



DATASHEET

Direct expansion
cooling units with
an integrated
compressor
CoolTeg Plus XC

CONTEG

COOLTEG PLUS COOLING UNITS



➤ **CoolTeg Plus** equipment represents a family of precision cooling in-row units specifically designed for easy integration between IT racks. These air-conditioning units—with various cooling principles, sizes and capacities—are CONTEG's main product line for effective targeted cooling, from server rooms to large data centers.

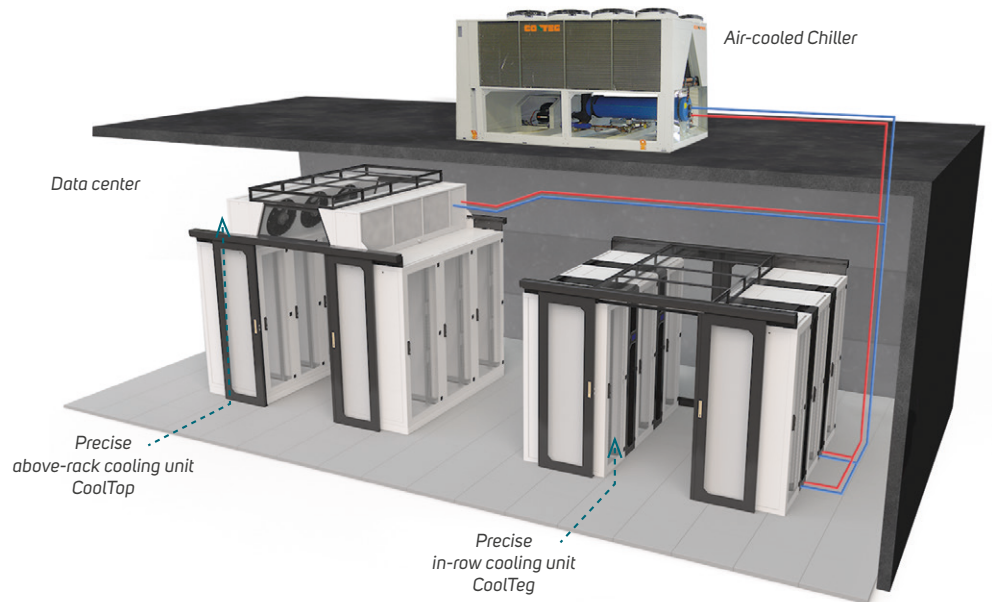
MAIN ADVANTAGES

- Small occupied floor area
- Brings chilled air directly to server rack
- Raised floor unnecessary for air distribution
- Very low power consumption, due to EC fans and control software
- Modern "server-friendly" control system
- Flexibility of room arrangement
- Perfect compatibility with CONTEG IT racks
- Wide range of accessories

SUITABLE FOR

- Open aisle
- Contained cold aisle
- Contained hot aisle
- Modular Closed Loop (MCL)—high capacity cooling system, where air is recirculated inside the rack and no heat is released into the environment

COLOR: RAL 9005 RAL 7035



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 CoolTeg 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 Webservice)
- Other protocols available
- Humidity sensors in both cold and hot zones
- Humidification and dehumidification mode in each unit
- Four temperature sensors per unit
- Four cooling systems:
 1. CW—chilled water system
 2. DX—direct expansion system with compressor (in outdoor unit)
 3. XC—direct expansion system with compressor (within CoolTeg Plus unit)
 4. DF—hybrid Dual Fluid system

COOLTEG PLUS XC



CoolTeg Plus XC30



CoolTeg Plus XC40

➤ **CoolTeg Plus XC** in-row 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

- Remarkable energy efficiency and stepless cooling capacity control
- Operation in extreme temperatures (−45 °C up to +55 °C)
- Regulation between 10-100 % cooling capacity
- No water in data center
- Compressor safely positioned inside the data center
- Variable design of outdoor unit (with regards to temperature, space, noise level, etc.)
- Low level of outdoor unit's noise
- R410A refrigerant

