

FLS

Heat recovery units

VERY HIGH EFFICIENCY WITH FREE COOLING
AND INTEGRATED CONTROL

from 700 to 23.000 m³/h

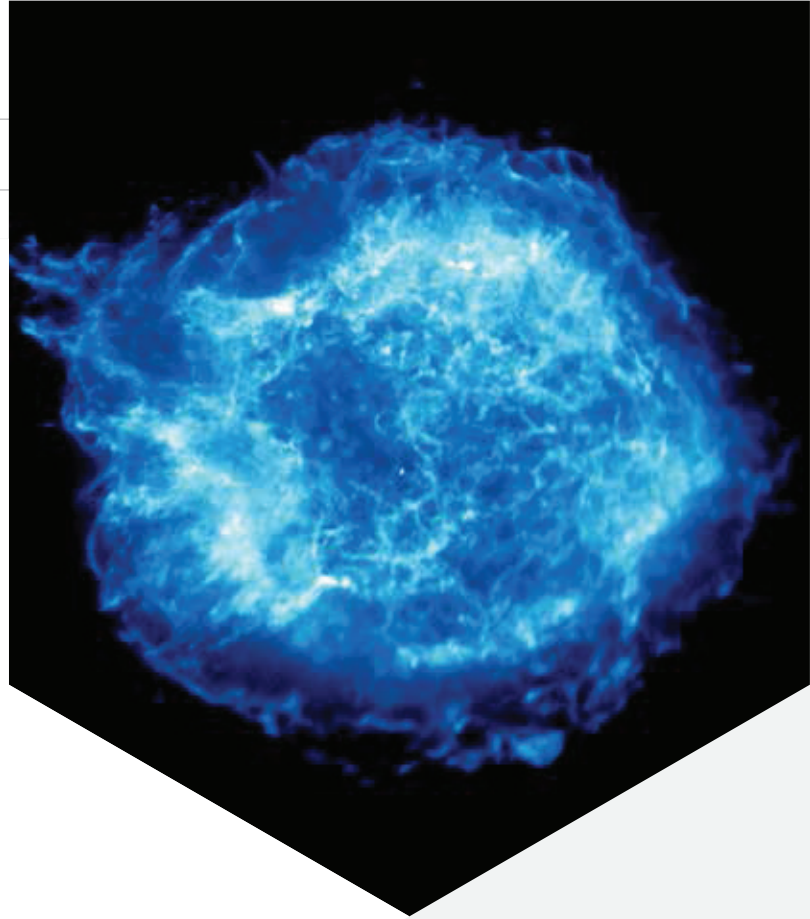
Supporting structure in extruded aluminium profiles and curtain panels (42mm. thick) of sandwich type with special sealing gaskets; exterior finish RAL 9002; thermal acoustic rock wool insulation class 0 and high density.

Filtering sections of F7 efficiency class with soft bags on the outside air circuit and M5 on exhaust air circuit, removable from the side.

Fan sections with single inlet backward-curved blades plug-fans directly coupled to EC Brushless electronic motors.

Very high efficiency (>90%) counterflow heat recovery, aluminium heat exchanger plates with supplementary sealing and built-in motorized by-pass device.

Complete control panel with remote display and microprocessor for temperature control at fixed air flow, based on the operation logics designed to maximize energy savings and environmental comfort, thanks to the modulation of air flow guaranteed by the inverter technology. The unit is designed for RS485 connection to supervision systems based on Modbus RTU protocol.



