

coolside evo dx system

COOLSIDE EVO DX SYSTEM: Direct expansion air conditioning system for high density racks and blade servers.
Cooling Capacity: **4,5 ÷ 41,7 kW**



MAIN FEATURES

- Direct expansion air conditioning system for high density racks and blade servers.
- 6 models, 2 versions available for a wide selection opportunity.
- 6 combinations (in-room unit-outdoor unit) available.
- EER up to 4,45.
- Rotary or Scroll BLDC Inverter compressors.
- R410A refrigerant charge.
- EC Plug-fans.
- "F" Version, frontal air delivery, "L" version, side air delivery.
- Evaporating unit suitable for indoor installation.
- Motocondensing unit MCAI, suitable for outdoor installation.
- Microchannel condensing coil.

MAIN BENEFITS

- High EER.
- Suitable for direct cooling system (close loops) or cooling system for rows of racks (hot/cold aisle).
- BLDC Inverter compressors and plug-fan EC for a higher energy efficiency.
- High energy efficiency at partial loads.
- Availability of connection on the top or on the bottom of the unit.
- Availability of dual power supply.
- Availability of box-server rack.
- Easily of maintenance.

WORKING LIMITS

INDOOR UNIT

Room air temperature:

14°C	minimum temperature with wet bulb
26°C	minimum temperature with wet bulb.
40°C	maximum temperature with dry bulb.

Room air humidity:

20%rH	minimum relative humidity.
70%rH	maximum relative humidity.

OUTDOOR UNIT - AIR COOLED MOTOCONDENSING UNIT

Ambient air temperature:

-30°C	minimum temperature
45°C	maximum temperature.



COMPONENTS - INDOOR UNIT - COOLSIDE EVO DX

FRAMEWORK

- Framework in galvanized steel sheet externally painted with epoxy powders.
- Panels in galvanized steel sheet externally painted with epoxy powders and internally insulated with noise absorption material.
- Access doors. The doors are equipped with handle with security lock.
- Holders for unit height adjusting.
- Colour RAL 7016 (anthracite grey) textured.
- Air flow:
 - Cooling system for rows of racks (in-row) COOLSIDE EVO "F":
 - o Air intake from the back side through honeycomb type grille and frontal air delivery through honeycomb type grille.
 - Direct cooling system of racks (in-rack) COOLSIDE EVO "L":
 - o Air intake from side through honeycomb type grille and air delivery from side through honeycomb type grille.

FILTER SECTION – COOLSIDE EVO "F"

The filter section is not supplied for COOLSIDE EVO "L" unit.

- Washable air filters with G2 efficiency, with cells in synthetic fibre, on air suction panel.
- Differential pressure switch on the air side for clogged filters signal.

EVAPORATING SECTION

- Heat exchanger coil with internally corrugated copper tubes and high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops.
- Condensate tray in peraluman with connection (external diameter Ø16) for a discharge tube or for a pump for condensate drain (option).

FANS SECTION

- Centrifugal fans with backward curved blades, single suction and without scroll housings (Plug-fans), directly coupled to brushless type synchronous EC motor with integrated electronic commutated system and continuous variation of the rotation speed. The motor rotation control is obtained with the EC system (Electronic Commutation) that manage the motor according to the 0÷10V proportional signal coming from the microprocessor control.
- Fans quick installation system for a fast replacement.
- #2 temperature sensors on air delivery.
- Temperature sensor on air intake.
- Current detector for loss of air flow alarm.

REFRIGERANT CIRCUIT

- Electronic expansion valve.
 - Refrigerant pressure transducer for expansion valve.
 - Refrigerant temperature sensor for expansion valve.
 - Filter dryer on liquid line.
 - Refrigerant circuit with copper tubing with anticondensate insulation.
 - Rotalock valves on liquid and suction line placed on bottom side of the unit for coupling to remote motocondensing unit.
- The COOLSIDE EVO DX 040 (size A6 / B6) is equipped with one Rotalock valve on liquid line and two Rotalock valves on suction lines. The refrigerant connection foresee a single liquid line and a double suction line to ensure the lubricant oil return to the compressor.
- R 410A refrigerant charge.

ELECTRICAL PANEL

Extractable electrical panel, in accordance with EN60204-1 norms, complete with:

- Power supply with 10A plugs.
- Magnetothermic switch on power supply
- Terminals for external enabling, smoke/fire alarm, general alarm and LAN connection.
- Power supply: 230/1/50.