COLOR:  RAL 9005  RAL 7035

CoolTeg Plus XC			
		XC30	XC40
Indoor unit code	Unit	AC-TXC-42-30/XX-XXX	AC-TXC-42-40/XX-XXX
Connected outdoor unit code		AC-CONDx-xx-xx	AC-CONDx-xx-xx
Basic data			
Cooling system	-	Direct expansion	
Architecture ¹	-	Open or closed	
Nominal cooling capacity ²	kW	21.5	42.2
Nominal net cooling capacity ³	kW	20.7	39.1
Power supply	V/ph/Hz	400/3/50-60	
Running current	A	?	22.7
Maximum current	A	?	25.3
Fan power consumption (maximum)	kW	0.85	3.1
Compressor power consumption ⁴	kW	5.45	12.3
Nominal airflow ⁵	m ³ /h	4 000	9 000
Number of radial fans	pcs	5	3
Motor fan technology	-	EC	
Refrigerant type	-	R410A	
Filter class ⁶		G4	
Dimensions			
Height	mm (U)	1978 (42U), 2 111 (45U), 2 245 (48U)	
Width	mm	300	400
Depth ⁷	mm	1000 or 1200	
Weight—depth 1000 mm, height 42/45/48U	kg	194/199/204	262/270/278
Weight—depth 1200 mm, height 42/45/48U	kg	204/209/214	274/284/294
Piping connection			
Piping diameter—liquid line	mm	12	16
Piping diameter—gas line	mm	16	22

¹CoolTeg units can be used either independently (in rack rows) or integrated in Modular Closed Loop (MCL)—closed architecture rack systems and cooling units. Code changed as per ordering matrix. ²Cooling capacity is changed by controller; nominal cooling capacity is calculated at return hot air temperature of 35 °C without condensation (heat exchanger's temperature above dew-point), outside temp. +35 °C (condensing temp. 45 °C), clean filters. ³Net cooling capacity is the total cooling capacity reduced for fan heat load. Useful unit cooling capacity. ⁴Power consumption at condensing temperature of 45 °C and evaporation temperature of 10 °C. ⁵Airflow is changed by the controller; nominal airflow matches nominal cooling capacity. ⁶Units in Modular Closed Loop architecture (MCL) are delivered without filters. ⁷Units for Modular Closed Loop architecture (MCL) are available in 1200 mm depth only.

COOLTEG PLUS XC30



CoolTeg Plus XC30

➤ **CoolTeg Plus XC30** in-row cooling unit is based on the direct expansion principle. A compressor is integrated into the indoor unit, which is connected to its outdoor condenser.

MAIN ADVANTAGES

- Remarkable energy efficiency and stepless cooling capacity control
- Operation in extreme temperatures (–45 °C up to +55 °C)
- Regulation between 10-100 % cooling capacity
- No water in data center
- Compressor safely positioned inside the data center
- Variable design of outdoor unit (with regards to temperature, space, noise level, etc.)
- Low level of outdoor unit's noise
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COLOR:  RAL 9005  RAL 7035

CoolTeg Plus XC30

Indoor unit code	Unit	AC-TXC-42-30/XX-XXX
Connected outdoor unit code		AC-CONDx-xx-xx
Basic data		
Cooling system	-	Direct expansion
Architecture ¹	-	Open or closed
Nominal cooling capacity ²	kW	21.5
Nominal net cooling capacity ³	kW	20.7
Power supply	V/ph/Hz	400/3/50-60
Running current	A	?
Maximum current	A	?
Fan power consumption (maximum)	kW	0.85
Compressor power consumption ⁴	kW	5.45
Nominal airflow ⁵	m ³ /h	4 000
Number of radial fans	ks	5
Motor fan technology	-	EC
Refrigerant type	-	R410A
Filter class ⁶		G4
Dimensions		
Height	mm (U)	1978 (42U), 2111 (45U), 2 245 (48U)
Width	mm	300
Depth ⁷	mm	1000 or 1200
Weight—depth 1000 mm, height 42/45/48U	kg	194/199/204
Weight—depth 1200 mm, height 42/45/48U	kg	204/209/214
Piping connection		
Piping diameter—liquid line	mm	12
Piping diameter—gas line	mm	16