EU 1253-2014
COMPLIANT



PLUG&PLAY



EC FANS



EFFICIENCY



ERP 2015

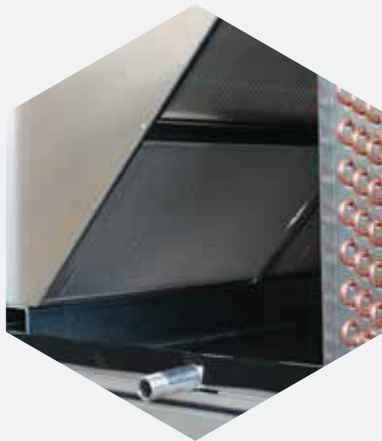


INSIDE

Accessories

Pre and/or post-heating electrical coil	SKE
External water cooling/heating section	CCS
3-way valve with actuator	V33
3 damper mixing chamber	MS3
Additional compact filter class M6 (on fresh air)	FC6
Soft bag filter class F7 (on return air)	FT7
Soft bag filter class F8 (on fresh air)	FT8*
Filters differential pressure gauge	PSTD
Differential pressure transducer	DPS
CO2 air quality sensor	AQS
Room hygrostat	HAS
Ductable hygrostat	HCS
External damper	SKR
On/off actuator with spring return for external damper	SSE
External hood with network	CFA
Flexible connection	GAT
Roof for outdoor installation	TPR

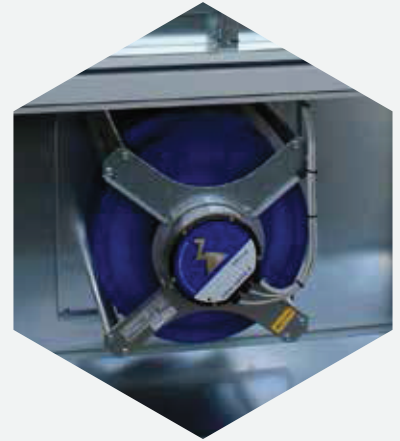
(*) to be combined with FC6



HIGH EFFICIENCY HEAT EXCHANGER
WITH INTEGRATED BYPASS



LC2 ELECTRONIC CONTROL



EC BRUSHLESS HIGH EFFICIENCY
FAN MOTOR



Models

FLS		14	20	26	50	92	144	205
Airflow	m ³ /h	1200	2100	2600	4800	7700	11400	13200
Rated static prevalence	Pa	250	250	250	250	250	250	250
Maximum static prevalence	Pa	531	586	653	939	1209	1048	1308
1 m sound pressure level at the outside of the machine	dB(A)	43	48	43	46	51	49	52
Total max current absorption	A	4,35	11,7	11,8	7,60	16,0	20,5	31,9
Power supply	V-Ph-Hz	230-1-50			400-3+N-50			
Efficiency (1)	%	79,9	79,4	79,3	79,3	79,3	79,3	79,3
Recovered cooling capacity (1)	kW	1,95	3,40	4,20	7,76	12,4	18,4	21,3
Supply temperature (1)	°C	27,2	27,2	27,2	27,2	27,2	27,2	27,2
Efficiency (2)	%	90,5	90,0	90,0	90,0	90,0	90,0	90,0
Recovered heating capacity (2)	kW	11,7	20,3	25,1	46,4	74,4	110	128
Supply temperature (2)	°C	18,9	28,0	28,0	28,0	28,0	28,0	28,0
CONFORMITY TO EU 1253/2014								
Recovery efficiency (5)	%	80,4	79,9	79,8	79,8	79,8	79,8	80,6
Filter correction factor	W/m ³ /s	0	0	0	0	0	0	0
SFP int limit	W/m ³ /s	1552	1500	1476	1384	1284	1284	1308
Total internal air pressure drop (5)	Pa	510	670	680	520	580	630	680
Overall fan static efficiency (6)	%	54,6	52,6	56,8	62,1	59,9	62,6	57,7
SFP int	W/m ³ /s	934	1274	1197	837	968	1006	1179
FANS								
Max current consumption	A	2 x 2,17	2 x 5,83	2 x 5,91	2 x 3,80	2 x 7,98	4 x 5,13	4 x 7,98
Max. total power absorbed	kW	2 x 0,50	2 x 1,35	2 x 1,35	2 x 2,50	2 x 5,20	4 x 3,30	4 x 5,20
2009/125/EC ErP Compliance	-	2015	2015	2015	2015	2015	2015	2015
Motor protection rating		IP54	IP54	IP54	IP54	IP54	IP54	IP54
Power supply	V-Ph-Hz	230-1-50			400-3-50			
ELECTRIC SKE HEATING ACCESSORY (1)								
Stages		1	1	1	1	1	1	1
Heating capacity	kW	6,00	10,0	14,0	28,0	48,0	64,0	80,0
Current consumption	A	8,66	14,4	20,2	40,4	69,3	92,4	115
ΔT air side	°C	14,7	14,0	15,8	17,2	18,3	16,5	18
Pressure drop	Pa	25	25	25	25	25	25	20
Power supply	V-Ph-Hz	400-3-50						
ELECTRIC SKE HEATING ACCESSORY (2)								
Stages		1	1	1	1	1	1	1
Heating capacity	kW	3,00	5,00	7,00	14,0	24,0	32,0	40,0
Current consumption	A	4,33	7,22	10,1	20,2	34,6	46,2	57,7
ΔT air side	°C	7,4	7,0	7,9	8,6	9,2	8,3	8,9
Pressure drop	Pa	17	17	17	17	17	17	15
Power supply	V-Ph-Hz	400-3-50						
CCS ACCESSORY								
Rows		4	4	4	4	4	4	4
Total cooling capacity (3)	kW	10,7	17,3	21,8	38,3	64,1	97	121
Sensible cooling capacity (3)	kW	5,44	8,84	11,1	19,5	32,7	49,6	61,7
Supply temperature (3)	°C	14,4	15,3	15,1	15,7	15,2	14,9	14
Water flow (3) (4)	m ³ /h	1,83	2,98	3,75	6,59	11	16,7	20,8
Water pressure drop (3) (4)	kPa	30	30	30	23	32	22	27
Heating capacity (4)	kW	8,40	14,7	18,2	33,6	53,9	79,8	92,5
Supply temperature (4)	°C	39,5	39,5	39,5	39,5	39,5	39,5	39,5

