

AIR COOLED CONDENSING UNITS WITH SCROLL COMPRESSORS AND CENTRIFUGAL FANS

REFRIGERANT R407C



MCE 201 C K



Series MCE ... C K

Cooling capacity from 10 to 40 kW - 1 circuit

The air cooled condensing units with centrifugal fans of **MCE C K series**, to be matched to remote evaporating units, are designed for indoor installation and are particularly suitable for small and medium sized air conditioning systems, in residential and commercial applications. Therefore during their design, it has been given a particular care for dimensions and sound level, so to have compact and silent units at the same time.

They are all available with 1 refrigerant circuit.

Thanks to their compact dimensions and to the several options available, these units are particularly easy to install in small spaces.

They are completely assembled and tested in the factory and supplied with refrigerant and oil charge.

The following versions are available:

Vertical air flow

MCE...C K standard version

MCE...C U K ultrasilenced version (from size 201)

Vertical air flow (from size 201)

MCE...C.O K standard version

MCE...C.O U K ultrasilenced version

Operation limits: (standard units): external air temperature from 15 to 45°C.

Main components:

Frame made of galvanized steel plate, suitably treated to resist to external agents and then painted in RAL 7035 colour. The compressor section is completely closed and suitably isolated from the air flow; inside of it, the compressor and the main components are placed so to facilitate also the service operations. The external panels, easy to be dismantled, allow the full access in case of service.

High-efficiency **scroll compressor** (EER 3.37 under ARI conditions), with low sound level, internal heat protection, installed on rubber vibration dampers, supplied with crankcase heater when necessary.

Heat-exchange external coil with copper tube and specially corrugated aluminium fins for a better efficiency. It is suitably sized with a wide exchange surface, so to allow the unit operation also at very high external air temperatures. On request, in case of installation in aggressive environments, several coil protection treatments are available.

Centrifugal fans of double suction type with electrical motor directly joined and balanced blades, suitably isolated with rubber vibration dampers and sealing on discharge. They are provided with short circuit and overload protections and external safety protection grid. The motor is of 4-pole triphase type, with belt transmission and variable pulleys, placed on slide so to speed up the pulley tension. As a standard, the unit has a vertical airflow or, on request, you can ask for an horizontal airflow, coil side (from size 201).

Cooling circuit composed of dehydrating filter, sight glass, safety device, high and low pressure switches, shut-off valve on discharge side, liquid receiver.

Electric board in compliance with CE norms, contained in a suitable partition protected by the internal safety panel, provided with a main switch and an external panel to be opened. It is complete with remote switches, overload protections, transformer for auxiliaries and terminal board.

Unit management microprocessor installed on the internal safety panel of the electrical board, complete with compressors hour counter.

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Accessories

- 1M-2M** **Higher available pressure for fan:** bigger electrical motor, so to have a higher available pressure to fans to be ducted (from size 201).
- AE** **Electrical power supply different from standard:** mainly, 230V three-phase, 460V three-phase. Frequency 50/60 Hz.
- BF** **Low temperature operation (-20°C) with inverter fan speed regulation:** electronic device controlling the condensing pressure through an inverter, modulating the frequency of the fans electrical supply (from size 201).
- BFa-BFb** **Low temperature operation (-20°C) with inverter fan speed regulation** (with option 1M and 2M): electronic device controlling the condensing pressure through an inverter, modulating the frequency of the fans electrical supply (from size 201).
- BT** **Low temperature operation (-20°C):** electronic device for the continuous modulating voltage control of the condensing pressure through the variation of the fan rotation speed.
- BTa-BTb** **Low temperature operation (-20°C) (with option 1M-2M):** electronic device for the continuous modulating voltage control of the condensing pressure through the variation of the fan rotation speed (from size 201).
- CF** **Soundproofed compressors cabinet:** Insulation of compressors by a cabinet coated with soundproofing material and vibration dampers under compressors (from size 201 and included on ultrasilenced version).
- CI** **Soundproofing jacket on compressors:** made of soundproofing material, wrapped all around compressors so to further reduce the overall sound level of the unit (from size 201 and already included on ultrasilenced version).
- CS** **Compressors inrush counter:** Electromechanical device positioned inside the electrical board, recording the total inrush starts of compressors (from size 201).