CONTROL SYSTEM

- Microprocessor system with graphic display for control and monitor of operating and alarms status. The system includes:
 - Voltage free contact for remote general alarm.
 - Main components hour-meter.
 - Nonvolatile "Flash" memory for data storage.
 - Menu with protection password.
 - LAN connection.

COMPONENTS - OUTDOOR UNIT - MCAI MOTOCONDENSING UNIT

FRAMEWORK

- Base, self supporting frame and panelling in steel plate with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders.
- Colour: RAL 9002

COMPRESSOR

Motocondensing unit model MCAI 10:

- Twin rotary hermetic compressors "BLDC inverter" type optimized for R410A refrigerant.

Motocondensing unit models MCAI 20 / MCAI 40:

- Orbiting spiral (SCROLL) hermetic compressors "BLDC inverter" type with spiral profile optimized for R410A refrigerant.

Common characteristics:

- Inverter driven brushless type electric motor.
- Modulating capacity control.
- Crankcase heater.
- Terminal box with IP54 enclosure class.
- Rubber supports.

CONDENSING COIL

- All-aluminium microchannel heat exchanger coil, specifically developed to provide high heat transfer and lower pressure drops. Moreover microchannel technology reduces the weight of the component and the refrigerant charge.

FANS SECTION

- Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels.
- Brushless type synchronous EC motor with integrated electronic commutated system and continuous variation of the rotation speed. The motor rotation control is obtained with the EC system (Electronic Commutation) that manage the motor according to the 0÷10V proportional signal coming from the microprocessor control.
- IP54 enclosure class.

REFRIGERANT CIRCUIT

- Liquid separator on suction line.
- Oil separator on delivery line with oil recovery capillary hose.
- Check valve on gas delivery.
- Liquid receiver.
- Filter dryer on liquid line.
- Sight glass.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure.
- High pressure safety switch with manual reset.
- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- Rotalock valves for coupling to indoor units:
 - MCAI 10: Rotalock valves for connection to 1 indoor unit
 - MCAI 20: Rotalock valves for connection to 2 indoor units
 - MCAI 40: Rotalock valves for connection to 3 indoor units. In case of connection to a single COOLSIDE EVO DX 040 unit, are available as option the indoor evaporating unit #2 "suction line collectors" for a single suction line realization.
- R410A refrigerant charge.

ELECTRICAL PANEL

In accordance with EN60204-1 norms, suitable for outdoor installation, IP54 enclosure class, complete with:

- Main switch with door lock safety
- Inverter to drive the compressor motor.
- Magnetothermic switch for fans motor protection
- Magnetothermic switch for inverter protection
- Transformer for auxiliary circuit and microprocessor supply.
- Terminals for external enabling and smoke/fire alarm.
- RJ45 connector for microprocessor terminal connection (the microprocessor terminal is not installed on the unit).
- Power supply:
 - 230/1/50 for model MCAI 10
 - 400/3/50+N for models MCAI 20 and MCAI 40

CONTROL SYSTEM

- Microprocessor system with graphic display for control and monitor of operating and alarms status. The system includes:
 - Voltage free contact for remote general alarm.
 - Main components hour-meter.
 - Nonvolatile "Flash" memory for data storage.
 - Menu with protection password.
 - LAN connection.

OPTIONAL ACCESSORIES - COOLSIDE EVO DX

COOLSIDE EVO DX SIZE	10 A3 F	10 A3 L	10 B3 F	10 B3 L	20 A3 F	20 A3 L	20 B3 F	20 B3 L	40 A6 F	40 A6 L	40 B6 F	40 B6 L
214 - BOX-server rack	-	•	-	•	-	•	-	•	-	-	-	-
215 - Kit BOX 8 connections cabling	•	•	•	•	•	•	•	•	•	•	•	•
216 - Kit BOX 16 connections cabling	•	•	•	•	•	•	•	•	•	•	•	•
Baseboard for machine holders	•	•	•	•	•	•	•	•	•	•	•	•
850 - Condensate discharge pump	•	•	•	•	•	•	•	•	•	•	•	•
905 - Remote temperature sensor	•	•	•	•	•	•	•	•	•	•	•	•
911 - Water presence alarm	•	•	•	•	•	•	•	•	•	•	•	•
913 - Additional water sensor (kit)	•	•	•	•	•	•	•	•	•	•	•	•
202 - Timed stop button kit	•	•	•	•	•	•	•	•	•	•	•	•
854 - Connections from the top COOLSIDE EVO DX	•	•	•	•	•	•	•	•	•	•	•	•
263 - Kit single suction	-	-	-	-	-	-	-	-	•	•	•	•
852 - COOLSIDE humidifier kit	•	•	•	•	•	•	•	•	-	-	-	-
851 - Dual power supply	•	•	•	•	•	•	•	•	•	•	•	•

