



FUI	A	B	C	D	E	F	G	H	L	M	N	P	R	S	T	Z
1 - 4	774	226	498	51	458	163	263	149	198	187	335	99	486	208	198	246
5 - 6	984	226	708	51	458	163	263	149	198	187	335	99	486	208	198	246
7 - 9	1194	226	918	51	458	163	263	149	198	187	335	99	486	208	198	246
95	1194	251	918	48	497	185	259	155	220	195	348	120	478	234	208	271
11	1404	251	1128	48	497	185	259	155	220	195	348	120	478	234	208	271

Overall dimensions of FPI ceiling mounted with cabinet, rear air intake

- 1 Clearance for water connections
- 2 Slots for installation on the wall
- 3 Clearance for electrical connections
- 4 Standard heat exchanger water connections
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet

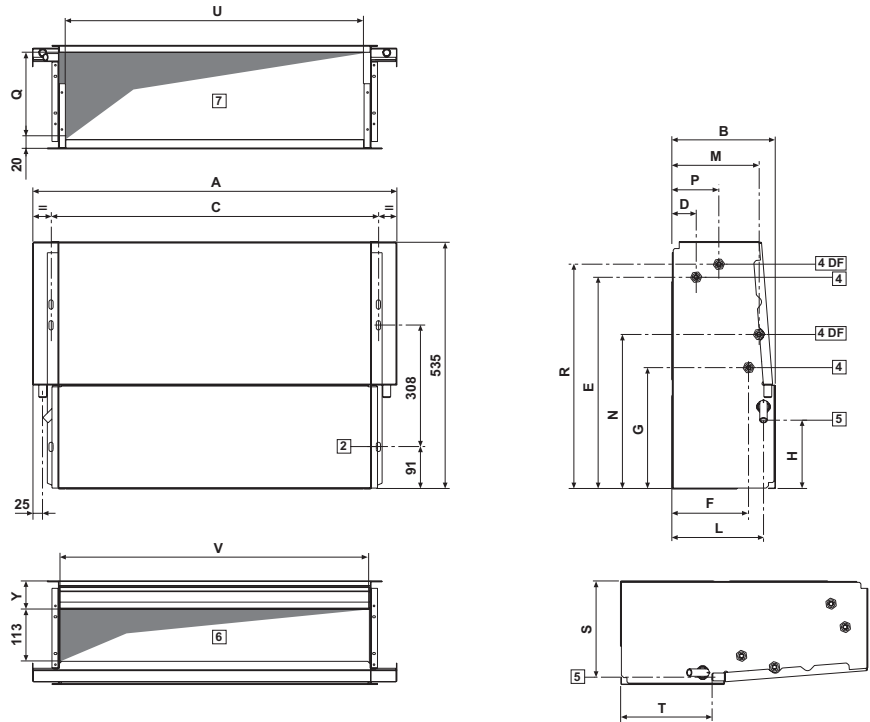


FPI	A	B	C	D	E	F	G	M	N	P	R	S	T
1 - 4	774	226	498	51	458	163	263	187	335	99	486	208	198
5 - 6	984	226	708	51	458	163	263	187	335	99	486	208	198
7 - 9	1194	226	918	51	458	163	263	187	335	99	486	208	198
95	1194	251	918	48	497	185	259	195	348	120	478	234	208
11	1404	251	1128	48	497	185	259	195	348	120	478	234	208

6 OVERALL DIMENSIONS

Overall dimensions of FCI horizontal/vertical recess mounted

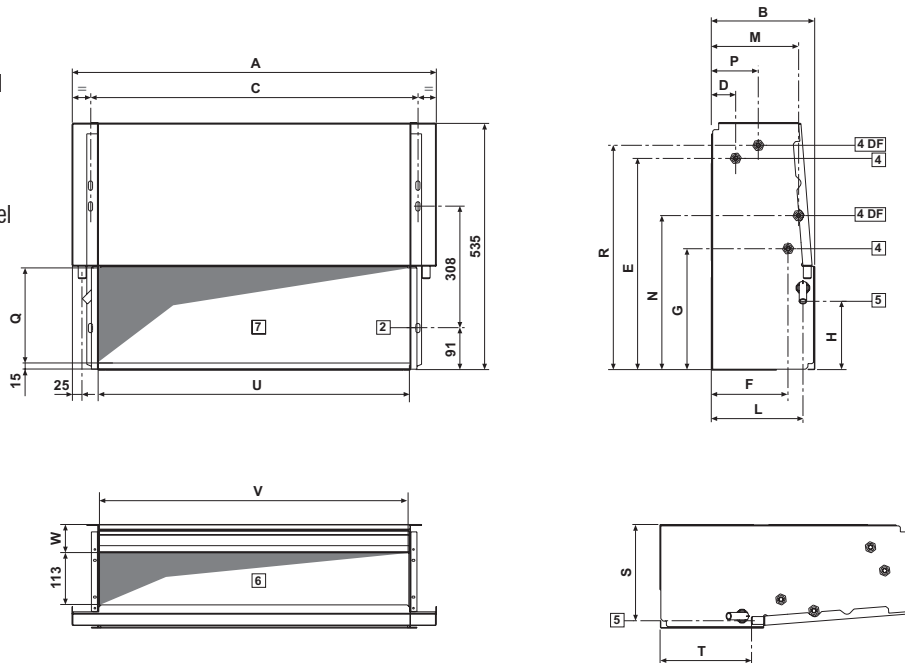
- 2 Slots for installation on the wall
- 4 Standard heat exchanger water connections
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet
- 6 Air outlet
- 7 Air intake