- GP** **Condensing coil protection grid:** metal protection grid against accidental impacts.
- HG** **Hot gas by-pass:** mechanical device for modulating cooling capacity.
- IH** **RS 485 serial interface:** electronic card to be connected to microprocessor, to allow communication between the units and a Carel supervision system. It is possible to fully control the unit from remote. For connection to other supervision systems, the protocol of the controlled parameters is available on request.
- IM** **Seawood packing:** fumigated seawood case and protection bag with hygroscopic salts, suitable for long sea transports.
- MF** **Phase monitor:** electronic device controlling the correct sequence and/or the eventual lack of one of the 3 phases, switching off the unit if necessary.
- MT** **High and low pressure gauges** for measuring circuit pressure.
- PA** **Rubber-type vibration dampers:** bell-shaped vibration dampers supports for insulating the unit (supplied in kit), made of base and bell in galvanized steel and natural rubber mixture.
- PQ** **Remote microprocessor:** remote terminal, allowing to display the temperature and humidity values detected by probes, the alarm digital inputs, the outputs and the remote ON/OFF of the unit, to change and program of the parameters, the sound signal and the display of the present alarms.
- RL** **Compressors overload relays:** electromechanical protection devices against compressor's overload.
- RM** **Condensing coil with pre-painted fins:** superficial treatment of the condensing coils with epoxy coating.
- RR** **Copper/copper condensing coils:** special execution of the condensing coils with copper pipe and fins.
- RV** **Personalized frame painting in RAL colour**
- VS** **Solenoid valve:** electromagnetic solenoid valve on each cooling circuit to prevent refrigerant migrations and consequent flooding of compressors.

Technical data

MCE		131 CK	151 CK	161 CK	181 CK
Cooling capacity					
Cooling capacity	kW	10,3	12,2	15,8	16,6
Nominal input power	kW	3,6	4,7	5,6	6,2
EER		2,86	2,59	2,82	2,62
Centrifugal fans					
Quantity	n.			2	
Air flow	m ³ /h	7'500			6'700
Air flow	l/s	2'083			1'861
Rotation speed	rpm			1'250	
Motor input power	kW	1,0			2,2
Input current	A			13,6	
Available pressure	Pa	40			165
Scroll compressors					
Quantity	n.			1	
Circuits	n.			1	
Standard capacity steps	%			0 - 100	
Nominal input current	A	5,4	6,3	9,0	10,3
Maximum input current	A	12,0	14,0	16,0	18,0
Inrush current	A	56,0	68,0	77,0	81,0
Electrical data					
Total input power	kW	4,1	5,2	6,7	7,3
Sound pressure level					
Sound pressure at 1 m	dB(A)			60	
Dimensions					
Length	mm			1'100	
Width	mm			750	
Height	mm			1'100	
Transport weight	kg	217	221	238	240
Electrical power supply					
Electrical power supply	V / ph / Hz	400 / 3 / 50 + N + T			

REMARKS:
 - Operating conditions: External air temperature 35°C; evaporating temperature 2°C
 - Sound pressure level at 1 m in open field (ISO 3744).

AIR COOLED CONDENSING UNITS WITH SCROLL COMPRESSORS AND CENTRIFUGAL FANS

REFRIGERANT R407C

Technical data - Standard version

MCE		201 CK	241 CK	281 CK	361 CK	421 CK
Cooling capacity						
Cooling capacity	kW	18,9	23,3	26,9	32,7	40,4
Nominal input power	kW	7,0	8,2	9,4	11,6	14,1
EER		2,70	2,84	2,86	2,82	2,86
Centrifugal fans						
Quantity	n.	1			2 (*)	
Air flow	m ³ /h	8'800	8'650	9'000	11'200	13'000
Air flow	l/s	2'444	2'403	2'500	3'111	3'611
STD Version						
Available pressure	Pa				80	
Rotation speed	rpm	896	915	975	746	858
Motor input power	kW	2,2		3,0	2,2	3,0
Nominal input current	A	5,3		6,7	5,3	6,7
Sound pressure level	dB(A)	66		67	64	65
1M Version						
Available pressure	Pa				120	
Rotation speed	rpm	935	955	1'014	811	914
Motor input power	kW	3,0			2,2	3,0
Nominal input current	A	6,7			5,3	6,7
Sound pressure level	dB(A)	67		68	65	66
2M Version						
Available pressure	Pa				200	
Rotation speed	rpm	1'014	1'036	1'091	938	1'025
Motor input power	kW			3,0		4,0
Nominal input current	A			6,7		9,4
Sound pressure level	dB(A)	68		69	66	67
Scroll compressors						
Quantity	n.				1	
Circuits	n.				1	
Standard capacity steps	%				0 – 100	
Nominal input current	A	12,9	15,1	16,0	18,7	22,7
Maximum input current	A	17,0	20,0	22,0	27,0	32,0
Inrush current	A	99,0	123,0	127,0	167,0	198,0
Electrical data						
Total input power	kW	9,2	10,4	12,4	13,8	17,1
Dimensions						
Length	mm	1'320			1'665	
Width	mm				750	
Height	mm	1'250			1'460	
Transport weight	kg	395	406	417	499	522
Electrical power supply						
Electrical power supply	V / ph / Hz				400 / 3 / 50 + N + T	

