

TARGETED COOLING AND AIRFLOW MANAGEMENT

COOLRAC ROOM COOLING SYSTEM



CoolRAC units represent a family of precision cooling units specifically designed for easy integration into new and renovated data centers. These cooling units—with different cooling principles, sizes and outputs—are still the most widely used system for efficient targeted cooling from smaller server rooms to large data centers.

MAIN ADVANTAGES

- Variable installation options for the unit with fan module and air outlet in the double floor or above the floor
- Option to equip the unit with one or two fans
- Very low energy consumption thanks to EC fans and control software
- User-friendly and modern control system
- Flexibility of spatial layout
- > Option to place the unit outside the data center room and connect the unit to the air duct
- Wide range of accessories

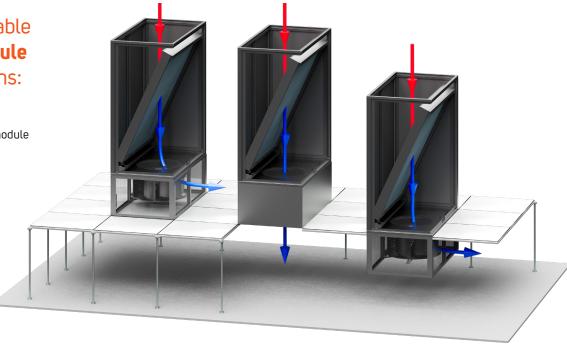
SUITABLE FOR

- Open aisle
- > Contained cold/hot aisle
- > Data center of any size

COLOR: RAL 9005 RAL 7035

Examples of variable air outlet fan module installation options:

- Above the double floor
- Into the double floor
- With installation of the fan module inside the double floor



DESCRIPTION

- Radial fans (with EC motors) for lowest energy consumption and precise control of airflow to servers
- High-efficiency copper-aluminium heat exchangers; also useful for Free-cooling systems
- Controller with special CONTEG software, based on long-term experience from worldwide data centers
- 4.3" color touch-screen display for user-friendly communication
- One display operating up to 16 units per group
- Independent unit control as well as CoolRAC group control functions for entire row of racks
- Wide range of settings adjust performance to specific project
- Communication through TCP/IP protocol (standard)
- Easy ModBUS and remote management from any computer connected to Internet (via integrated Webserver)
- Other protocols available
- Humidity sensors integrated into units
- Possibility of humidification and dehumidification mode integration in each unit
- Four temperature sensors per unit

- Three cooling systems:
- 1. CW—chilled water system
- XC—directexpansionsystemwith compressor (within CoolRAC unit)
- 3. DF—hybrid Dual Fluid system

DIRECT EXPANSION COOLING UNITS WITH AN INTEGRATED COMPRESSOR

COOLRAC XC



CoolRAC XC M



CoolRAC XC S

CoolRAC XC room cooling units are based on the direct expansion principle. A compressor is integrated into the indoor unit, which is connected to its outdoor condenser.

MAIN ADVANTAGES

- > Cooling capacity up to 45 kW
- > Operating temperature range -40 up to 55 °C
- > Remarkable energy efficiency and stepless cooling capacity control
- No water in data center
- Compressor safely positioned inside the data center
- > Low level of outdoor unit's noise
- > R410A refrigerant

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	<u> </u>	C. IDACVO		
		CoolRAC XC		
Indoor unit code	Unit	Unit AC-CRXC-00S AC-CRXC-		
Connected outdoor unit code		AC-CON	Dx-xx-xx	
Basic data				
Cooling system	-	Direct ex	rpansion	
Architecture	-	DownFloor/Unde	rFloor/FrontFloor	
Nominal cooling capacity *	kW	21,5	45,8	
Nominal net cooling capacity	kW	20,1	45,2	
Power supply	V/f/Hz	400/3/	′50-60	
Running current *	Α	13,5	18,1	
Maximum current	Α	21	25,9	
Fan power consumption *	kW	1,4	0,63	
Compressor power consumption *	kW	7,2	11,7	
Nominal airflow *	m³/h	5 000	10 300	
Maximum air flow	m³/h	10 400	13 040	
Number of radial fans	pcs	1	1 or 2	
Motor fan technology	-	EC		
Refrigerant type	-	R410A		
Filter class	-	G4		
Dimensions				
Height	mm	20	25	
Width	mm	714	1353	
Depth	mm	76	33	
Weight	kg	290	330	
Piping connection				
Piping diameter—liquid line	mm	12	16	
Piping diameter—gas line	mm	16	22	

Outlet air parameters (nominal conditions): 35 $^{\circ}$ C at 30 $^{\circ}$ RH. Condensing temperature 45 $^{\circ}$ C.

