

Fan coil units with centrifugal fan and BLDC motor

ESTRO i 1 - 9 kW



Energy savings and comfort in a single solution

The continual innovation that characterizes the design of ESTRO has resulted in fan assemblies with inverter-controlled permanent magnet BLDC motors.

The use of this type of motor makes it possible to achieve a major reduction in power consumption, better perceived comfort in terms of temperature and humidity and considerable reductions in noise emissions.

Analyses and verifications have shown a reduction in consumption of no less than 70% with integrated operation compared to traditional AC motors, with a 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 continuous modulation of air flow brings about an adjustment in the delivered heating capacity, so that the interior is brought quickly to the set conditions and the noise levels are exceptionally low while they are being maintained.

ESTRO fan coil units MYCOMFORT LARGE and EVO microprocessor control panels, which, thanks to the analogue outputs and refined adjustment logics, perfectly control the operation of the BLDC motors and modulating valves.

PLUS

- ✓ Inverter-controlled BLDC motor
- ✓ Low energy consumption
- ✓ Modulating operation
- ✓ Extremely quiet operation
- ✓ Can be integrated into the ERGO
- ✓ Heat exchanger up to 4 rows
- ✓ Incorporable ioniser



AVAILABLE VERSIONS

- ESTRO FL i** Wall mounted with cabinet
- ESTRO FA i** Wall recess mounted with cabinet
- ESTRO CL i** Wall mounted with cabinet
- ESTRO FU i** Floor and ceiling mounted with cabinet
- ESTRO FP i** Ceiling mounted with cabinet
- ESTRO FB i** Floor and ceiling mounted with low cabinet

- ESTRO FC i** Vertical / horizontal recess mounted with rear air intake
- ESTRO FF i** Vertical / horizontal recess mounted with front air intake
- ESTRO FBC i** Vertical / horizontal recess mounted with low cabinet and front air intake



MAIN COMPONENTS

Cabinet

Composed of a painted steel sheet panel, side panels, air outlet grille (swinging by 180°) and back suction grille built from ABS.

Structure

Built from galvanised steel sheet of extra thickness, heat and sound insulated by means of Class 1 self-extinguishing panels. FUi – FBi – FCi – FFi and FBCi versions are suitable for either vertical or horizontal installation thanks to the dual condensate collection and drainage system.

Heat exchanger

High efficiency heat exchanger made with copper piping and aluminium fins, provided with brass manifolds and vent valve. The water connections are reversible at the time of installation. On request it is possible to mount an additional heat exchanger for 4-pipe systems.

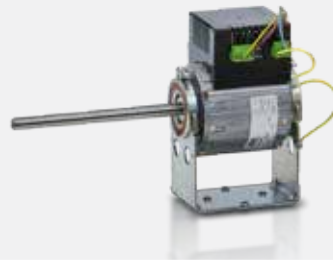


Fans

Double suction centrifugal fans, statically and dynamically balanced, manufactured from anti-static ABS, with blades having an airfoil section and offset modules. The fans are housed in a low-noise ABS volute with high-efficiency profile.

BLDC electric motor

Permanent magnet motor. The unit is equipped with an inverter board to control the motor, that makes it possible to precisely set the maximum rotation speed of the motor (control signal 0-10 V).



Air filter

Honey-comb polypropylene washable air filter, easily removable for maintenance operations. On FUi and FBi versions the air filters are fitted onto the air inlet grille.

ACCESSORIES

Wall-mounted microprocessor electronic control panels

MCLE	MYCOMFORT LARGE electronic controller with display
KBE	Mycomfort on-board installation kit
DIST	Mycomfort controller spacer for wall mounting
MCSWE	Water sensor for EVO, MYCOMFORT and LED503 controller
MCSUE	Humidity sensor for EVO, MYCOMFORT MEDIUM and LARGE controller
EVODISP	EVO CLOCK Remote display
EVOBOARD	EVO 230V circuit board

Power interface and regulating louver controllers

CSB	On-board controller for opening and closing the motor-driven regulating louver
CSD	Recess mounted controller for opening and closing the SM motor-driven regulating louver

Additional heat exchanger for 4-pipe systems

DF	1-row additional heat exchanger for 4-pipe systems (not suitable for "M" models)
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Auxiliary water drip trays, insulating shell, condensate drainage pump

BV	Auxiliary water drip tray for vertical installation fan coil units
BH	Auxiliary water drip tray for horizontal installation fan coil units
GIVKR	Insulating shell for VK1S valve, water connections on the right
GIVKL	Insulating shell for VK1S valve, water connections on the left
KSC	Condensate drain kit

Support and covering elements

ZL	Pair of support covering elements for Estro FLi
ZLG	Pair of support covering elements with front grille for Estro FLi
ZA	Pair of support covering elements for Estro FAi
ZAG	Pair of support covering elements with front grille for Estro FAi
ZC	Pair of support covering elements for Estro CLi
ZCG	Pair of support covering elements with front grille for Estro CLi
D	Supports for Estro FCi

Rear covering panels

PV	Painted rear panel for vertical installation models with cabinet
PH	Painted rear panel for horizontal installation models with cabinet

Grilles

GE+C	Aluminium external air intake grille, with subframe
GEF+C	Aluminium external air intake grille, with subframe and air filter
GM+C	Aluminium air outlet grille with 2-row fins and subframe
RGC	Plenum with circular collars for air outlet grille

Plenum and connectors

RM90	Angular outlet connector
RM90C	Angular outlet insulated connector
RMD	Straight outlet connector
RMCD	Straight outlet insulated connector
RA90	Angular inlet connector
RAD	Straight inlet connector
RMCD C	Air outlet plenum with circular collars
RAD C	Air inlet plenum with circular collars

