

DATASHEET
Cooling units
CoolTop DX

CONTEG

COOLTOP DX COOLING UNITS



➤ **CoolTop DX** above-rack cooling units are specially designed for easy installation above IT racks, and are uniquely suitable for effective targeted cooling of server rooms and large data centers.

Indoor CoolTop DX unit is connected with outdoor condensing unit/units via refrigerant piping. CoolTop DX includes special heat exchanger with two separate refrigerant circuits.

In basic mode, one 19 kW or 24 kW cooling capacity outdoor unit can be connected to each CoolTop unit. If the cooling capacity needs to be increased, a second outdoor cooling unit can be added to increase the cooling capacity up to 38 kW or 48 kW.



CoolTop is the solution not only for the energy-conscious client but also for an immediate increase in cooling capacity in an existing space without the need for any structural modifications.

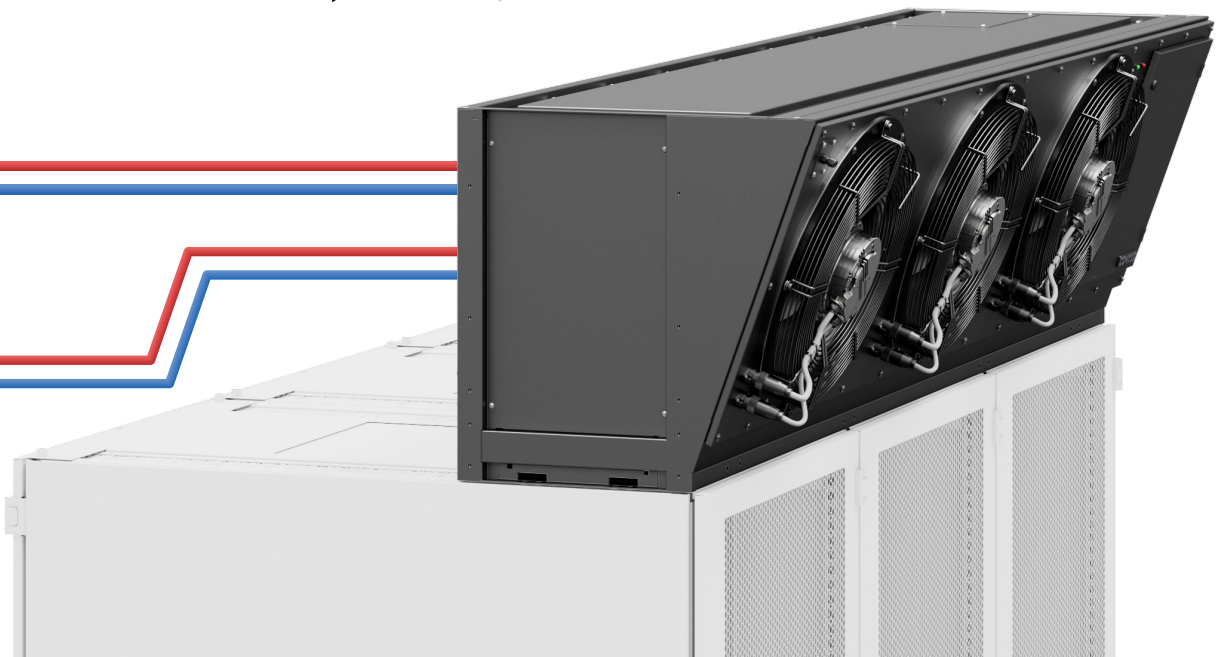
MAIN ADVANTAGES

- Does not occupy floor area
- No water in data center
- Brings chilled air directly to cold aisle in front of server racks
- Vertical air loop, with local flexibility
- Extremely low power consumption due to large heat exchanger and EC axial fans
- Modern and user-friendly control system
- Allows flexibility of room arrangement
- Raised floor unnecessary for air distribution
- Installs easily in contained hot or cold aisle
- Perfectly compatible with CONTEG IT racks + wide range of accessories
- Dual-circuit heat exchanger
- Regulation between 30–100 % cooling capacity. If the CoolTop DX unit is connected to the CoolOut unit—the cooling capacity control is then starting from 11 %.
- Ready to be connected to 2 outdoor units
- Stainless steel double condensate tray located under the heat exchanger
- Controller with ModBus communication (contained in the controller)

