



SkyStar Jumbo ECM

Fan Coil Unit Cassette

TECHNICAL LEAFLET

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Fan Coil Unit Cassette with Electronic Motor and Inverter Board



Innovating and beautiful design, perfect to meet all air-conditioning requirements of wide environments, **4 different versions**, high control flexibility, easy maintenance: the new cassette fan coil unit **SkyStar Jumbo ECM** is the result of an extended technical and design development aimed at achieving the highest level in terms of performance, silent operation and control possibility.

The range **SkyStar Jumbo ECM** uses an innovative brushless synchronous permanent magnet electric motor controlled by an inverter board that is directly installed on the unit.

The air flow can be varied **continuously** with a 1-10 V signal from **Sabiana** controls or by independent controllers (programmable controllers with a 1-10 V output). The extreme efficiency, also at a low speed, makes possible a great reduction in electric consumption (more than **75% less** in comparison to a traditional motor) with absorption values, under normal operating conditions, that are **no greater than 20 Watt** in the entire range.

The brushless motor is characterised by a constant synchronous speed, independently of the applied load, that depends only on the motor power supply frequency, which is modulated by the inverter.

It consumes less because:

- The motor always works at its point of maximum efficiency.
- In the brushless motor, the rotor's permanent magnets generate the magnetising power autonomously.
- The motor always operates at the synchronous speed, as a result there are no induced currents that reduce efficiency.

The main advantages are:

- Large reduction in energy consumption, thanks to an optimal response to the thermal load of the environment during every moment of the day.
- Operating silence at all rotation speeds.
- Ability to operate at any rotation speed.

All the units **SkyStar Jumbo ECM** can be supplied in **MB** version. This version includes a wide range of controls, including the infra-red remote control, which allow managing one single unit or several units by using the Bus communication protocol.

In the MB version it is possible to control at the same time the (motorized) outlet louvers with the infra-red remote-control or with the T-MB2 wall control.



Casing: is made of galvanized steel with internal thermal insulation with polyolefin (PO) foam (B-s2-d0 EN 13501-1) and external anti-condensate lining.

Control panel:

SK-ECM / SK-ECM-E version:

it consists of the pump control circuit board and the inverter circuit board.

SK-ECM-MB / SK-ECM-MB-E version:

it consists of the MB electronic board (that integrates pump control) and the inverter board.

The diffusion louvers are adjustable with the infra-red remote control or with T-MB2 wall control.

Fan assembly: secured on anti-vibration mountings, is particularly silent.

The radial fan has been designed to optimise performance, using wing profile blades with a shape that reduces turbulence, increasing efficiency and reducing noise.

The fans are connected to a three phase permanent magnet brushless electronic motor that is controlled with reconstructed current according to a BLAC sinusoidal wave.

The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply.

The electric power supply required for the machine is therefore single-phase with voltage of 230 - 240 V and frequency of 50 - 60 Hz.

Coil: made of copper tubes with bonded aluminium fins for maximum transfer contact. 3 row coil for 2 pipe models and 2,5 + 1/2 row coil for 4 pipe models (the heating row is on the inside part of the coil).

The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

Condensate collection tray: high density polystyrene foam condensate tray, shaped in order to optimize the air diffusion. Fire retardant rating B1 to DIN 4102.

Filter: easy access to the filter that is available in both versions, the G0 filter (synthetic regenerable washable) and in the **ePM1 55% - F7 filter class** (to change at the end of its life-cycle).

Condensate pump: float switch centrifugal pump with 650 mm of maximum head, integral to the unit and wired to the control panel on the outside of the casing.

Valve set: two or three way valves for ON/OFF operation, with pipe mounting kit and ball valves.

Air intake and distribution grids

Intake grids, frame and adjustable air distribution louvers on each side, made of ABS.