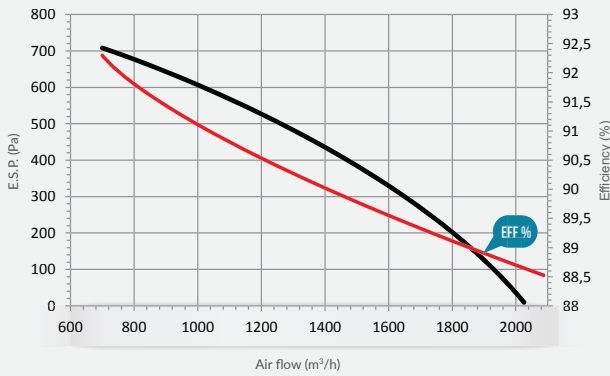
(1) Outdoor air 32°C 50% RH, ambient air 26°C 50% RH
 (2) Outdoor air -10°C 90% RH, ambient air 22°C 50% RH
 (3) Water in 7° out 12°C

(4) Water in 45° out 40°C
 (5) At dry conditions : outside air temperature 5°C, room air temperature 25°C
 (6) Including motor & speed controller efficiency

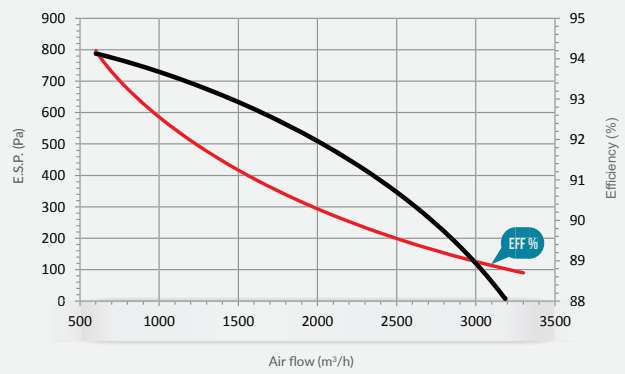
Performance

PERFORMANCE

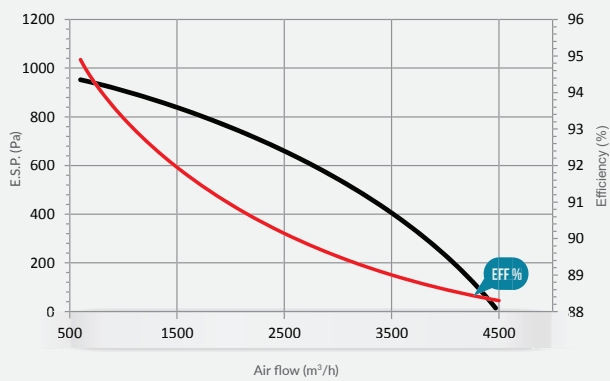
FLS 14