FCI	A	B	C	D	E	F	G	H	L	M	N	P	Q	R	S	T	U	V	Y
1 - 4	584	224	498	51	458	163	263	149	198	187	335	99	189	486	208	198	436	464	61
5 - 6	794	224	708	51	458	163	263	149	198	187	335	99	189	486	208	198	646	674	61
7 - 9	1004	224	918	51	458	163	263	149	198	187	335	99	189	486	208	198	856	884	61
95	1004	249	918	48	497	185	259	155	220	195	348	120	215	478	234	208	856	884	67
11	1214	249	1128	48	497	185	259	155	220	195	348	120	215	478	234	208	1066	1094	67

Overall dimensions of FFI, horizontal / vertical recess mounted, front air intake

- 2 Slots for installation on the wall
- 4 Standard heat exchanger water connections
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet
- 6 Air outlet
- 7 Air intake



FFI	A	B	C	D	E	F	G	H	L	M	N	P	Q	R	S	T	U	V	W
1 - 4	584	224	498	51	458	163	263	149	198	187	335	99	210	486	208	198	436	464	61
5 - 6	794	224	708	51	458	163	263	149	198	187	335	99	210	486	208	198	646	674	61
7 - 9	1004	224	918	51	458	163	263	149	198	187	335	99	210	486	208	198	856	884	61
95	1004	249	918	48	497	185	259	155	220	195	348	120	215	478	234	208	856	884	67
11	1214	249	1128	48	497	185	259	155	220	195	348	120	220	478	234	208	1066	1094	67