External air intake louvers

S	Manual external air intake louver
SM	Motor-driven louver, with motor on the right with transformer
	Motor driven louver, with motor on the left, with transformer
SMC	Motor driven louver, with motor on the right, for centralised control
	Motor driven louver, with motor on the left, for centralised control

Valves

	3-way valve, 230V actuator, hydraulic kit for standard heat exchanger
VK	3-way valve, 230V actuator, hydraulic kit for DF heat exchanger
	3-way valve, 24V actuator, hydraulic kit for standard heat exchanger
	3-way valve, 24V actuator, hydraulic kit for DF heat exchanger
VKM	3-way valve, modulating actuator, hydraulic kit for standard heat exchanger
	3-way valve, modulating actuator, hydraulic kit for DF heat exchanger
	3-way valve, 230V actuator, hydraulic kit on heat exchanger side for standard heat exchanger
	3-way valve, 230V actuator, hydraulic kit on heat exchanger side for DF heat exchanger
VK	3-way valve, 24V actuator, hydraulic kit on heat exchanger side for standard heat exchanger
	3-way valve, 24V actuator, hydraulic kit on heat exchanger side for DF heat exchanger
	3-way valve, modulating actuator, hydraulic kit on heat exchanger side for standard heat exchanger
VKM	3-way valve, modulating actuator, hydraulic kit on heat exchanger side for DF heat exchanger
	2-way valve, 230V actuator, hydraulic kit on water connection side for standard heat exchanger
	2-way valve, 230V actuators, hydraulic kit on water connection side for standard and DF heat exchanger
KV	2-way valve, 24V actuator, hydraulic kit on water connection side for standard heat exchanger
	2-way valve, 24V actuator, hydraulic kit on water connection side for standard and DF heat exchanger
	2-way valve, modulating actuator, hydraulic kit on water connection side for standard heat exchanger
KVM	2-way valve, modulating actuators, hydraulic kit on water connection side for standard and DF heat exchanger

Rated technical data

ESTRO i		1			3			4			4M		
Fan speed		min	med	max	min	med	max	min	med	max	min	med	max
Control voltage	V	4,0	5,3	6,5	5,2	6,9	8,4	5,2	6,9	8,4	5,2	6,9	8,4
Total cooling capacity (1) (E)	kW	0,77	0,92	1,15	1,26	1,52	1,74	1,36	1,70	1,96	1,50	1,85	2,24
Sensible cooling capacity (1) (E)	kW	0,59	0,70	0,87	0,95	1,14	1,30	1,00	1,24	1,42	1,06	1,32	1,60
Water flow (1)	l/h	132	158	197	216	261	299	234	292	337	258	317	384
Water pressure drop (1) (E)	kPa	4	5	7	8	11	14	6	9	12	10	14	20
Heating capacity (2) (E)	kW	1,11	1,30	1,55	1,71	2,04	2,20	1,78	2,16	2,55	1,83	2,26	2,74
Water pressure drop (2) (E)	kPa	3	4	6	7	9	12	5	8	10	8	11	16
Heating capacity (3)	kW	1,94	2,27	2,68	2,93	3,50	3,74	3,04	3,67	4,35	3,08	3,80	4,62
Water flow (3)	l/h	171	199	235	257	307	329	267	322	382	270	333	405
Water pressure drop (3)	kPa	4	6	8	8	11	13	6	8	11	8	12	16
Air flow	m ³ /h	149	189	231	211	271	344	211	271	344	211	271	344
Power input (E)	W	5	6	7	7	9	19	7	9	19	7	9	19
Sound power level (4) (E)	dB/A	30	32	40	38	44	49	40	44	50	41	45	51
Additional coil heating capacity DF (3) (E)	kW	1,35	1,50	1,70	1,56	1,78	2,02	1,56	1,78	2,01	not available		
Water flow (3)	l/h	118	132	149	137	156	177	137	156	176	not available		
Water pressure drop (3) (E)	kPa	3	4	4	5	7	8	5	6	7	not available		

ESTRO i		5			6			6M			7		
Fan speed		min	med	max	min	med	max	min	med	max	min	med	max
Control voltage	V	3,8	5,7	7,3	3,8	5,7	7,3	3,8	5,7	7,3	3,6	5,4	8,0
Total cooling capacity (1) (E)	kW	1,60	2,03	2,42	1,76	2,38	2,93	1,93	2,64	3,30	1,98	2,63	3,51
Sensible cooling capacity (1) (E)	kW	1,18	1,57	1,88	1,26	1,70	2,11	1,33	1,83	2,30	1,45	2,04	2,75
Water flow (1)	l/h	275	348	415	302	408	503	331	452	565	340	451	602
Water pressure drop (1) (E)	kPa	8	12	16	5	8	11	7	12	17	4	7	12
Heating capacity (2) (E)	kW	2,07	2,68	3,20	2,09	2,83	3,50	2,33	3,21	4,04	2,81	3,69	4,78
Water pressure drop (2) (E)	kPa	6	10	13	4	6	9	6	10	14	4	6	10
Heating capacity (3)	kW	3,52	4,57	5,47	3,52	4,76	5,89	3,91	5,39	6,79	4,83	6,34	8,21
Water flow (3)	l/h	308	401	480	308	417	517	343	473	595	424	556	720
Water pressure drop (3)	kPa	7	12	16	4	6	9	6	10	14	5	8	13
Air flow	m ³ /h	241	341	442	241	341	442	241	341	442	320	450	640
Power input (E)	W	6	8	16	6	8	16	6	8	16	8	12	18
Sound power level (4) (E)	dB/A	35	43	48	36	42	48	35	43	49	35	43	52
Additional coil heating capacity DF (3) (E)	kW	2,06	2,53	2,92	2,18	2,68	3,08	not available			3,21	3,96	4,80
Water flow (3)	l/h	181	222	257	191	235	270	not available			282	347	421
Water pressure drop (3) (E)	kPa	2	3	4	3	4	5	not available			10	14	20