HTA version

in white ABS, RAL 9003

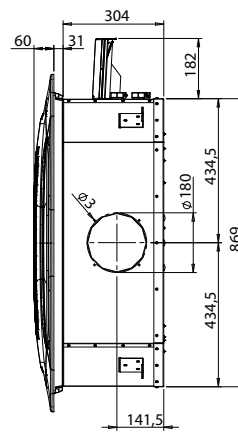
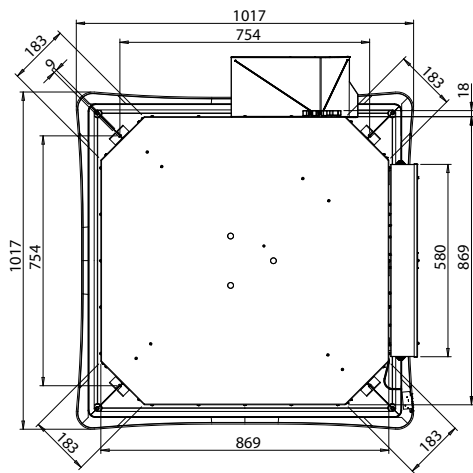
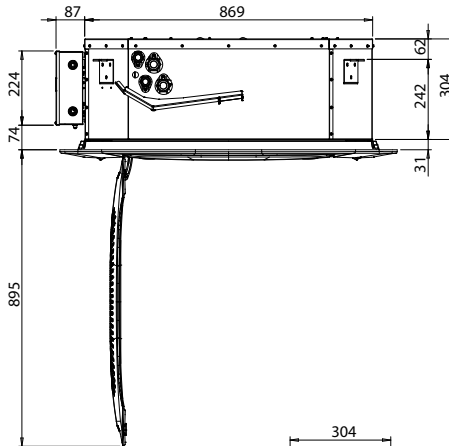
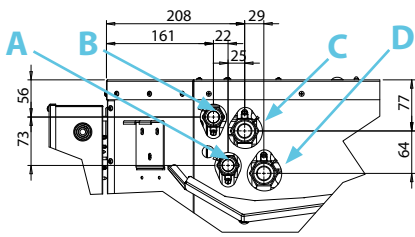


HTB version

in ABS one single color to choose



SK-ECM 72-76 / SK-ECM 82-86



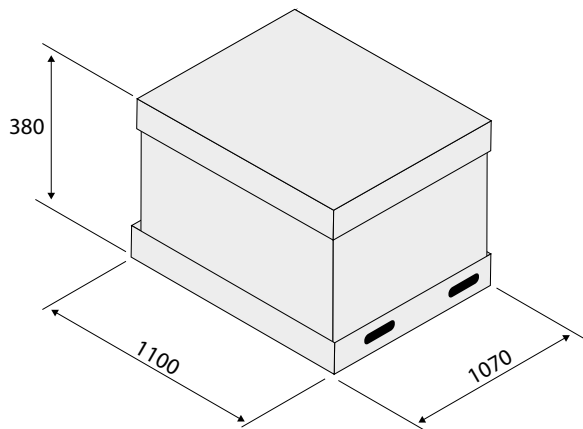
2 pipe unit

- A** Flow, heating/cooling 1"
- B** Return, heating/cooling 1"

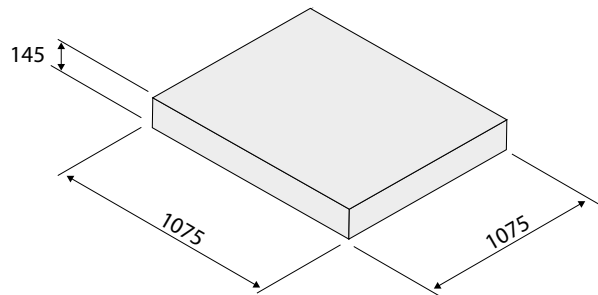
2 pipe unit

- A** Flow, cooling 1"
- B** Return, cooling 1"
- C** Flow, heating 3/4"
- D** Return, heating 3/4"

Unit



Diffuser



Model	SK-ECM 72	SK-ECM 76	SK-ECM 82	SK-ECM 86
Weight with packaging kg			52	
Weight without packaging kg			42	

Model	SK-ECM 72	SK-ECM 76	SK-ECM 82	SK-ECM 86
Weight with packaging kg			9,4	
Weight without packaging kg			7,5	