7 WIRING DIAGRAMS

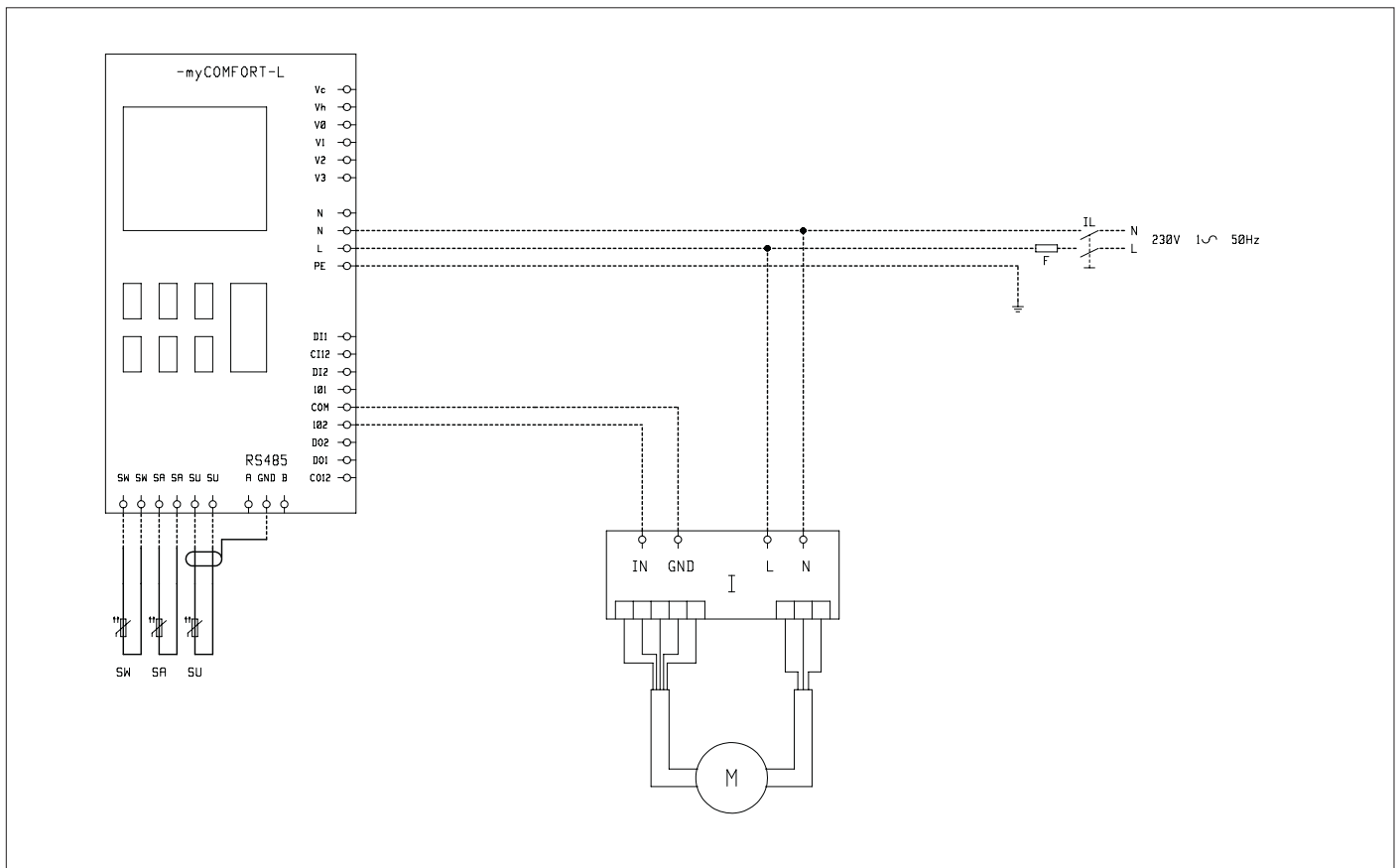
MYCOMFORT LARGE

Wall-mounted microprocessor control

Key to symbols used in wiring diagrams

- V0** Extra low speed
- V1** Minimum speed
- V2** Medium speed
- V3** Maximum speed
- L** Phase
- PE** Ground
- N** Neutral
- RE** Heating element
- SW** Water sensor
- SA** Air sensor
- SU** Humidity sensor
- DI1** Digital 1 input
- DI2** Digital 2 input
- CI12** Digital input common

- A/B/GND** RS 485
- F** Fuse (not supplied)
- IL** Circuit breaker (not supplied)
- VC** Solenoid valve - Cooling
- VH** Solenoid valve - Heating
-** Electrical connections to be made by installer
- 101** 0-10V 1 Output
- COM** 0-10V Output Common
- 102** 0-10V 2 Output
- D02** Digital 2 output
- D01** Digital 1 output
- C012** Digital output Common



For each fan coil a switch (IL) should be mounted on the power supply, with opening contacts at a distance of at least 3 mm and a suitable protection fuse (F) .

8 VERSIONS WITH SEPARATE INVERTER

8.1 INVERTER REGULATION PROCEDURE

The curve setting can be performed in the factory (and modified on site, if necessary) by arranging the dip switched as shown in the following figure:

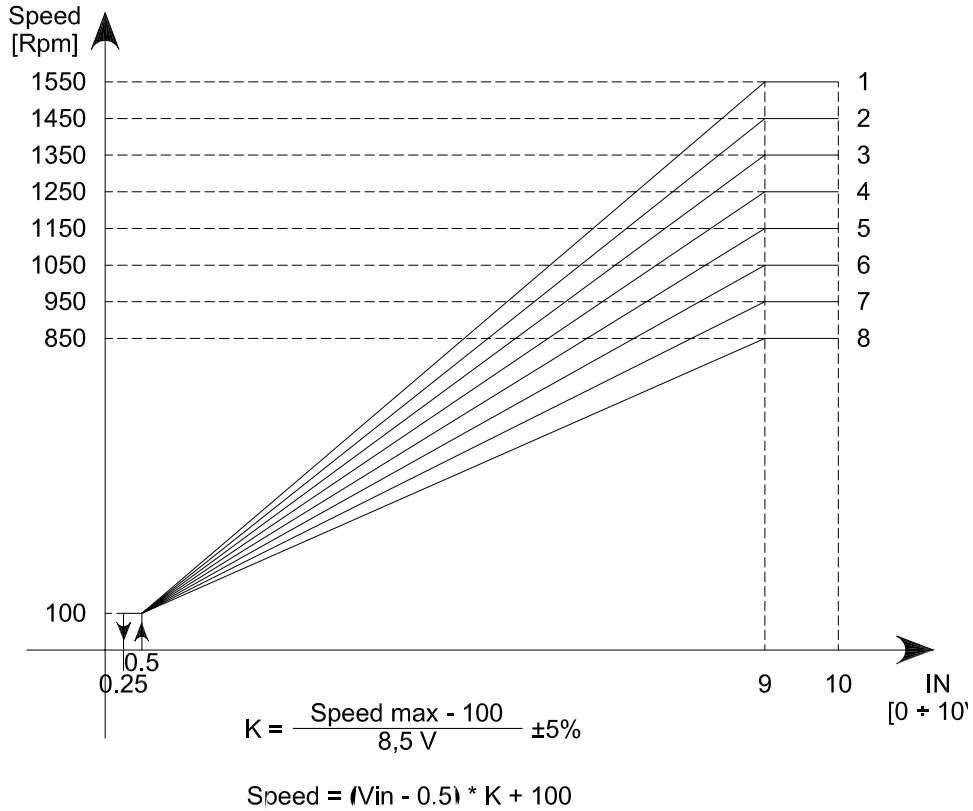
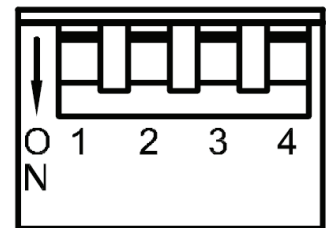