ESTRO i		8			9			9M			95		
Fan speed		min	med	max	min	med	max	min	med	max	min	med	max
Control voltage	V	3,6	5,4	8,0	5,0	6,7	8,9	5,0	6,7	8,9	4,8	6,1	8,3
Total cooling capacity (1) (E)	kW	2,51	3,27	4,33	3,00	3,66	4,51	3,52	4,37	5,40	3,42	4,19	5,26
Sensible cooling capacity (1) (E)	kW	1,80	2,45	3,15	2,23	2,82	3,53	2,47	3,07	3,82	2,34	3,00	3,82
Water flow (1)	l/h	431	561	743	515	628	774	605	750	927	587	719	902
Water pressure drop (1) (E)	kPa	5	8	12	7	10	14	11	16	24	9	13	19
Heating capacity (2) (E)	kW	2,98	3,90	5,10	3,93	4,84	5,91	4,24	5,24	6,47	4,22	5,18	6,57
Water pressure drop (2) (E)	kPa	4	6	10	6	8	12	9	13	19	7	10	16
Heating capacity (3)	kW	5,03	6,57	8,57	6,69	8,25	10,1	7,11	8,79	10,9	7,10	8,72	11,1
Water flow (3)	l/h	442	576	752	588	724	884	623	772	953	623	765	973
Water pressure drop (3)	kPa	4	6	10	7	10	14	9	13	19	8	11	17
Air flow	m ³ /h	361	497	706	470	605	785	470	605	785	488	615	814
Power input (E)	W	10	13	27	12	16	33	12	16	33	13	16	37
Sound power level (4) (E)	dB/A	35	43	53	43	49	56	44	50	57	44	51	58
Additional coil heating capacity DF (3) (E)	kW	3,11	3,67	4,36	4,04	4,65	5,30	not available			4,21	4,78	5,51
Water flow (3)	l/h	273	322	382	355	408	465	not available			369	419	483
Water pressure drop (3) (E)	kPa	11	14	19	6	8	10	not available			9	11	14



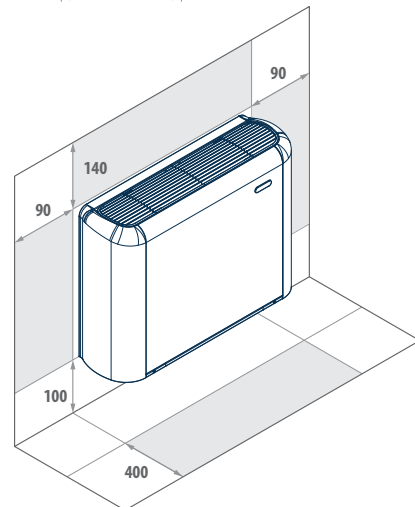
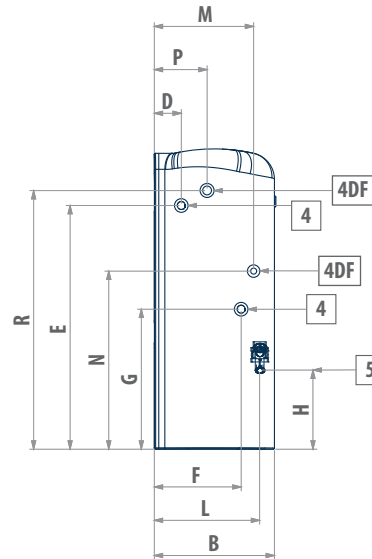
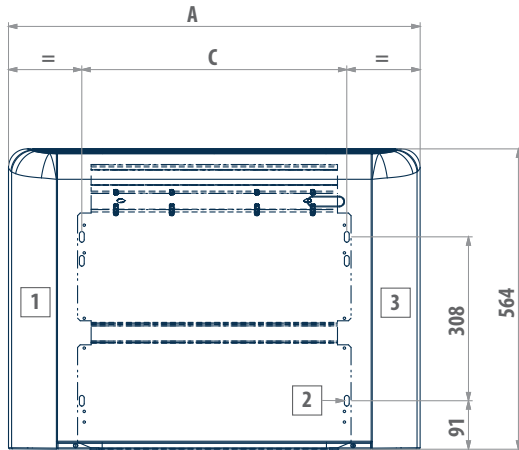
Rated technical data

ESTRO i		11			11M		
Fan speed		min	med	max	min	med	max
Control voltage	V	3,6	6,2	8,6	3,6	6,2	8,6
Total cooling capacity (1) (E)	kW	4,11	6,24	8,02	4,66	6,98	8,98
Sensible cooling capacity (1) (E)	kW	3,05	4,63	5,96	3,29	4,94	6,39
Water flow (1)	l/h	706	1071	1376	800	1198	1541
Water pressure drop (1) (E)	kPa	6	13	20	9	19	29
Heating capacity (2) (E)	kW	5,24	7,80	10,0	5,70	8,43	10,8
Water pressure drop (2) (E)	kPa	5	11	16	8	15	24
Heating capacity (3)	kW	8,91	13,2	16,9	9,57	14,2	18,2
Water flow (3)	l/h	782	1158	1486	840	1242	1593
Water pressure drop (3)	kPa	6	11	17	8	15	24
Air flow	m ³ /h	642	1022	1393	642	1022	1393
Power input (E)	W	13	38	87	13	38	87
Sound power level (4) (E)	dB/A	49	60	67	50	61	68
Additional coil heating capacity DF (3) (E)	kW	5,50	7,14	8,35	not available		
Water flow (3)	l/h	483	627	733	not available		
Water pressure drop (3) (E)	kPa	14	23	30	not available		