2 pipe unit. The following standard rating conditions are used:

COOLING

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

HEATING

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

Model	SK-ECM 72					SK-ECM 82					
	1	3	5	7,5	10	1	3	5	7,5	10	
	MIN		MED		MAX	MIN		MED		MAX	
Speed											
Air flow	mc/h	790	1040	1290	1600	1905	1025	1340	1650	2060	2480
Cooling total emission (E)	kW	6,36	7,95	9,43	11,10	12,60	7,86	9,72	11,38	13,35	15,13
Cooling sensible emission (E)	kW	4,45	5,65	6,77	8,09	9,31	5,58	7,00	8,30	9,88	11,41
Heating (E)	kW	6,18	7,93	9,59	11,55	13,39	8,72	9,91	11,86	14,29	16,40
Dp Cooling (E)	kPa	6,6	9,8	13,4	18,0	22,7	9,6	14,1	18,8	25,2	31,8
Dp Heating (E)	kPa	5,4	8,4	11,8	16,5	21,5	8,2	12,5	17,3	24,2	31,0
Motor power input (E)	W	13	22	35	59	93	21	38	64	113	183
Sound power Lw (E)	dB(A)	38	44	49	54	58	44	50	55	60	64
Sound pressure (*)	dB(A)	29	35	40	45	49	35	41	46	51	55
Water content	l	4,6					4,6				
Dimensions	mm	816x816x303									

4 pipe unit. The following standard rating conditions are used:

COOLING

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

HEATING

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

Model	SK-ECM 76					SK-ECM 86					
	1	3	5	7,5	10	1	3	5	7,5	10	
	MIN		MED		MAX	MIN		MED		MAX	
Speed											
Air flow	mc/h	790	1040	1290	1600	1905	1025	1340	1650	2060	2440
Cooling total emission (E)	kW	6,07	7,53	8,86	10,35	11,61	7,45	9,10	10,59	12,30	13,59
Cooling sensible emission (E)	kW	4,33	5,46	6,53	7,74	8,87	5,40	6,73	7,96	9,44	10,68
Heating (E)	kW	6,01	7,27	8,40	9,63	10,55	7,19	8,62	9,80	11,05	12,17
Dp Cooling (E)	kPa	7,0	10,3	13,8	18,3	22,6	10,1	14,5	19,1	25,2	30,4
Dp Heating (E)	kPa	7,2	10,2	13,2	16,9	19,9	10,0	13,8	17,4	21,6	25,7
Motor power input (E)	W	13	22	35	59	93	21	38	64	113	183
Sound power Lw (E)	dB(A)	38	44	49	54	58	47	50	55	60	64
Sound pressure (*)	dB(A)	29	35	40	45	49	38	41	46	51	55
Cooling water content	l	3,6					3,6				
Heating water content	l	1,2					1,2				
Dimensions	mm	816x816x303									

(E) = EUROVENT certified performance

(*) = The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 m³ room and a reverberation time of 0,5 sec.

SK-ECM-MB

All the **SkyStar Jumbo ECM** units can be supplied in **MB** version.

This version includes a wide range of controls, including the infra-red remote control, which allows managing one single unit or several units by using the Bus communication protocol.



SK-ECM-E
SK-ECM-MB-E

The 2 pipe model Cassette units are available with electric heater. The electric heater is controlled in place of the hot water valve and not as integration to it.

The electric heaters are hermetically sealed and supplied inside the coil pipes and therefore can be only factory mounted. The electric heaters of the unit can be for 230Vac 1Ph 50-60Hz or 400Vac 3Ph 50-60Hz supply.

ECM model	Power installed
All models	3000 W

MCT 900

The MCT version has been designed for all environments where false ceilings are not featured or cannot be constructed. The casing fits perfectly to the air intake and outlet diffuser, maintaining the appealing design that defines the SkyStar series. The water fittings can be turned to point upwards.

The MCT series includes 2 models, with an installation height of up to 5 m, thanks to the highly flexible adjustment of the air distribution louvers.