TABLE OF SPEED RAMP SELECTION

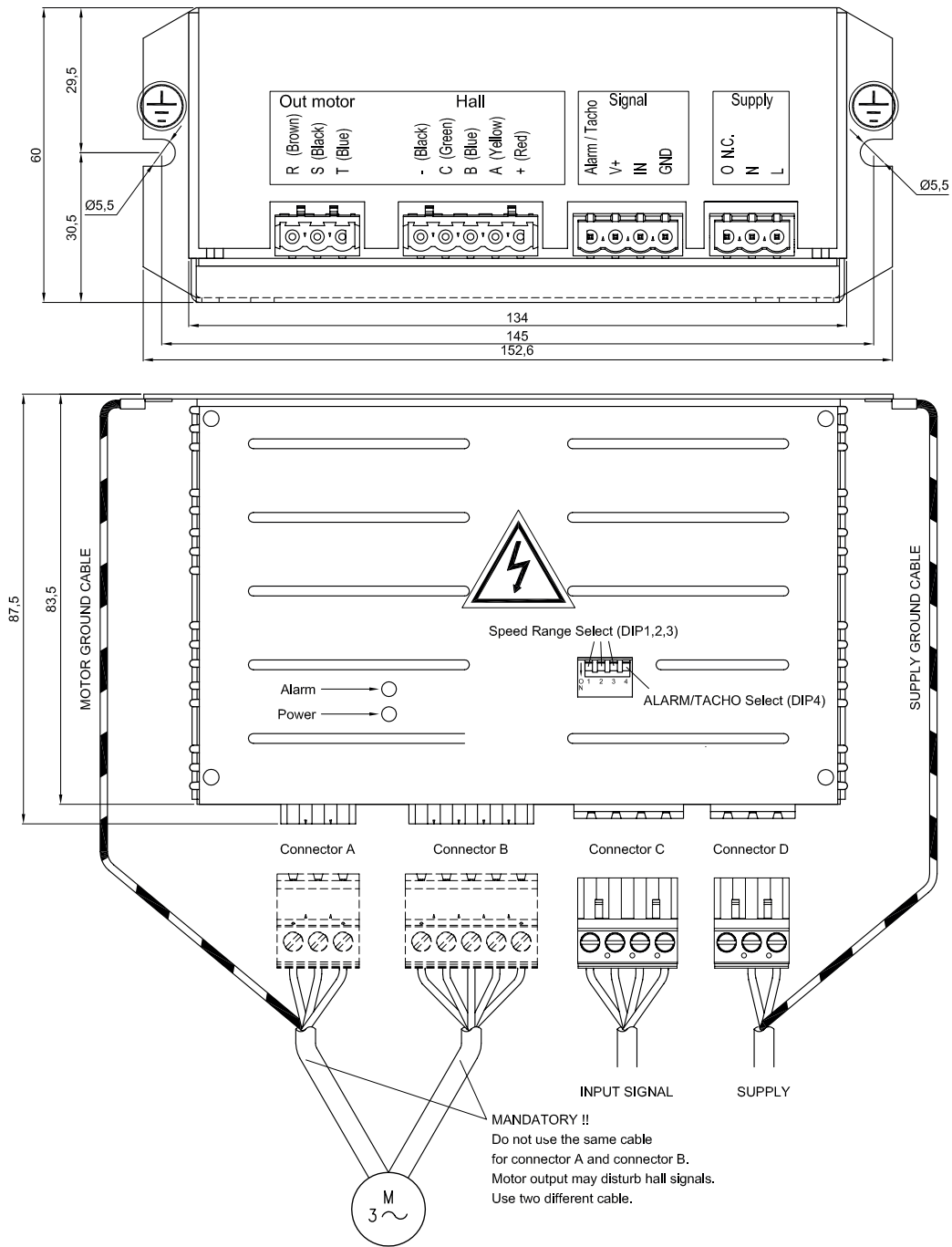
No.	MAX speed	DIP 1	DIP 2	DIP 3	DIP 4
1	1550 rpm	OFF	OFF	OFF	-
2	1450 rpm	ON	OFF	OFF	-
3	1350 rpm	OFF	ON	OFF	-
4	1250 rpm	ON	ON	OFF	-
5	1150 rpm	OFF	OFF	ON	-
6	1050 rpm	ON	OFF	ON	-
7	950 rpm	OFF	ON	ON	-
8	850 rpm	ON	ON	ON	-