- (1) Water temperature 7 / 12°C, air temperature D.B. 27°C, W.B. 19°C (47% relative humidity)
 (2) Inlet water temperature 50°C, water flow rate same as in cooling mode, air temperature 20°C
 (3) Water temperature 70 / 60°C, air temperature 20°C
 (4) Sound power measured according to standards ISO 3741 and ISO 3742
 (E) EUROVENT certified data
 Power supply 230-1-50 (V-ph-Hz)

Dimensional drawings

ESTRO i FL - CL



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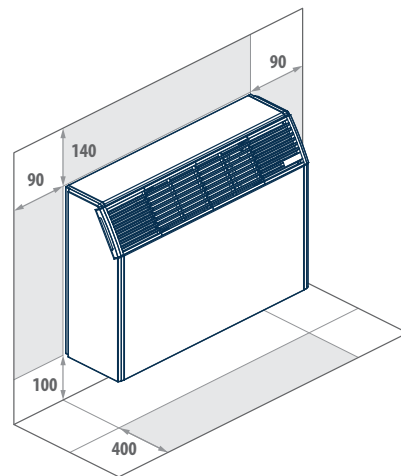
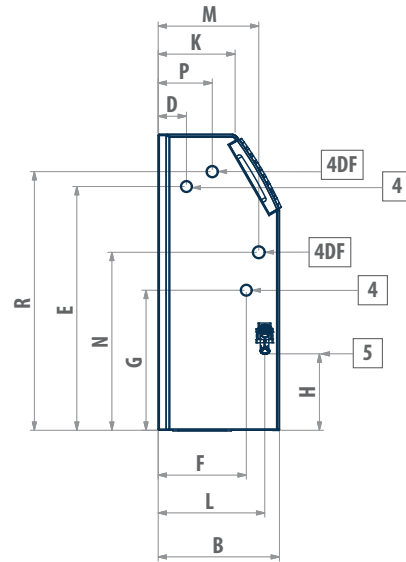
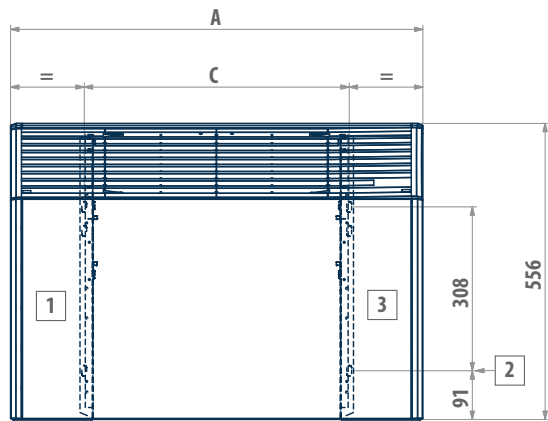
1	Usable space for plumbing connections
2	Slots for installation on the wall
3	Usable space for electrical connections
4	Standard heat exchanger water connections
4DF	DF 1-row DF additional heat exchanger water connections
5	Condensate drainage

ESTRO i FL	ESTRO i CL	A	B	C	D	E	F	G	H	L	M	N	P	R	4	4DF	5
1 - 4M	1 - 4M	774	226	498	51	458	163	263	149	198	187	335	99	486	1/2"	1/2"	16
5 - 6M	5 - 6M	984	226	708	51	458	163	263	149	198	187	335	99	486	1/2"	1/2"	16
7 - 9M	7 - 9M	1194	226	918	51	458	163	263	149	198	187	335	99	486	1/2"	1/2"	16
95	ND	1194	251	918	48	497	185	259	155	220	195	348	120	478	3/4"	1/2"	16
11 - 11M	ND	1404	251	1128	48	497	185	259	155	220	195	348	120	478	3/4"	1/2"	16