SUITABLE FOR

- Contained cold aisle
- Contained hot aisle
- Can be combined with CoolTeg Plus units in the same zone (aisle)

COLOR:  RAL 9005  RAL 7035



CoolTop DX—technical parameters

		CoolTop2		CoolTop3	
Indoor unit code	Unit	AC-TOP2-DX-240/60		AC-TOP3-DX-240/60	
Connected outdoor unit code		AC-ODX-25-XXXXXXX or AC-PUHZ-ZRP-200Y One/Two outdoor units	AC-ODX-25-XXXXXXX or AC-PUHZ-ZRP-250Y One/Two outdoor units	AC-ODX-25-XXXXXXX or AC-PUHZ-ZRP-200Y One/Two outdoor units	AC-ODX-25-XXXXXXX or AC-PUHZ-ZRP-250Y One/Two outdoor units
Basic data					
Cooling system	–	System with direct expansion			
Architecture	–	Open		Open	
Nominal cooling capacity ¹	kW	26/52 ⁸ or 19.7/39.3	26/52 ⁸ or 22.8/42.5	26/52 ⁸ or 19.7/39.3	26/52 ⁸ or 22.8/45.6
Nominal net cooling capacity ²	kW	25.1/50.2 ⁸ or 19.0/38.6	25.1/50.2 ⁸ or 22.1/41.8	25.1/50.2 ⁸ or 18.6/38.2	25.1/50.2 ⁸ or 21.7/44.5
Power supply	V/ph/Hz	230/1/50			
Running current	A	3.4		5.0	
Maximal current	A	4.6		6.8	
Nominal power consumption	W	710		1100	
Nominal airflow ³	m ³ /h	7700		11 000	
Number of fans	ks	2		3	
Motor fan technology	–	EC			
Refrigerant type		R410A			
Filter class	–	G2 (+ droplet separator)			
Dimensions					
Height ⁴	mm	600			
Width	mm	2 400			
Depth ⁵	mm	400 (600)			
Weight ⁶	kg	175		184	
Piping connection					
Supply pipe diameter and type ⁷	mm	16			
Return pipe diameter and type ⁷	mm	22			

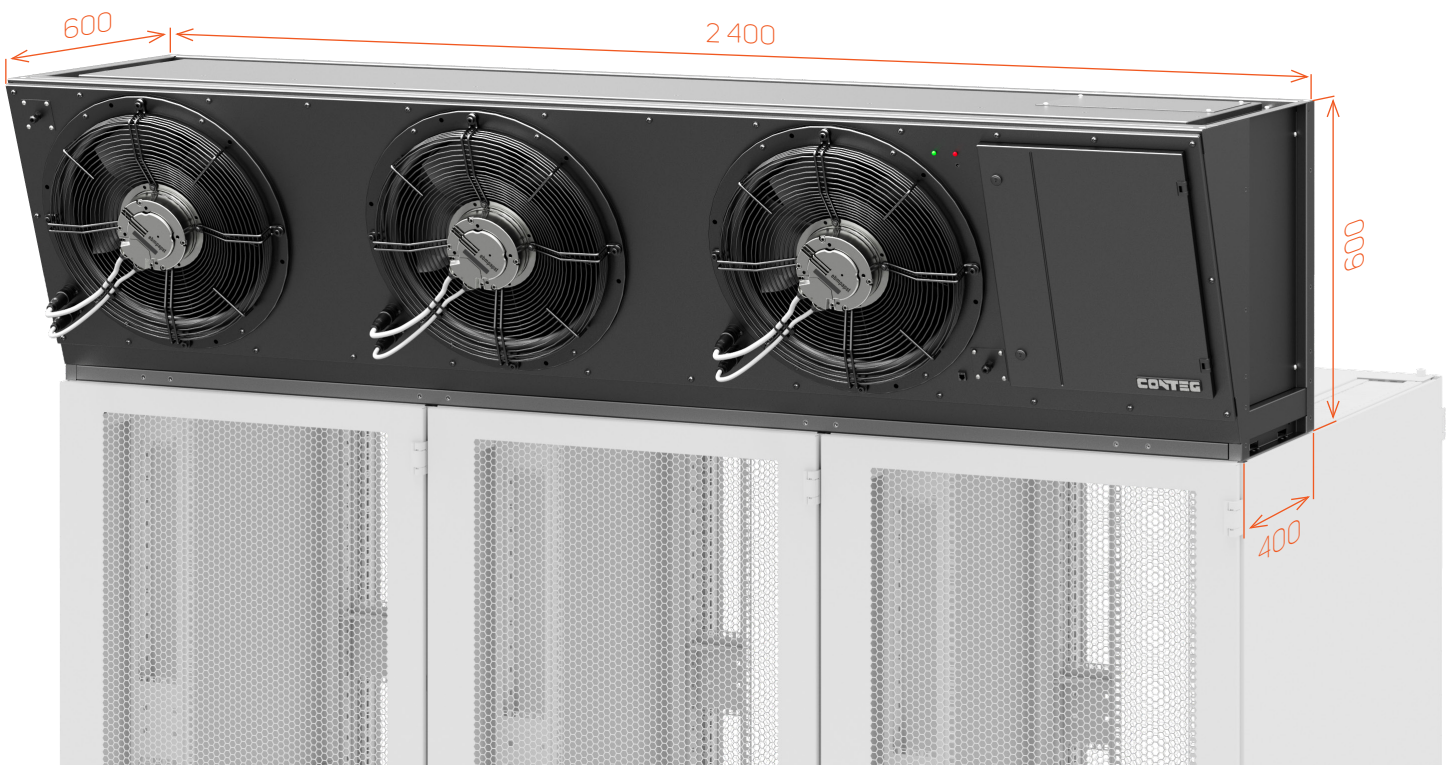
¹Cooling capacity can be changed via electronic controller. Nominal cooling capacity is stated for air temperature of 35 °C in hot zone, without condensation (heat-exchanger's temperature above dew-point). Evaporation temperature 6 °C, clean filters.. ² Net cooling capacity (without heat from fans) is usable cooling capacity of entire system.