Note: Generally the max. speed (1550 rpm) is not used

8 VERSIONS WITH SEPARATE INVERTER

8.2 INVERTER BOARD



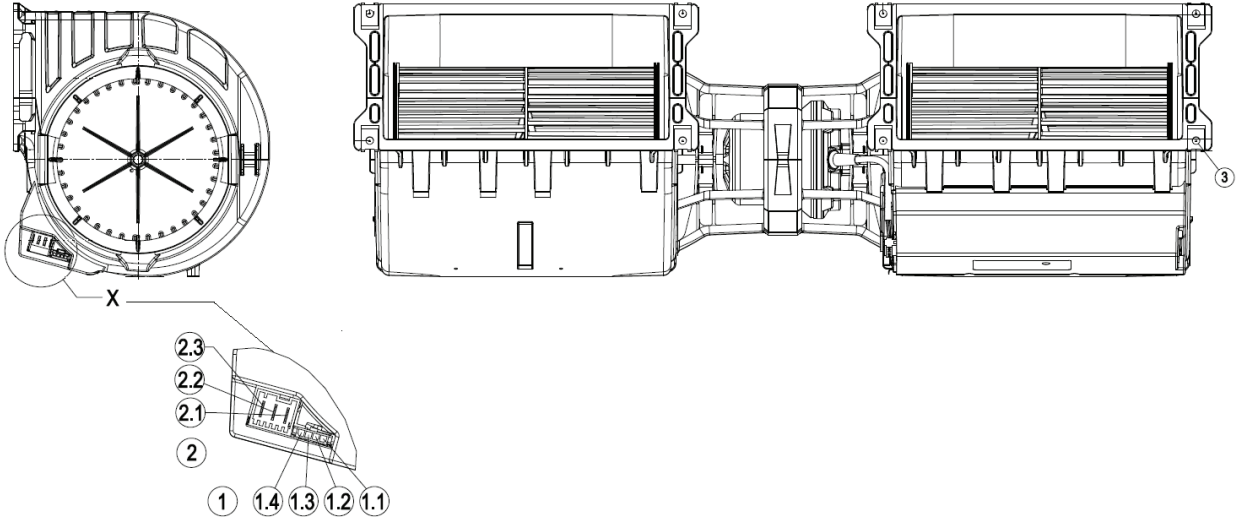
8.3 ALARMS

Alarm indication Table

ALARM TYPES	LED INDICATIONS	ALARM INDICATIONS DIP4 = OFF	ACTIONS	NOTES
OVER TEMPERATURE	Blink Alarm led 3s ON 0,5s OFF	Blink Alarm output 3s ON 0,5s OFF	MOTOR OFF	Autorestart Alarm. After about 1,5 min of persistence condition the Alarm is set permanently: led ON and Alarm ON and system is in STOP mode
OVER VOLTAGE				
UNDERVOLTAGE				
OVER CURRENT				
OVER LOAD	Blink Alarm led 0,5s ON 0,5s OFF	Blink Alarm output 0,5s ON 0,5s OFF	SPEED REDUCTION	POWER LIMITING
SAFETY CONTROL				TEMPERATURE LIMITING
STOP	ALARM LED ON PERMANENTLY	ALARM OUT ON PERMANENTLY	MOTOR OFF	SET 0V ON INPUT TO RESET THE ALARMS

9 VERSIONS WITH INTEGRATED INVERTER

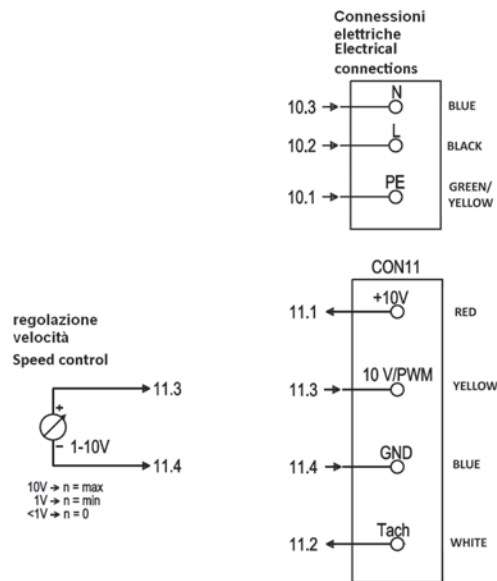
VERSIONS WITH INVERTER INTEGRATED IN THE MOTOR ASSEMBLY (VOLUTE)



Legend

- 1 = Strip Molex Micro Fit 3.0 04365 00400 (to be used with 04364 50400)
- 1.1 = 10V
- 1.2 = Tachometer outlet
- 1.3 = 0-10V lin. signal / PWM
- 1.4 = GND
- 2 = Lumberg 3642 03 K01connector (to be used with 3626 03 K01)
- 2.1 = PE (ground)
- 2.2 = N (neutral)
- 2.3 = L (phase)
- 3 = fastening points

ELECTRICAL CONNECTION



10 ACCESSORIES

MYCOMFORT LARGE - Wall-mounted microprocessor control, GALLETTI model MYCOMFORT LARGE having the following main features:

- room air temperature reading and adjustment
- room humidity reading and adjustment
- water temperature reading (water sensor as an optional)
- manual and automatic adjustment of fan speed
- manual and automatic switching of heating and cooling mode depending on the water temperature within the heat exchanger or on the room temperature, with a neutral zone that can be selected in the range from 2° to 5°C
- clock and hourly timer-programmed operation
- 2 analogue outputs for controlling modulating devices 0-10V
- 2 digital outputs for controlling (On/Off) external devices (no-voltage contacts)
- serial port for Bus connection



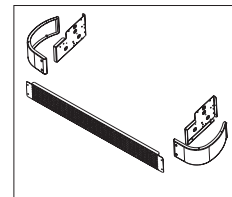
The controller is equipped with a large display (3") to show and set all the functions of the unit.