^{*} Values under nominal conditions.

FOR COOLRAC XC COOLING UNITS

OUTDOOR AIR-COOLED CONDENSERS



Outdoor air-cooled condensers dissipate the data center heat-load to the ambient. Indoor unit is designed so it's able to cooperate with the widest field of condensers. It allows customer to select the type which perfectly fits the requirements.

Recommended **condensers for CoolRAC XC** are listed in the table below. They are sorted according to the maximum ambient temperature.

	AIR-COOLED FINS AND TUBES											
Indoor	Max.	CONTEG P/N	Sound p	Sound pressure level Lw(A) Lp(A) 10m Of fa		nber Power supply			Length	Width	Height	Weight
unit	temp.	CONTEGP/N	Lw(A)			ph/V/Hz	Α	kW	(mm)	(mm)	(mm)	(kg)
CoolRAC XC	35 °C	AC-COND2-03-35	87 dB	56 dB	2	3/400/50-60	4,2	2,59	1884	888	957	158
CoolRAC XC	45°C	AC-COND2-02-45	93 dB	61 dB	2	3/400/50-60	6,2	4,02	2484	1088	961	236
CoolRAC XC	55 °C	AC-COND2-03-55	96 dB	64 dB	2	3/400/50-60	8,6	5,77	2484	1088	961	267

FOLLOW THE STEPS FOR DETERMINING THE CODE OF THE REQUIRED COOLRAC UNIT

AC - CR 1. - 2. 3. 4. - 5. - 6. 7. - 8. 9. 10. 11. 12. 13. 14. 15. 16.

An example of a correct code:

AC - CR DF - 0 0 M - 04 - 1 D - 1 3 A 2 0 0 2 0 3

Explanation of an example of a correct Code: CoolRAC cooling unit based on the principle of dual-fluid technology (with integrated indirect free-cooling function), medium-sized W × H × D = 1353 × 2 025 × 790 mm. Cooling capacity 45 kW. With perforated bottom cover for air distribution into the double floor. With integrated 4.3" LCD touch screen. Integrated humidifier 3 kg/h steam. Powerful condensate pump. Dual power supply. pCO web communication card for SNMP communication. With two fans. Heating coils for electric reheating of air up to 1200 W.

1. UNIT TYPE		
Code Model		
cw	Chilled water	
хс	Direct expansion with an integrated compressor	
DF	Free-cooling water cooling with an integrated compressor	

2. EMPTY POSITION		
Code	Options	
0		

3. EMPTY POSITION		
Code	Options	
0		

4. UNIT DIMENSIONS		
Code W×H×D(mm)		
s	Small. 714 × 2 025 × 763mm	
М	Medium. 1353 × 2 025 × 790 mm	

5. COOLING CAPACITY			
Code	Options		
04	45 kW		
06	60 kW		
08	80 kW		
10	100 kW		

6. AIR DISTIBUTION			
Code	Options		
0	All perforated		
1	Perforated bottom		
2	Perforated front		
3	Perforated front and sides		
4	Perforated front and one side		
5	No perforation (for air-outlet installation)		

7. DISPLAY POSITION		
Code	Options	
D	Display in the door	
W	Without display	

Code	Code Options		
0	No humidifier		
1	Standard humidifier		
2	Humidifier for low conductivity		
P	Preparation for humidifier		

	9. CONDENSATE		
Code	Options		
0	Standard drain		
1	MiniBlue		
2	Flood rope		
3	MegaBlue		
Α	MiniBlue + flood rope		
В	MegaBlue + flood rope		