OPTIONAL ACCESSORIES - MCAI

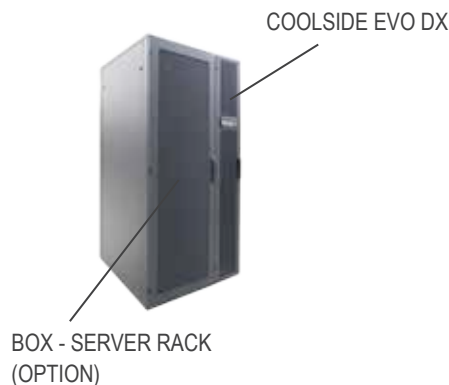
MCAI	10	20	40
856 - Kit MCAI low temperature	•	•	•
857 - MCAI double power supply	•	•	•
923 - RC-Com MBUS/JBUS serial board	•	•	•
931 - BACnet for Ethernet - SNMP - TCP/IP serial board	•	•	•
932 - BACnet for MS/TP serial board	•	•	•

• available accessory; - not available accessory

OPTIONAL ACCESSORIES - BOX - Server Rack

Standard 19" server rack to match to COOLSIDE EVO DX 10 "L", COOLSIDE EVO DX 20 "L".

The system sucks hot air directly from the rear side of the racks, and, once cooled, enters it in the front side of the rack. Thanks to the "closed" cooling system the electronic equipment contained in racks do not require fans for air circulation.



FRAMEWORK

- The rack is a 19" standard type (482,6 mm) - 42U (1,75 inch = 44,45 mm) in galvanized steel sheet externally painted with epoxy powders.
- Galvanized steel sheet panels externally painted with epoxy powders and internally insulated with noise absorption material.
- Colour: RAL 7016 (anthracite grey) textured.
- The server - rack is in compliance with IEC 60 297-1/2 norms
- Maximum load capacity for internal installation 1000 kg.
- Access doors. The doors are equipped with handle with security lock.
 - Front door is made of safety glass that allows direct control of the internal equipment
 - Back door in galvanized steel sheet

OPTIONAL ACCESSORIES

- Bus bar with maximum load of 96 A (7 modules 2 x 3 x 16A) and power supply cord.

POSSIBLE CONFIGURATIONS



IN-ROW



COOLSIDE EVO DX "F"
Frontal air delivery

IN-RACK



COOLSIDE EVO DX "L"
Side air delivery

COOLING SYSTEM FOR ROWS OF RACKS (IN ROW). COOLSIDE EVO DX "F"

COOLSIDE EVO units and the racks are placed in rows that are arranged so as to obtain alternate cold and hot aisles. Electronic equipments contained in racks independently provide to aspire the necessary air for cooling.

DIRECT COOLING SYSTEM (IN RACK). COOLSIDE EVO DX "L"

The system sucks hot air directly from the rear side of the racks, and, once cooled, enters it in the front side of the rack. Thanks to the "closed" cooling system the electronic equipment contained in racks do not require fans for air circulation.

TECHNICAL DATA - COOLSIDE EVO DX

MODEL SIZE	10 A3 - B3					20 A3 - B3				40 A6 - B6			
	Nominale	Ridotto	Medio	Massimo		Nominale	Ridotto	Medio	Massimo	Nominale	Ridotto	Medio	Massimo
Cooling Capacity (1)													
Total	kW	10,1	4,5	8,1	11,1	20,3	10,0	15,0	22,5	41,1	20,0	28,0	41,7
Sensible	kW	10,1	4,5	8,1	11,1	20,3	10,0	15,0	22,5	41,1	20,0	28,0	41,7
SHR	kW/kW	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Fans	n.	3	3	3	3	5	5	5	5	10	10	10	10
Total air flow rate	m³/h	2800	1300	2100	2900	4700	2200	3500	4850	9400	4300	7000	9700
Air filters	n.		1				1				1		
Efficiency			G2				G2				G2		
Refrigerant			R410A				R410A				R410A		
Evaporating coil volume	l		2				2,8				5,8		
Gas circuits	n.		1				1				1		
Power supply	V/Ph/Hz		230/1/50				230/1/50				230/1/50		
Max operating current (FLA)	A		2,2				3,6				7,1		
Sound pressure level (2)													
On air delivery COOLSIDE EVO "F"	dB(A)	67,6	51	61,2	68,3	69,8	53,3	63,4	70,4	72,3	55,4	65,9	72,9
Irradiated COOLSIDE EVO "L"	dB(A)	60,9	44,3	54,5	61,6	63,1	46,6	56,7	63,7	65,6	48,7	59,2	66,2
Net weight													
COOLSIDE EVO "F"	kg		A3 = 165 / B3 = 175				A3 = 170 / B3 = 180				A6 = 224 / B6 = 237		
COOLSIDE EVO "L"	kg		A3 = 163 / B3 = 173				A3 = 168 / B3 = 178				A6 = 222 / B6 = 235		
Refrigerant connections													
Liquid line	ODS Ø		12				12				16		
Suction line	ODS Ø		16				22				2 x 22		