Using the installation kit available, myComfort can be mounted on the unit.

ZLG - Pair of support covering feet with front grille for FLI models

The ZLG, ZCG covering feet, designed for the installation on éstro FLI models are supplied in pairs and comprise supports for fastening to the base unit, outer coverings for fastening to the cabinet and the front covering grille.

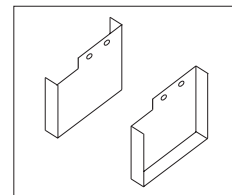
They are used to conceal the plumbing (pipes leading up from the floor) and in cases where the fan coil unit cannot be anchored to the wall. The height of covering feet is 100 mm.



D - Support brackets for FCI vertical installation models

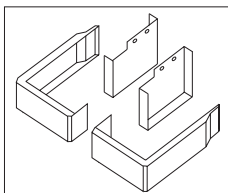
The D support brackets are supplied in pairs and combined to the recess wall mounted éstro fan coils FCI in cases where the fan coil unit cannot be anchored to the wall.

The height of the support brackets is 100 mm.



ZA - Pair of support covering feet for FAI models

The ZA covering feet, designed for the installation on éstro FAI models are supplied in pairs and comprise supports for fastening to the base unit and outer coverings for fastening to the cabinet. They are used to conceal the plumbing (pipes leading up from the floor) and in cases where the fan coil unit cannot be anchored to the wall. The height of covering feet is 100 mm.

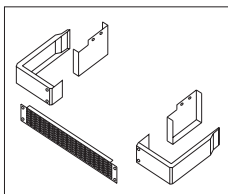


KBESTE KIT for on-board installation on ESTRO BLDC (1 air probe + bracket + on-board LCD controller frame + wiring kit)

- The LCD controller can be installed directly (on both sides) on ESTRO BLDC units using the controller kit provided, which contains:
- Remote air temperature probe (cable length 1.5 m)
- LCD frame (to be added or replaced in case of flap)
- Support for installation on the indoor unit
- Frame
- Sensor holder trap and clamp

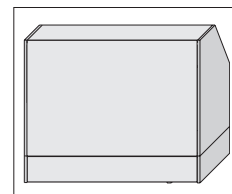
ZAG - Pair of support covering feet with front grille for FA models

The ZAG covering feet, designed for the installation on éstro FAI models are supplied in pairs and comprise supports for fastening to the base unit, outer coverings for fastening to the cabinet and the front covering grille. They are used to conceal the plumbing (pipes leading up from the floor) and in cases where the fan coil unit cannot be anchored to the wall. The height of covering feet is 100 mm.



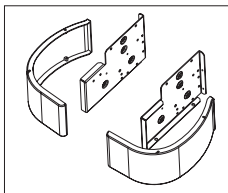
PVA - Painted rear covering panel for FAI models

This panel is suitable for wall mounted FAI fan coils with apparent rear part. For instance: installation against glass walls. The kit includes an upper rear covering panel and a lower rear covering panel. The fan coils using a PVA rear covering panel cannot be wall mounted.



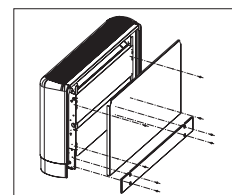
ZL - Pair of support covering feet for FLI models

The ZL covering feet, designed for the installation on éstro FLI models are supplied in pairs and comprise supports for fastening to the base unit and outer coverings for fastening to the cabinet. They are used to conceal the plumbing (pipes leading up from the floor) and in cases where the fan coil unit cannot be anchored to the wall. The height of covering feet is 100 mm.



PVL - Painted rear covering panel for FLI and FUI models

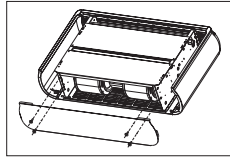
This panel is suitable for wall mounted FAI, FUI fan coils with apparent rear part. For instance: installation against glass walls. The kit includes an upper rear covering panel and a lower rear covering panel. The fan coils using a PVL rear covering panel cannot be wall mounted.



10 ACCESSORIES

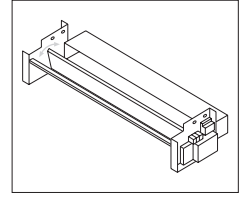
PH - Painted rear covering panel for horizontal installation models FUI

The painted rear panel PH is supplied exclusively for ceiling mounted éstro FUI fan coils with apparent rear part in order to cover the technical compartments (plumbing and electrical). It is used to cover the technical compartments. The fan coils with rear panel can work in heating mode only.