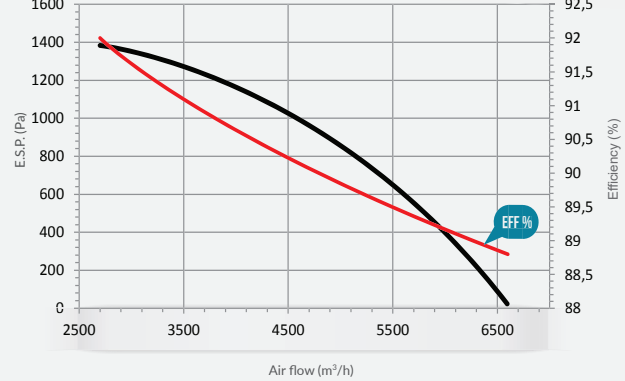
FLS 20



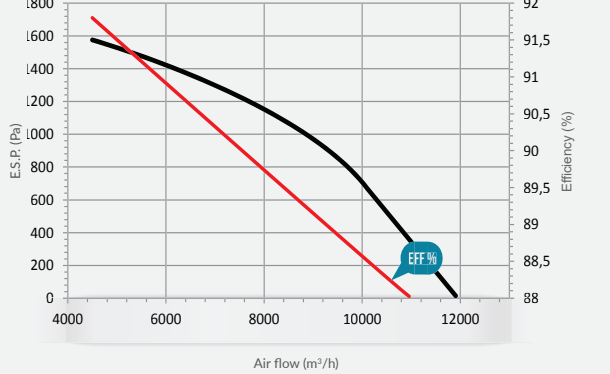
FLS 26



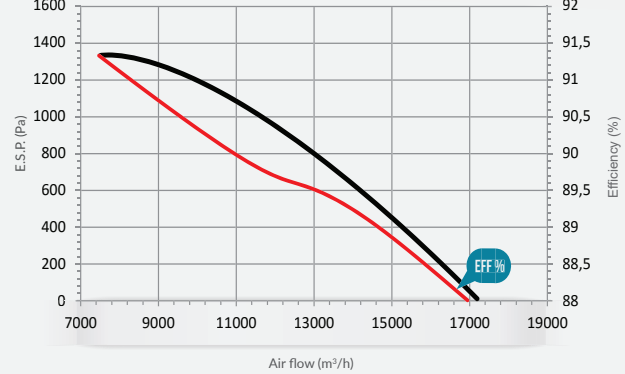
FLS 50



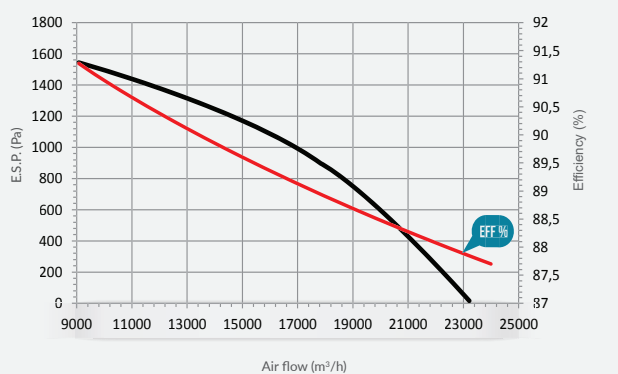
FLS 92



FLS 144



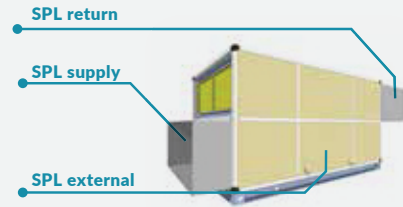
FLS 205



Noise levels

The table lists the sound power values (SWL) in octave bands and totals; it also indicates the values of sound pressure level (SPL) at 1 m, 5 m and 10 m at supply, return and at the outside of the unit.