³ Airflow is changed by control needs.. ⁴ Without any base frame. ⁵ Bottom side length 400 mm; top side length 600 mm. ⁶ For weight with droplet separator, add 11 kg.

⁷ Only connection diameter is mentioned. Please design the refrigerant piping according manual of outdoor condensing unit, depending on the length of the pipe.

⁸ If using the AC-ODX-25-XXXXXXX outdoor unit.

CoolTop unit dimensions (in mm)



FOR COOLTOP DX COOLING UNITS

COOLOUT CONDENSING UNIT



CoolOut—front view



CoolOut—rear view

➤ The **CoolOut** outdoor condensing unit is specially designed for conducting heat out of data centers. The unit meets all the strict demands on precision, stability and service life required for data centers.

MAIN ADVANTAGES

- Advanced communication and cooling regulation based on commands from the data center
- Very low consumption thanks to high-quality EC fans and active regulation of condensing pressure
- Inverter-controlled BLDC compressor
- Wide range of cooling power from 11 % upwards
- Versions for extreme ambient temperatures available
- Robust frame and housing made of high-quality corrosion-resistant materials
- Ability to communicate with a monitoring system (SNMP, Modbus TCP, Modbus RS485)
- Ability to monitor and control operating parameters through the indoor unit
- Simple to install and operate
- Option for remote servicing after connecting a PGDx service display
- Specially designed for precision cooling
- Linear electronic expansion valve

SUITABLE FOR

- Wide range of ambient conditions
- Installations emphasizing economical and reliable operation
- Compatible with CONTEG's CoolTeg DXSmall, CoolTop DX and CoolSeven cooling units

DESCRIPTION

- CoolOut is an outdoor condensing unit designed for precision compression cooling. The units are fitted with an inverter-controlled rotary DC compressor.
- Thanks to the use of hot gas bypass technology, the unit's cooling power can be adjusted from 11% of total cooling power upwards regardless of outdoor conditions.
- The use of a specially designed condenser, EC fans and a system of dynamic control of condensing pressure allowed minimizing the power consumption and noise emissions of the cooling unit.
- The running of the unit and correct functioning of all its parts is overseen by a built-in regulator with special CONTEG software.
- The regulator also ensures communication with the indoor unit via Fieldbus protocol. Basic information about the running of the outdoor unit can be tracked through the indoor unit.
- The design of the condensing unit allows its mounting onto the floor or a wall.
- CoolOut units are highly user-friendly in their setup and operation. Initialization and operation is very simple.