REMARKS:

- Operating conditions: External air temperature 35°C; evaporating temperature 2°C

- Sound pressure level at 1 m in open field (ISO 3744) with ducted air suction and discharge

- (*) 2 fans in tandem, driven by 1 motor.

- In case of a different available pressure, included between the standard pressure and the values indicated for 1M or 2M options, however not higher 2M, it is necessary to order the higher pressure option, clearly stating the pressure value effectively requested on site. In the factory we will adjust the motor's pulley accordingly.

AIR COOLED CONDENSING UNITS WITH SCROLL COMPRESSORS AND CENTRIFUGAL FANS

REFRIGERANT R407C

Technical data - Ultrasilenced version

MCE C.U		201 K	241 K	281 K	361 K	421 K
Cooling capacity						
Cooling capacity	kW	19,2	22,8	26,9	33,6	39,8
Nominal input power	kW	6,9	8,5	9,4	11,7	14,3
EER		2,78	2,68	2,86	2,87	2,78
Centrifugal fans						
Quantity	n.	1		2 (*)		2
Air flow	m ³ /h	6'300	7'200	6'950	9'600	13'900
Air flow	l/s	1'750	2'000	1'930	2'666	3'861
STD Version						
Available pressure	Pa	80		50	80	
Rotation speed	rpm	720	818	637	711	696
Motor input power	kW	1,5			3,0	
Nominal input current	A	3,7			7,4	
Sound pressure level	dB(A)	62	64	61	63	
1M Version						
Available pressure	Pa	120			752	
Rotation speed	rpm	776	866	728	785	752
Motor input power	kW	1,5	2,2	1,5		3,0
Nominal input current	A	3,7	5,3	3,7		7,4
Sound pressure level	dB(A)	62	64	61	64	
2M Version						
Available pressure	Pa	200			858	
Rotation speed	rpm	886	963	891	925	858
Motor input power	kW	1,5	2,2	1,5	2,2	4,4
Nominal input current	A	3,7	5,3	3,7	5,3	10,6
Sound pressure level	dB(A)	63	65	62	64	
Scroll compressors						
Quantity	n.	1			1	
Circuits	n.	1			1	
Standard capacity steps	%	0 - 100			0 - 100	
Nominal input current	A	12,7	15,4	16,1	18,9	23,0
Maximum input current	A	17,0	20,0	22,0	27,0	32,0
Inrush current	A	99,0	123,0	127,0	167,0	198,0
Electrical data						
Total input power	kW	8,4	10,0	10,9	13,2	17,3
Dimensions						
Length	mm	1'320		1'665		2'120
Width	mm	750			778	
Height	mm	1'250		1'460		1'570
Transport weight	kg	396	407	501	511	642
Electrical power supply						
Electrical power supply	V / ph / Hz	400 / 3 / 50 + N + T				

REMARKS:

- Operating conditions: External air temperature 35°C; evaporating temperature 2°C

- Sound pressure level at 1 m in open field (ISO 3744) with ducted air suction and discharge

- (*) 2 fans in tandem, driven by 1 motor.

- In case of a different available pressure, included between the standard pressure and the values indicated for 1M or 2M options, however not higher 2M, it is necessary to order the higher pressure option, clearly stating the pressure value effectively requested on site. In the factory we will adjust the motor's pulley accordingly.