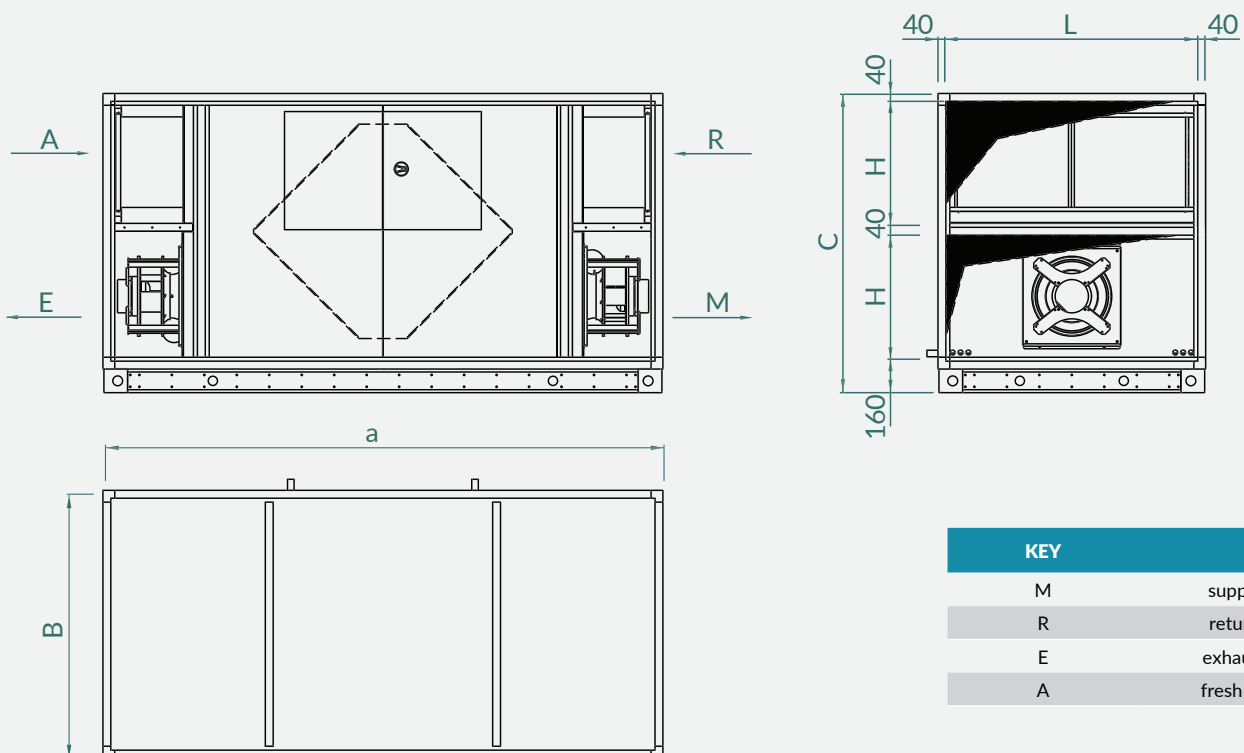
All values refer to the operation of the ducted unit at FULL speed and at the nominal flow rate.