10. P	10. POWER SUPPLY			
Code	Options			
0	Standard			
Α	Dual			

11. COMMUNICATION							
Code Options							
0	Standard						
1	Modbus RS485 card						
2	pCO WEB card						

12. REGULATION				
Code	Options			
0	Standard			

13. EMPTY POSITION				
Code	Options			
0				

14. FANS							
Code Options							
1	One fan						
2	Two fans						

15. SPECIAL MODIFICATIONS					
Code	Options				
	Logo, color etc				

16. ELECTRIC REHEATING OF AIR					
Code	Options				
0	Without				
1	600 W				
2	900 W				
3	1200 W				

FOR COOLRAC COOLING UNITS

BASIC ACCESSORIES

TOUCH SCREEN

- For more user-friendly communication with the unit's regulator, you can use a 4.3" color touch screen.
- A single touch screen can control up to 16 cooling units. For quick communication and full functionality of BMS, we recommend using a maximum of 8 units.
- RS485 port and Ethernet port enable remote control and monitoring using various master systems. The USB is used primarily for quick and easy software updating and downloading of historical data.
- The touch terminal has a number of functions: connection to a customer network, remote control, ModBus communication and many more.
- The screen can be placed directly onto a CoolRAC unit, on the side of a rack or onto a wall in the data room.



DUAL POWER SUPPLY

 Electrical PDU for two power branches. The device allows powering the unit from two independent sources.

STEAM HUMIDIFIER

- The steam humidifier maintains the set relative humidity of the air in the data center.
- The humidifier can output 3 kg of steam per hour
- The steam humidifier of the CoolRAC unit is powered separately.
- You can choose from 2 boiling vessels depending on water hardness.



pCO WEB COMMUNICA-TION CARD

- Accessory compatible with CoolRAC regulators.
- Enables additional individual communication (monitoring and control).
- Communication via Ethernet network protocols.
- Functions: web server, e-mail, FTP, SNMP, BAC-Net, ModBus TCP/IP and more.



CONDENSATE PUMP

- All CONTEG units can be connected to the sewerage system via gravity feed.
- If there is no sewerage connection in the room, the water can be conducted away using a condensate pump.
- Each unit includes a water detector that activates the pump, and a level sensor that turns off the unit in case of increased water levels.



Comparison	CoolTeg Plus				CoolTop		CoolSeven	CoolRAC			
	CW	DX	XC	DF	CW	DX		CW	хс	DF	
Installation											
Between IT racks	✓	✓	✓	✓	-	_	-	-	-	-	
On top of IT racks	-	-	-	-	✓	✓	-	-	-	-	
Inside of 19" racks	-	-	-	-	-	-	✓	-	-	-	
Farther from IT racks	-	-	-	-	-	-	-	✓	✓	✓	
Cooling medium											
Water/glycol	✓	-	-	-	✓	-	-	✓	-	-	
R410A	-	✓	✓	-	-	✓	✓	-	✓	-	
R410A + water/glycol	-	-	-	✓	-	-	-	-	-	✓	
Application											
Smaller	✓	✓	✓	✓	✓	✓	✓	-	-	-	
Medium	✓	-	✓	✓	✓	✓	-	✓	✓	✓	
Bigger	-	-	-	-	-	-	-	✓	✓	✓	
Occupied floor area (in data o	enter)										
None	-	-	-	-	✓	✓	✓	-	-	-	
Small	✓	✓	✓	✓	-	-	-	-	-	-	
Large	-	-	-	-	-	-	-	✓	✓	✓	
Nominal cooling capacity			Air	temperature in hot z	one: 35 °C; wa	ater temperatu	ire of 6/12 °C (for	CW units)	, no conde	nsation.	
7-19 kW	-	DXSmall DX30	-	-	-	-	CoolSeven	-	-	-	
20-39 kW	CW30	DX30	XC30	DF	CoolTop2	CoolTop2 CoolTop3	-		CoolRAC XC CoolRAC DF		
40-100 kW	CW30 SuperC CW60	-	XC40	-	CoolTop3	CoolTop2 CoolTop3	-	CoolRAC CW CoolRAC XC CoolRAC DF			
Suitable for											
Smaller applications – e.g. Modular Closed Loop	-	✓	-	✓	-	-	✓	-	-	-	
High outside temp.	-	-	✓	-	-	-	√	-	✓	-	
Cooling system with a cold-water source	✓	-	-	-	✓	-	-	✓	-	-	
No water in a data center	-	✓	✓	-	-	✓	-	-	✓	-	
Free-cooling	✓	-	-	✓	✓	-	-	✓	-	✓	