AC-ODX-25-XXXXXXX

Operating conditions	°C	-20 to +47 °C
Operating conditions ⁴	°C	-40 to +47 °C
Power regulation		Smooth 11-100%
Rated cooling power	kW	26
Power supply	V/ph/Hz	400/3/50-60
Operating current ¹	A	11.28
Maximum current	A	17
Rated input power ¹	kW	8.2
Compressor control		BLDC Inverter
Coolant regulation		Linear expansion valve
R410A coolant capacity ²	kg	0
Acoustic pressure Lp(A) ¹	dBA	50
Dimensions/weight		
Width	mm	1400
Depth	mm	450
Height ³	mm	1200
Weight	kg	130
Piping connection		
Fluid piping (diameter)	mm	12
Gas piping (diameter)	mm	22
Max. piping length	m	85
Max. difference in elevation	m	50

¹ Values at stabilized 80 % output. ² Without coolant, filled in during installation. ³ Including the profile for mounting the condensing unit. ⁴ If fitted with winter-kit accessories. The values shown may vary depending on the current product innovation.



Part number on request.

Please contact our sales or technical team www.conteg.com/contacts

COOLOUT CONDENSING UNIT

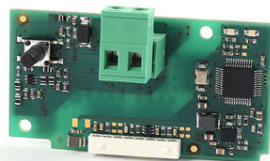
ACCESSORIES

DUAL POWER SUPPLY

- Electrical distributor for two power supply branches.
- The device allows powering a unit from two separate power sources.

RS485 BMS COMMUNICATION CARD

- Optically insulated card allowing communication with a unit via Modbus RTU protocol.



pCO WEB COMMUNICATION CARD

- Allows further individual communication (monitoring and control).
- Communication via Ethernet network protocols.
- Functions: web server, e-mail, FTP, SNMP, BACNet, ModBus TCP/IP and more.



FOR COOLTOP DX COOLING UNITS

MITSUBISHI CONDENSING UNITS



➤ CoolTop DX cooling unit can be connected to up to 2 **outdoor condensing units**, which contain all of the control elements (compressor, expansion valve, frequency driver). The units are equipped with a scroll compressor that works with the R410A refrigerant.

Technical parameters

	Unit	AC-PUHZ-ZRP200Y	AC-PUHZ-ZRP250Y
Nominal cooling capacity	kW	19.7	22.8
Power supply	V/ph/Hz	400/3/50	400/3/50
Operation current	A	7.77	8.28
Maximum current	A	19	21
Nominal power consumption	kW	5.46	8.3
Compressor control	–	Inverter	
Control valve	–	Linear expansion valve	
Refrigerant volume R410A ¹	kg	7.1	7.7
Dimensions			
Width	mm	1050	1050
Depth	mm	330	330
Height	mm	1338	1338
Weight	kg	135	144
Piping connection			
Supply pipe diameter (liquid) ²	mm	10	10
Return pipe diameter (gas) ²	mm	25	25
Max. pipe length	m	100	100
Max. height difference	m	30	30
Operation conditions	°C	from –15 up to +46	

¹Outdoor units are pre-filled with the refrigerant R410A for piping length 30 m. ²This datasheet considers connecting pipe dimensions only. Please follow outdoor unit's manual to design the proper diameters of refrigerant piping.

CoolTop CW and CoolTop DX—ordering and shipping information

Configure the above-rack CoolTop cooling unit that meets your requirements. The ordering matrix below will help you create a Code. As soon as you have the Code, please contact your CONTEG products distributor.

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

AC - 1. - 2. - 3. / 4. - 5. 6. 7. 8. 9. 10. 11. 12. 13.

An example of a correct code:

AC - TOP3 - CW - 240 / 60 - 0 R C 0 W P 0 0 0

Explanation of an example of a correct Code: CoolTop3 above-rack cooling unit with three EC fans, chilled water, open architecture, width 2 400 mm, depth 400 mm and height 600 mm. Water rope detector; Condensate pump; Power supply 230V/1ph/50Hz; Communication card SNMP pCO WEB; Pressure control; 3-way valve.