All the technical specifications described on the previous pages remain the same, while keeping in mind that:

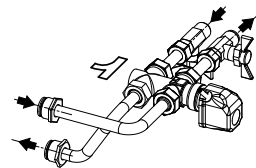
- the MCT series features one coil only (2 pipe systems)
- there is no possibility of fresh air intake
- there is no possibility of additional electric heater

The MCT version features a special casing, in COOL GREY 1C colour, delivered in separate packaging; this must only be fitted after having installed the SkyStar unit and completed the water and electrical connections.



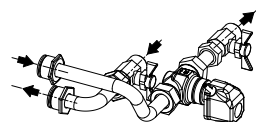
**ON-OFF 3-way-valves
with thermoelectric actuator and ball valve**

Water flow regulation kit with ON-OFF 3-way-valves with thermoelectric actuator.
The kit includes the connection pipes and the ball valves.



**ON-OFF 2-way-valves
with thermoelectric actuator and ball valve**

Water flow regulation kit with ON-OFF 2-way-valves with thermoelectric actuator.
The kit includes the connection pipes and the ball valves.



**ON-OFF 3-way-valves
with thermoelectric actuator and simplified kit**

Water flow regulation kit with ON-OFF 3-way-valves with thermoelectric actuator.
The kit includes the connection pipes.

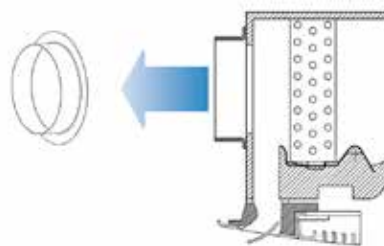


**ON-OFF 2-way-valves
with thermoelectric actuator and simplified kit**

Water flow regulation kit with ON-OFF 2-way-valves with thermoelectric actuator.
The kit includes the connection pipes.

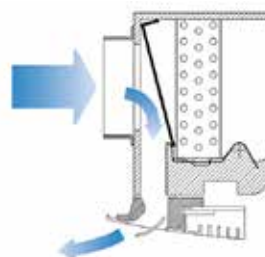


CDA Air distribution connection



PRT Fresh air kit

This is used to introduce fresh air into the environment directly through the diffuser.



**PM-SK Fitted condensate pump
with higher pressure head**

Electronic wall controls

SK-ECM version	
WM-AU	Automatic 3 speed progressive switch with electronic thermostat and summer/winter switch. (to be used with UPM-AU or with UP AU only)
T-MB2	Wall control with LCD color display and WiFi (to be used with UPM-AU or with UP-AU only)
WM-503-AC-EC	Automatic speed control with electronic thermostat to be mounted in the 503 box (to be used with UP-503-AC-EC only)
WM-S-ECM	Control with automatic continuous speed control, with electronic thermostat, summer/winter switch and LCD display
UPM-AU	UP-AU power unit for WM-AU e T-MB2 remote controls, fitted on the unit
UP-AU	UP-AU power unit for WM-AU e T-MB2 remote controls, not fitted on the unit
UP-503-AC-EC	UP-503-AC-EC power unit for WM-503-AC-EC remote control, not fitted on the unit

Electronic controls

SK-ECM-MB version	
T-MB2	Wall control with LCD color display and WiFi (to be used with SK-ECM-MB version only)
RT03	RT03 infra-red remote control with separate packaging (to be used with SK-ECM-MB version only)
PSM-DI	PSM-DI multifunction control panel (to be used with SK-ECM-MB version only)
T-DI	T-DI touch screen multifunction control panel (to be used with SK-ECM-MB version only)
SabWeb	Web gateway for Sabiana Cloud (to be used with SK-ECM-MB version only)
WM-NTC	NTC probe with infra-red receiver (to be used with SK-ECM-MB version only)

Hardware/software supervisory system for a network of more Fan Coil units	
Sabianet	Sabianet (to be used with SK-ECM-MB version only)
Router-S	Router for Sabianet (default) or for BMS systems, not provided by Sabiana
SIOS	8 relay output board for Sabianet

NOTE: All the Controls and the principal Accessories are described in detail at the dedicated pages.



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