SM - Motor-driven external air intake louver

The motor driven external air intake louver is designed to allow frequent air renewals directly from the fan coil. The quantity of filtered and heat treated external air is proportionally controlled from 0 to 100% by means of a servomotor located inside.

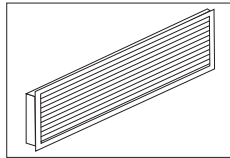


The SM - SM-C kit is complete with servomotor (protection rating IP54, 24 V supply voltage) and 230V - 24V transformer. The automatic closure and opening of the louver can be obtained by means of external auxiliary contacts (not supplied) as anti-freeze thermostats, timers, etc. by connecting in parallel several servomotors to a single opening-closing control. The louver should be coupled to one of the following control panels (optional): CSB (installation on the unit) and CSD (wall recess mounted), permitting to close and open the louver from 0 to 100%.

This louver can be used on all éstro BLDC models except the floor mounted FUI version. The installation of a pair of covering feet (ZL for FLI fan coils and ZA for FAI fan coils) is required, when the louver is mounted on fan coil units with cabinet (FLI, FAI and FPI ceiling mounted).

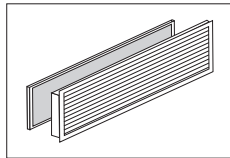
GE+C - Aluminium air intake grille with subframe

The external air intake louver with anodised aluminium fixed fins, complete with anodised aluminium subframe is usually combined with external air intake louvers and is designed for wall mounting.



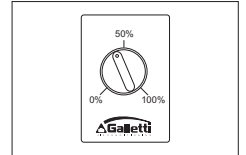
GEF+C - Aluminium air intake grille with subframe and filter

The air intake louvers with anodised aluminium fixed fins complete with washable acrylic fibre filter and galvanised sheet subframe, is usually combined with recess mounted fan coils.



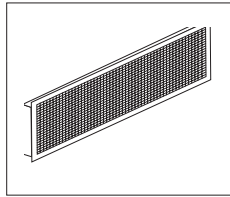
CSD - Recess mounted control for opening and closing the SM motor-driven regulating valve

Designed for wall recess mounting on the opposite side of the fan coil control panel, it controls the proportional opening and closing of the motor-driven regulating louver SM (from 0 to 100%).



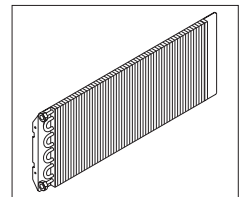
GM+C - Anodised aluminium double-row finned air outlet grille, complete with subframe

Anodized aluminium air outlet grille with 2-row swinging fins complete with galvanized sheet steel subframe. It is usually combined with recessed mounted fan coils.



DF - Additional heat exchanger for 4-pipe systems (hot water circuit)

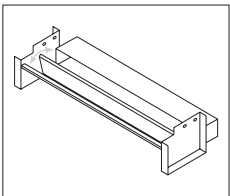
Additional heat exchanger made with copper piping and aluminium fins: it is suitable for 4-pipe systems and is connected to the heating circuit.



The heat exchanger comes complete with air vent valves on the system connection openings. The kit comes complete with locking bracket to avoid the manifold rotation during plumbing connection operations. The performances of the heat exchanger mounted on the éstro BLDC fan coils are certified by Eurovent which guarantees the reliability of the data shown on this manual.

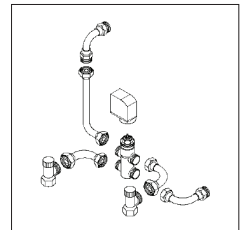
S - Manual external air intake louver

The manual external air intake louver is designed to allow frequent air renewals directly from the fan coil. The quantity of renewal air is filtered and heat treated by the fan coil and manually adjusted by means of the flap located inside. This louver can be used on all éstro BLDC models except the floor mounted FU version. The installation of a pair of covering feet (ZL for FLI fan coils and ZA for FAI fan coils) is required, when the louver is mounted on fan coil units with cabinet (FLI, FAI and FPI ceiling mounted).



VK - ON-OFF 3-way motor driven valve, with hydraulic kit

The ON/OFF motor driven VK 3-way valve/4 connections kit connected to the control panel for éstro fan coils, controls the room temperature by stopping the water flow through the heat exchanger. VK kit is available in various configurations for all models of éstro fan coils with standard (VK S) or additional DF (VK DF) heat exchanger, as shown in the table below:



The kit includes:

brass 3-way valve / 4 connections with built-in by-pass, maximum operating pressure 16 bar;

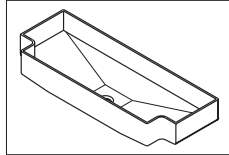
electrothermal actuator with the ON/OFF functions (total opening time 4 minutes), 230 V power supply;

Hydraulic kit for installing the valve on the heat exchanger, complete with 2 holders for balancing and regulating the fan coil unit.