THE COOLING CAPACITY DOES NOT CONSIDER THE SUPPLY FANS MOTOR THERMAL LOAD

- Gross value - Characteristics referred to entering air at 35°C d.b. (20.1°C w.b.) - unit coupled to a MCAI motocondensing unit operating at nominal conditions with equivalent length of refrigerant pipes connecting 3m.
- Sound pressure level at 1 meter in free field (ISO EN 3744).

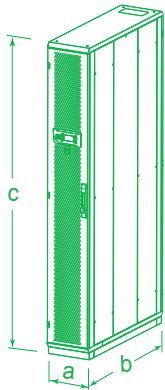
TECHNICAL DATA - MCAI

MODEL		MCAI 10	MCAI 20	MCAI 20	MCAI 40	MCAI 40	MCAI 40
Connected COOLSIDE EVO DX units	n x modello	1 x 010	1 x 020	2 x 010	3 x 010	2 x 020	1 x 040
Cooling capacity (1)	kW	10,1	20,3	21,6	39,9	40,6	41,1
Unit power input	KW	2,3	5,6	5,7	11,9	11,9	11,5
Compressor		Twin Rotary	Scroll	Scroll	Scroll	Scroll	Scroll
Quantity	n.	1	1	1	1	1	1
Modulating power control	%	30÷100	30÷100	30÷100	30÷100	30÷100	30÷100
Axial fans	n.	1	2	2	2	2	2
Total air flow rate	m³/h	5500	11000	11000	19000	19000	19000
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A
Total refrigerant charge (2)	kg	3,5	5	5	6	6	6
Gas circuit	n.	1	1	1	1	1	1
Power supply	V/Ph/Hz	230/1/50	400/3/50+N	400/3/50+N	400/3/50+N	400/3/50+N	400/3/50+N
Max operating current (FLA)	A	26,3	24,0	24,0	38,5	39,1	38,2
Energy efficiency index							
EER - Energy Efficiency Ratio	kW/kW	4,45	3,64	3,82	3,36	3,42	3,58
Sound level							
Sound power level [Lw] (3)	dB(A)	86,2	89,2	89,2	87,9	87,9	87,9
Average sound pressure level [LPm]							
[Lpm] 1 meter far (4)	dB(A)	70,4	73,4	73,4	71,8	71,8	71,8
[Lpm] 5 meters far (4)	dB(A)	60,1	63,1	63,1	61,7	61,7	61,7
[Lpm] 10 meters far (4)	dB(A)	54,7	57,7	57,7	56,4	56,4	56,4
Net weight	kg	96	178	178	228	228	228
Refrigerant connections							
Liquid line	n x ODS Ø	1 x 12	2 x 12	2 x 12	3 x 12	3 x 12	3 x 12
Suction line	n x ODS Ø	1 x 16	2 x 22	2 x 22	3 x 22	3 x 22	3 x 22

- Characteristics referred to ambient temperature at 35°C with indoor units operating at nominal conditions with equivalent length of refrigerant pipes connecting 3m for each unit.
- Unit refrigerant charge, connection pipes excluded.
- Sound power level [Lw] according to ISO EN 9614 - 2
- Average sound pressure level [Lpm] 1 meter far according to ISO EN 3744

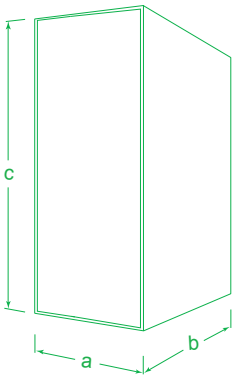
DIMENSIONS - COOLSIDE EVO DX (mm)

SIDE	a	b	c
10 A3	300	1000	2000
10 B3	300	1200	2000
20 A3	300	1000	2000
20 B3	300	1200	2000
40 A6	600	1000	2000
40 B6	600	1200	2000



DIMENSIONS - BOX, SERVER-RACK (mm)

SIDE	a	b	c
BOX A	600	1000	2000
BOX B	600	1200	2000



DIMENSIONS (mm)