Dimensional drawings

ESTRO i FA



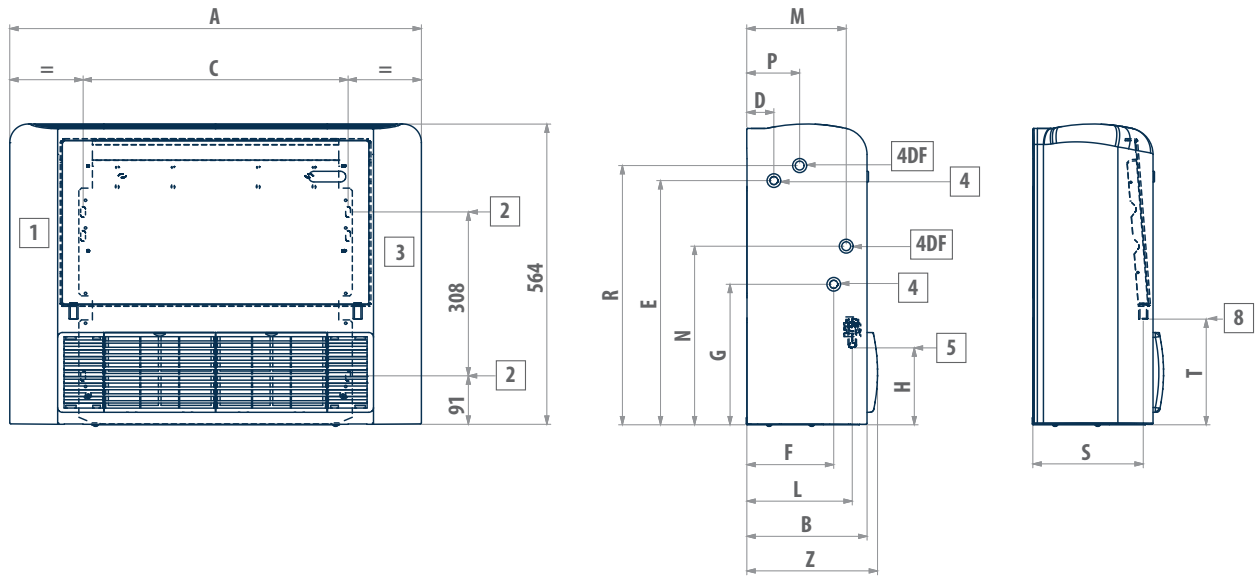
LEGEND

1	Usable space for plumbing connections
2	Slots for installation on the wall
3	Usable space for electrical connections
4	Standard heat exchanger water connections
4DF	DF 1-row DF additional heat exchanger water connections
5	Condensate drainage

ESTRO i FA	A	B	C	D	E	F	G	H	K	L	M	N	P	R	4	4DF	5
1-4M	774	228	498	53	458	166	263	149	145	198	187	335	99	486	1/2"	1/2"	16
5-6M	984	228	708	53	458	166	263	149	145	198	187	335	99	486	1/2"	1/2"	16
7-9M	1194	228	918	53	458	166	263	149	145	198	187	335	99	486	1/2"	1/2"	16
11-11M	1404	253	1128	50	497	188	259	155	155	220	195	348	120	478	3/4"	1/2"	16

Dimensional drawings

ESTRO i FU



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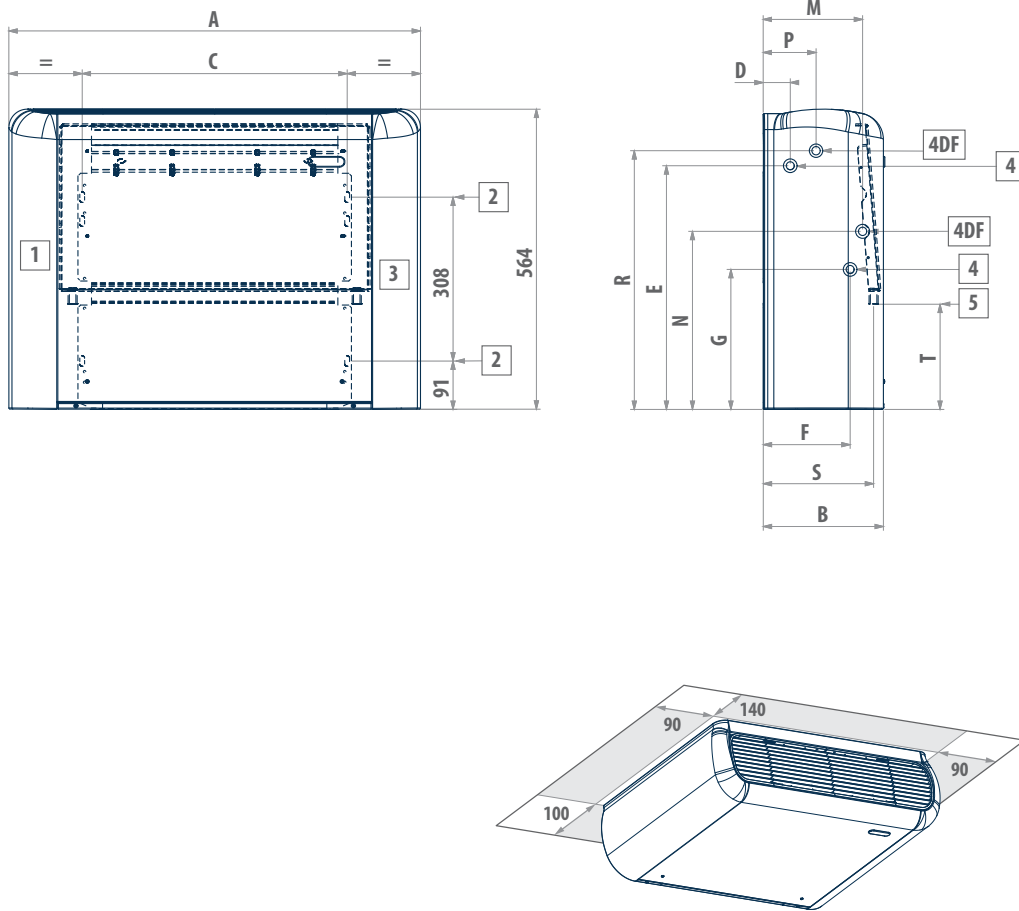
1	Usable space for plumbing connections
2	Slots for installation on the wall
3	Usable space for electrical connections
4	Standard heat exchanger water connections
4DF	DF 1-row DF additional heat exchanger water connections
5	Drain outlet for vertical installation
8	Drain outlet for horizontal installation

ESTRO i FU	A	B	C	D	E	F	G	H	L	M	N	P	R	S	T	Z	4	4DF	5
1 - 4M	774	226	498	51	458	163	263	149	198	187	335	99	486	208	198	246	1/2"	1/2"	16
5 - 6M	984	226	708	51	458	163	263	149	198	187	335	99	486	208	198	246	1/2"	1/2"	16
7 - 9M	1194	226	918	51	458	163	263	149	198	187	335	99	486	208	198	246	1/2"	1/2"	16
95	1194	251	918	48	497	185	259	155	220	195	348	120	478	234	208	271	3/4"	1/2"	16
11 - 11M	1404	251	1128	48	497	185	259	155	220	195	348	120	478	234	208	271	3/4"	1/2"	16