10 ACCESSORIES

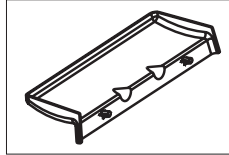
BV - Auxiliary water drip tray for vertical installation units

The auxiliary drip tray is used to collect the condensate from the valve and the pressure regulator. It can be used on all éstro fan coils.



BH - Auxiliary water drip tray for horizontal installation units

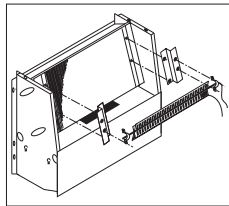
The BH auxiliary drip tray is suitable for horizontal installation fan coils to collect the condensate from the ON/OFF 3-way valve (VK S accessory).



RE - Electric heating element complete with installation kit, safety devices and power relay box

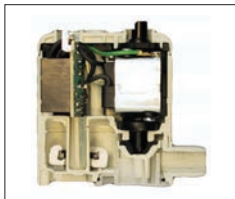
Designed to meet the needs of supplement conventional water heating systems, the kit includes armoured electric heating elements, safety thermostats (with automatic/manual resetting) and power relay set.

The additional heating element should be coupled to the MYCOMFORT LARGE control panel.



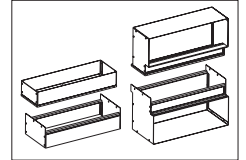
KSC - Condensate drainage pump kit

It permits the drainage of condensate in case of height differences. The pump is equipped with a check valve on the drain pipe and is capable to drain up to 8 l/h of water.



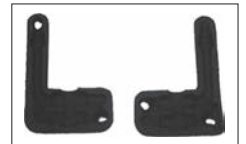
RA / RM - Inlet and outlet connectors

These accessories are designed for éstro BLDC FCI, FFI fan coils and are used for room ducts when the basic unit (éstro BLDC FCI) is placed within false ceilings and/or recess wall mounted. For each configuration, the inlet and outlet connectors are available in straight version and in 90° jointed version.



GIVK - Valve insulation shell

The GIVK valve insulation shell avoids the creation of condensate within the valve body. The plumbing connections are provided either on the right side or the left side.



MCSWE - Water temperature sensor for microprocessor controls model MYCOMFORT

Directly connected to the microprocessor control model MYCOMFORT to measure the water temperature through the heat exchanger.

If the temperature detected is less than 17°C, the unit will operate in the cooling mode and the controller will use the summertime temperature scale (19 - 31°C); if the temperature detected is greater than 37°C the unit will function in the heating mode and the controller will use the wintertime temperature scale (14 / 26°C). If the temperature detected by the probe is in the range of 17°C to 37°C, the controller will inhibit operation of the fan coil unit.



MCSUE - Humidity sensor for on-board microprocessor controls model MYCOMFORT LARGE.



11 INSTALLATION REQUIREMENTS

The fan coils should be installed in a position where the room can be cooled or heated evenly, on walls or ceilings able to withstand their weight.

It is advisable to install any accessories on the standard unit prior to positioning the latter.

For installation and use of accessories, please refer to the relative technical sheets.

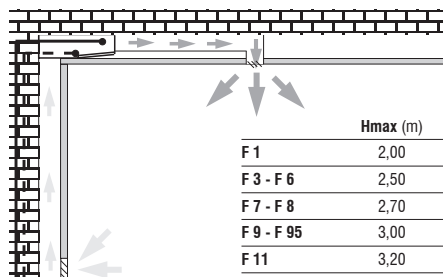
To guarantee the proper functioning of the unit and access for routine and extraordinary maintenance purposes, it is necessary to comply with the minimum installation clearance requirements (see "overall dimensions" section).

In case of recess mounted units an access panel should be provided.

In order to avoid hot air stratification in rooms heated with ceiling mounted fan coils, it is recommended:

- not to exceed the "H" installation heights referred to the maximum operating speed as shown on the diagram;
- supply the units with moderately hot water (water inlet 50/60°C);
- provide the air intake from the lower part of the room, if possible.

Install any remote control panel in an easily accessible position allowing the user to set the functions while ensuring an accurate reading of the ambient temperature, if provided. You should avoid:



- positions directly exposed to sunlight;
- positions exposed to direct currents of warm or cold air;
- placing obstacles that impede an accurate temperature reading.

During wintertime periods of quiescence, drain water from the system, to prevent ice from forming. If anti-freeze solutions are used, check for their freezing point using the table below.

Glycol by weight (%)	Freezing temperature (°C)	Capacity adjustment	Pressure drop adjustment
0	0	1,00	1,00
10	-4	0,97	1,05
20	-10	0,92	1,10
30	-16	0,87	1,15
40	-24	0,82	1,20

12 MAINTENANCE

ESTRO BLDC type fan coils do not have particular maintenance requirements: it is sufficient to periodically clean the air filter.

The motor requires no maintenance since it has self-lubricating bearings. It is recommended to replace the air filter once a year, using an original replacement filter; the fan coil unit model is specified on the identification plate on the inside of the side panel.

Always consult the "Installation, use and maintenance manual" provided with the unit when undertaking maintenance and cleaning.



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