1. CoolTop COOLING SYSTEM	
Code	Model
TOP2	With two fans
TOP3	With three fans

2. COOLING SYSTEM	
Code	Options
CW	Chilled water
DX	Direct expansion

3. WIDTH	
Code	Width (mm)
240	2 400

4. HEIGHT	
Code	Height (mm)
60	600

5. DROPLET SEPARATOR	
Code	Options
0	Without
E	Droplet separator

6. SECURITY	
Code	Options
0	Standard
S	Dew sensor
R	Water rope detector
A	Dew sensor + water rope detector

7. CONDENSATE PUMP	
Code	Options
0	Without
C	Condensate pump

8. POWER SUPPLY	
Code	Options
0	Standard 230V/1ph/50Hz
A	Dual power supply

9. COMMUNICATION	
Code	Options
0	Without
M	Modbus
W	SNMP

10. CONTROL	
Code	Options
0	Standard
P	Pressure control
H	Humidity sensor
R	Pressure control + humidity sensor

11. CONTROL VALVES	
Code	Options
0	Standard (3-way valve)
2	2-way valve
Z	Without valves

12. OTHER ACCESSORIES	
Code	Options
0	-
D	Display

13. SPECIAL MODIFICATION	
Code	Options
0	Standard
2	Ready to be connected to 2 outdoor units (DX only)



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 CoolTeg unit, on the side of a rack or onto a wall in the data room.

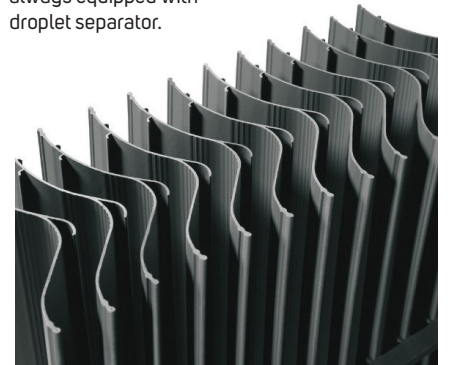


- Minimizes power consumption of the entire cooling system due to precise distribution of cooled air.



WATER DROPLET SEPARATOR

- Horizontal construction located behind the heat exchanger in the direction of airflow.
- The separator prevents dripping of water droplets by the airflow into the fans.
- We recommend using the droplet separator if high relative humidity or low temperature of the chilled water is assumed, generally every time when there is a potential risk of condensation on the heat exchanger. CoolTop DX should be always equipped with droplet separator.



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.



WATER ROPE DETECTOR

- Device for water detection. It is located at the top edge of condensate pan. If the water level reaches this level, the cooling unit goes to mode Emergency OFF. It is powered directly from the CoolTop controller.



DEW SENSOR

- Dew sensor is placed on a heat exchanger and measures its surface temperature. If the temperature is lower than temperature of dew point, the controller triggers alarm, or switch the unit off.



DUAL POWER SUPPLY

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

CONTROL BASED ON PRESSURE

- Each unit can control air flow rate (fan speed) based on differences in temperature between the hot and cool zones or based on pressure differences.
- Flow rate control based on pressure differences ensures that air is supplied to the area in front of the server at the exact same rate as that at which the servers draw the air in.
- Perfect environment for servers (no risk of server damage caused by over- or under-pressure).

HANDRAIL (for moving)

- Special steel handrail designed for easy manipulation and placement of CoolTop units above racks.
- Supplied in a pair.
- Are connected with by screws from front and back side of the unit.

pCO WEB COMMUNICATION CARD

- Accessory compatible with CoolTeg 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.



Comparison	CoolTeg Plus				CoolTop		CoolSeven	CoolRAC		
	CW	DX	XC	DF	CW	DX		CW	XC	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 center)										
None	-	-	-	-	✓	✓	✓	-	-	-
Small	✓	✓	✓	✓	-	-	-	-	-	-
Large	-	-	-	-	-	-	-	✓	✓	✓
Nominal cooling capacity Air temperature in hot zone: 35 °C; water temperature of 6/12 °C (for CW units), no condensation.										
7-19 kW	-	DXSmall DX30	-	-	-	-	CoolSeven	-	-	-
20-39 kW	CW30 CW30 SuperC	DX30	XC30	DF	CoolTop2	CoolTop2 CoolTop3	-	-	-	-
40-100 kW	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	✓	-	-	✓	✓	-	-	✓	-	✓



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