Dimensional drawings

ESTRO i FP



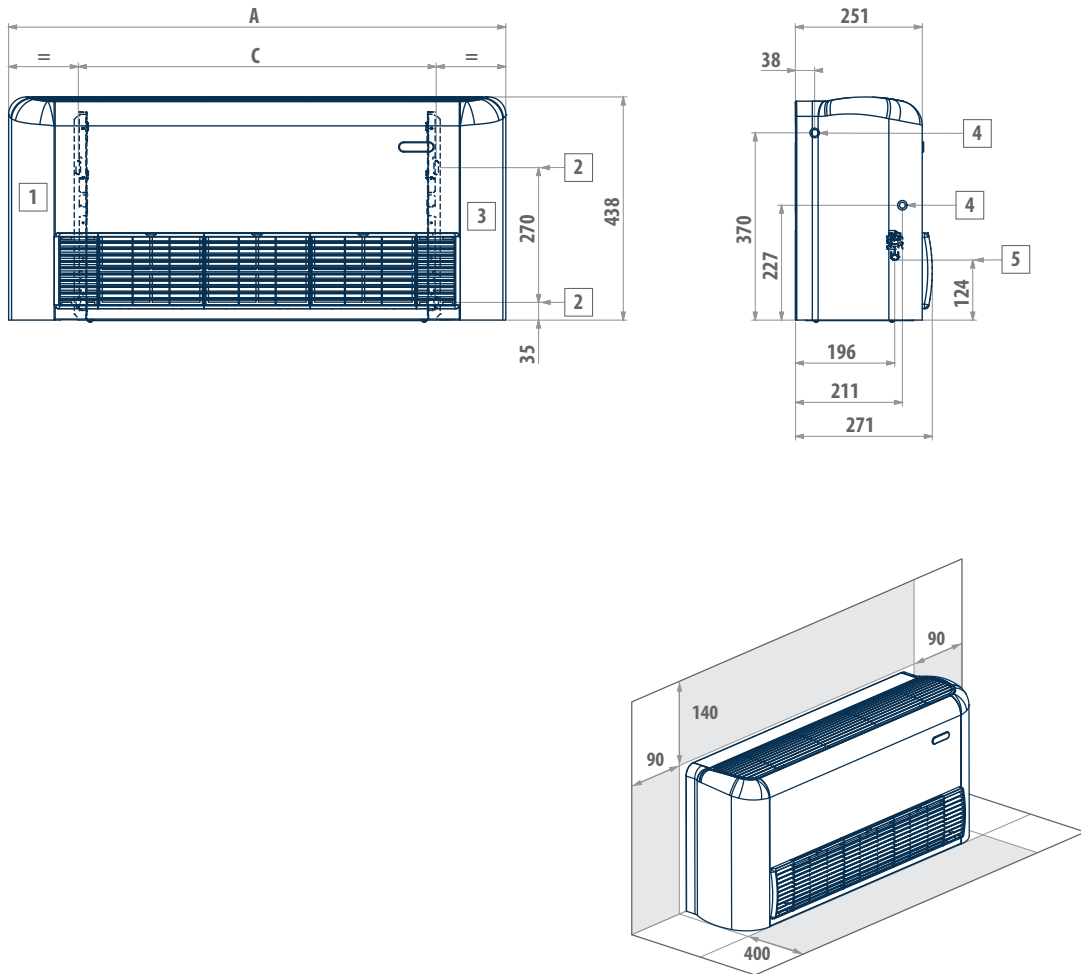
LEGEND

1	Usable space for plumbing connections
2	Slots for installation on the wall
3	Usable space for electrical connections
4	Standard heat exchanger water connections
4DF	DF 1-row DF additional heat exchanger water connections
5	Condensate drainage

ESTRO i FP	A	B	C	D	E	F	G	M	N	P	R	S	T	4	4DF	5
1 - 4M	774	226	498	51	458	163	263	187	335	99	486	208	198	1/2"	1/2"	16
5 - 6M	984	226	708	51	458	163	263	187	335	99	486	208	198	1/2"	1/2"	16
7 - 9M	1194	226	918	51	458	163	263	187	335	99	486	208	198	1/2"	1/2"	16
95	1194	251	918	48	497	185	259	195	348	120	478	234	208	3/4"	1/2"	16
11 - 11M	1404	251	1128	48	497	185	259	195	348	120	478	234	208	3/4"	1/2"	16