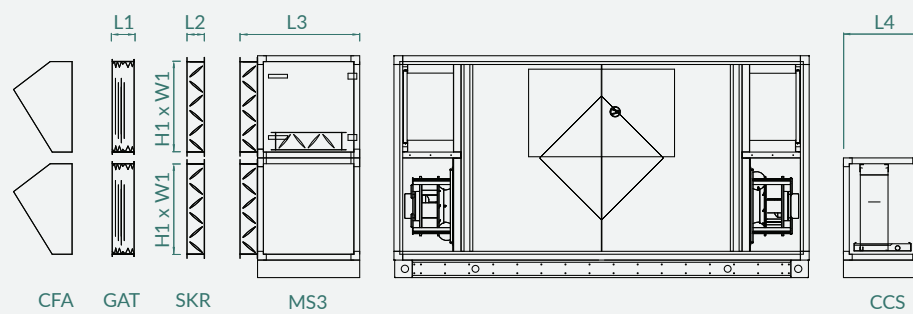
FLS	SWL [dB] OCTAVE BAND [HZ]								SWL		SPL SUPPLY			SPL RETURN			SPL OUTSIDE		
	63	125	250	500	1000	2000	4000	8000	dB	dB(A)	1 m	5 m	10 m	1 m	5 m	10 m	1 m	5 m	10 m
14	43,0	50,0	70,0	66,0	66,0	69,0	66,0	59,0	75	74	61	49	43	55	45	39	43	33	27
20	55,0	60,0	74,0	74,0	71,0	73,0	70,0	64,0	80	78	67	53	47	59	49	43	48	38	32
26	50,0	56,0	71,0	70,0	67,0	69,0	66,0	60,0	76	74	63	49	43	54	45	39	43	34	28
50	43,0	51,0	73,0	73,0	72,0	73,0	71,0	67,0	80	79	68	54	48	56	47	42	46	37	32
92	50,0	59,0	79,0	77,0	78,0	78,0	75,0	75,0	85	84	73	59	53	61	52	47	51	42	37
144	48,0	56,0	80,0	76,0	77,0	78,0	75,0	70,0	85	83	72	58	52	60	52	47	49	41	36
205	53,0	62,0	82,0	80,0	81,0	81,0	78,0	79,0	88	87	76	62	56	63	55	51	52	44	40

Dimensions and weights

FLS		14	20	26	50	92	144	205
a	mm	2185	2185	2515	2845	3175	3505	3835
B	mm	700	865	1030	1360	1690	2020	2020
C	mm	1190	1190	1190	1520	1850	2180	2510
L	mm	620	785	950	1280	1610	1940	1940
H	mm	475	475	475	640	805	970	1135
Weight	kg	310	420	520	730	930	1150	1470



FLS		14	20	26	50	92	144	205
L1	mm	150	150	150	150	150	150	150
L2	mm	100	100	100	100	100	100	100
L3	mm	635	635	635	800	965	965	965
L4	mm	535	535	535	535	535	535	535
W1	mm	470	635	800	1130	1460	1790	1790
H1	mm	395	395	395	560	725	890	1055



Controls

		LC2
Manual selection of 3 speed		•
Automatic/manual selection of speed		•
EC fans management		•
Manual ON-OFF		•
Cool/change over valve management	CCS+V33	•
Heat valve management	CCS+V33	•
Cold/change over pump management	CCS	•
Heat pump management	CCS	•
Defrost recovery management		•
Water coil anti-freeze management		•
ON-OFF electric heater management	SKE	•
Filter pressure switch management	PSTD	•
Management of ventilation with CO2 probe	AQS	•
Management of ventilation with one or two pressure sensors	DPS	•
Free-cooling damper management		•
Management of mixing chamber	MS3	•
Management of mixing chamber with CO2 probe	AQS+MS3	•
Management of motorized dampers	SKR+SSE	•
Management of Boost by keyboard		•
Alarms management		•
Post ventilation		•
Weekly programming		•
Remote ON-OFF		•
Digital input for PIR occupancy		•
Digital input for fire alarm		•
Mode change (hot/cold) from digital input		•
Minimum thermal hot water temperature		•
Remote display with internal sensor		•
BMS Modbus RS485 protocol		•
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