Dimensional drawings

ESTRO i FB



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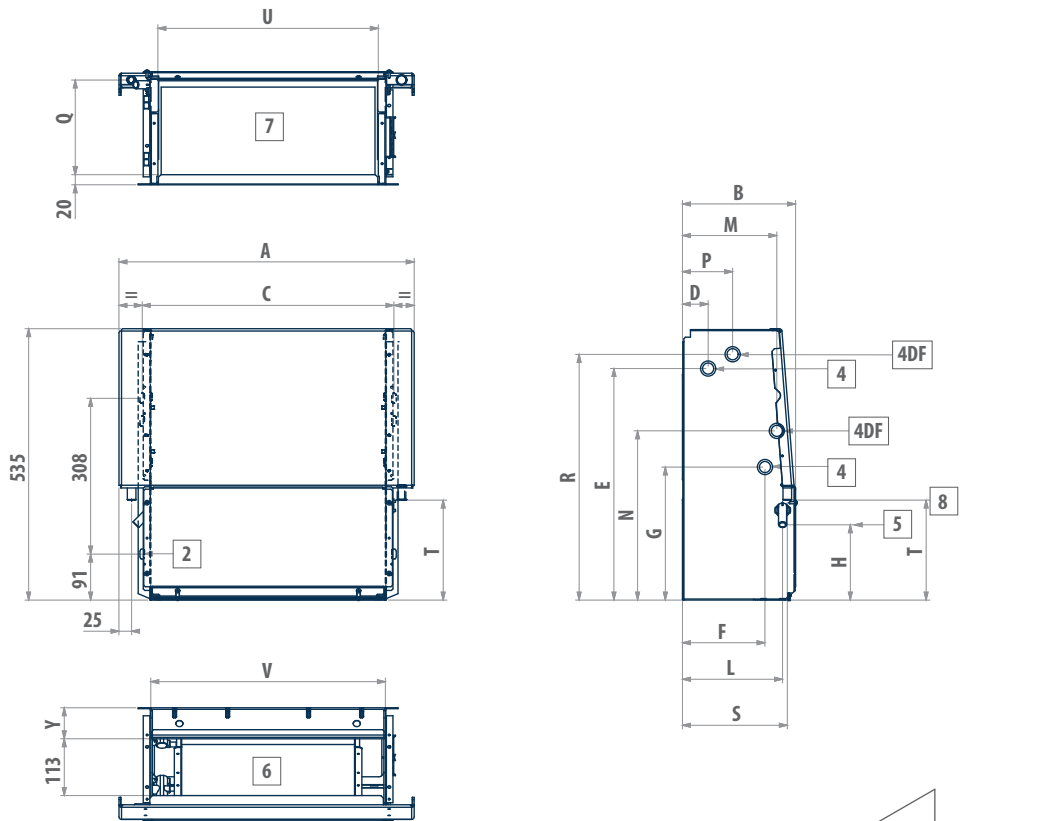
1	Usable space for plumbing connections
2	Slots for installation on the wall
3	Usable space for electrical connections
4	Standard heat exchanger water connections
5	Condensate drainage

ESTRO i FB	A	C	4	4DF	5
1-4M	774	498	1/2"	1/2"	16
5-6M	984	708	1/2"	1/2"	16
7-9M	1194	918	1/2"	1/2"	16



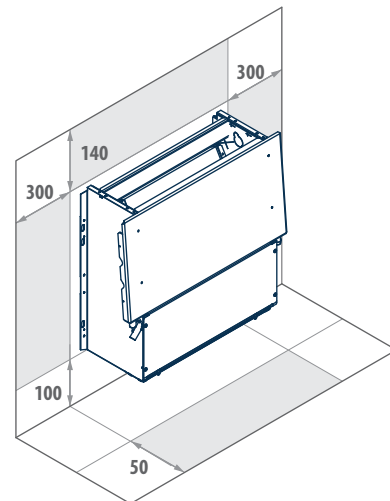
Dimensional drawings

ESTRO i FC



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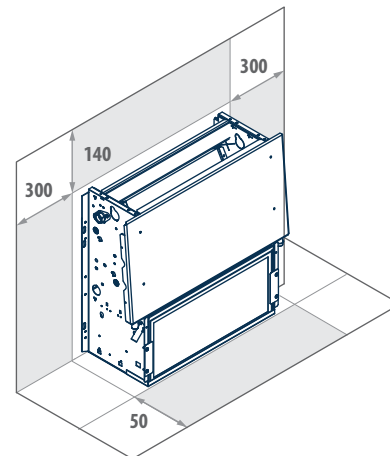
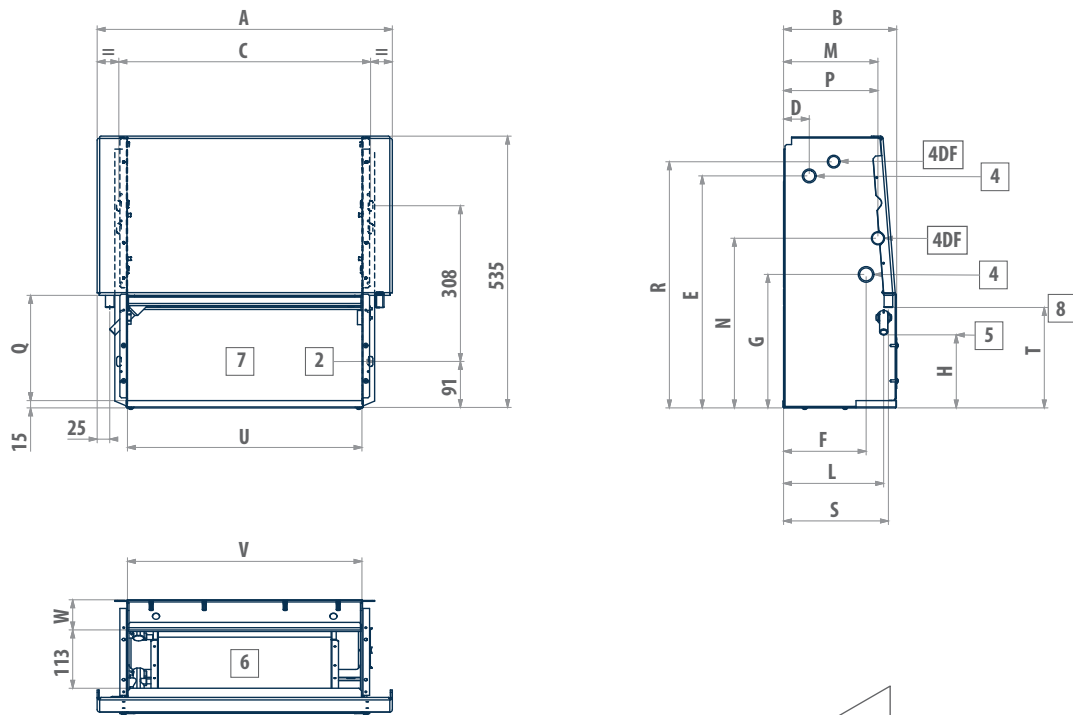
2	Slots for installation on the wall
4	Standard heat exchanger water connections
4DF	DF 1-row DF additional heat exchanger water connections
5	Drain outlet for vertical installation
6	Air outlet
7	Air intake
8	Drain outlet for horizontal installation



ESTRO i FC	A	B	C	D	E	F	G	H	L	M	N	P	Q	R	S	T	U	V	Y	4	4DF	5
1-4M	584	224	498	51	458	163	263	149	198	187	335	99	189	486	208	198	436	464	61	1/2"	1/2"	16
5-6M	794	224	708	51	458	163	263	149	198	187	335	99	189	486	208	198	646	674	61	1/2"	1/2"	16
7-9M	1004	224	918	51	458	163	263	149	198	187	335	99	189	486	208	198	856	884	61	1/2"	1/2"	16
9S	1004	249	918	48	497	185	259	155	220	195	348	120	215	478	234	208	856	884	67	3/4"	1/2"	16
11-11M	1214	249	1128	48	497	185	259	155	220	195	348	120	215	478	234	208	1066	1094	67	3/4"	1/2"	16

Dimensional drawings

ESTRO i FF



LEGEND

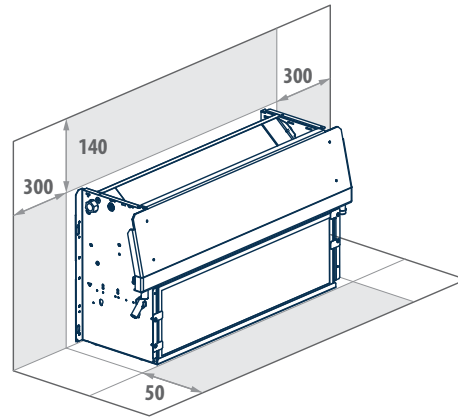
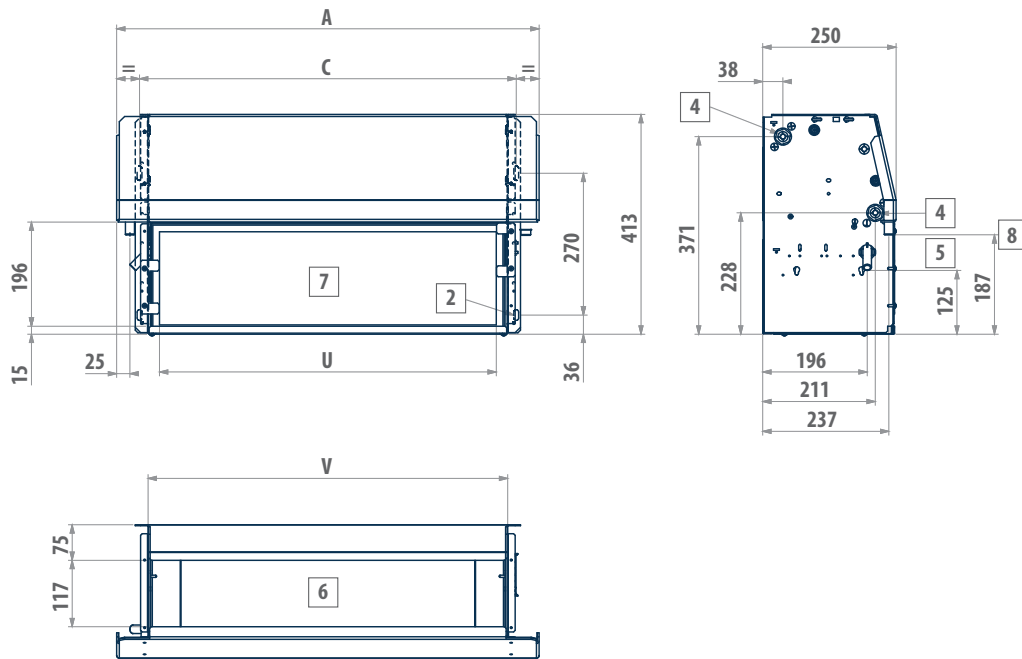
2	Slots for installation on the wall
4	Standard heat exchanger water connections
4DF	DF 1-row DF additional heat exchanger water connections
5	Drain outlet for vertical installation
6	Air outlet
7	Air intake
8	Drain outlet for horizontal installation

ESTRO i FF	A	B	C	D	E	F	G	H	L	M	N	P	Q	R	S	T	U	V	Y	4	4DF	5
1-4M	584	224	498	51	458	163	263	149	198	187	335	99	189	486	208	198	436	464	61	1/2"	1/2"	16
5-6M	794	224	708	51	458	163	263	149	198	187	335	99	189	486	208	198	646	674	61	1/2"	1/2"	16
7-9M	1004	224	918	51	458	163	263	149	198	187	335	99	189	486	208	198	856	884	61	1/2"	1/2"	16
95	1004	249	918	48	497	185	259	155	220	195	348	120	215	478	234	208	856	884	67	3/4"	1/2"	16
11-11M	1214	249	1128	48	497	185	259	155	220	195	348	120	215	478	234	208	1066	1094	67	3/4"	1/2"	16



Dimensional drawings

ESTRO i FBC



LEGEND

2	Slots for installation on the wall
4	Standard heat exchanger water connections
5	Drain outlet for vertical installation
6	Air outlet
7	Air intake
8	Drain outlet for horizontal installation

ESTRO i FBC	A	C	U	V	4	4DF	5
1 - 4M	584	498	423	464	1/2"	1/2"	16
5 - 6M	794	708	633	674	1/2"	1/2"	16
7 - 9M	1004	918	843	884	1/2"	1/2"	16