DESCRIPTION

- Twin rotary compressor
- BLDC driven compressor
- Electronic expansion valve and advanced steering logic
- Low vibrations
- Low- and high-pressure safety switches
- Refrigerant valves for easy maintenance
- Distance between indoor and outdoor units up to 60 m

¹CoolTeg units can be used either independently (in rack rows) or integrated in Modular Closed Loop (MCL)—closed architecture rack systems and cooling units. Code changed as per ordering matrix. ²Cooling capacity is changed by controller; nominal cooling capacity is calculated at return hot air temperature of 35 °C without condensation (heat exchanger's temperature above dew-point), outside temp. +35 °C (condensing temp. 45 °C), clean filters. ³Net cooling capacity is the total cooling capacity reduced for fan heat load. Useful unit cooling capacity. ⁴Power consumption at condensing temperature of 45 °C and evaporation temperature of 10 °C. ⁵Airflow is changed by the controller; nominal airflow matches nominal cooling capacity. ⁶Units in Modular Closed Loop architecture (MCL) are delivered without filters. ⁷Units for Modular Closed Loop architecture (MCL) are available in 1200 mm depth only..

COOLTEG PLUS XC40



CoolTeg Plus XC40

➤ **CoolTeg Plus XC40** in-row cooling unit is based on the direct expansion principle. A compressor is integrated into the indoor unit, which is connected to its outdoor condenser.

MAIN ADVANTAGES

- Remarkable energy efficiency and stepless cooling capacity control
- Operation in extreme temperatures (−45 °C up to +55 °C)
- Regulation between 10-100 % cooling capacity
- No water in data center
- Compressor safely positioned inside the data center
- Variable design of outdoor unit (with regards to temperature, space, noise level, etc.)
- Low level of outdoor unit's noise
- R410A refrigerant

COLOR:  RAL 9005  RAL 7035

CoolTeg Plus XC40

Indoor unit code	Unit	AC-TXC-42-40/XX-XXX
Connected outdoor unit code		AC-CONDx-xx-xx
Basic data		
Cooling system	-	Direct expansion
Architecture ¹	-	Open or closed
Nominal cooling capacity ²	kW	42.2
Nominal net cooling capacity ³	kW	39.1
Power supply	V/ph/Hz	400/3/50-60
Running current	A	22.7
Maximum current	A	25.3
Fan power consumption (maximum)	kW	3.1
Compressor power consumption ⁴	kW	12.3
Nominal airflow ⁵	m ³ /h	9 000
Number of radial fans	ks	3
Motor fan technology	-	EC
Refrigerant type	-	R410A
Filter class ⁶		G4
Dimensions		
Height	mm (U)	1978 (42U), 2111 (45U), 2 245 (48U)
Width	mm	400
Depth ⁷	mm	1000 or 1200
Weight—depth 1000 mm, height 42/45/48U	kg	262/270/278
Weight—depth 1200 mm, height 42/45/48U	kg	274/284/294
Piping connection		
Piping diameter—liquid line	mm	16
Piping diameter—gas line	mm	22

DESCRIPTION

- The most efficient compressor to date
- Inverter-driven compressor built into the internal unit
- Environmentally-friendly R410A refrigerant
- Electronic expansion valve and advanced steering logic
- Stepless capacity control from 20 to 100 %
- Oil separator and Trax-oil inside
- Low- and high-pressure safety switches
- Refrigerant valves for easy maintenance
- Operation in outdoor temperatures between −40 °C and +55 °C
- Distance between indoor and outdoor unit up to 60 m

¹CoolTeg units can be used either independently (in rack rows) or integrated in Modular Closed Loop (MCL)—closed architecture rack systems and cooling units. Code changed as per ordering matrix. ²Cooling capacity is changed by controller; nominal cooling capacity is calculated at return hot air temperature of 35 °C without condensation (heat exchanger's temperature above dew-point), outside temp. +35 °C (condensing temp. 45 °C), clean filters. ³Net cooling capacity is the total cooling capacity reduced for fan heat load. Useful unit cooling capacity. ⁴Power consumption at condensing temperature of 45 °C and evaporation temperature of 10 °C. ⁵Airflow is changed by the controller; nominal airflow matches nominal cooling capacity. ⁶Units in Modular Closed Loop architecture (MCL) are delivered without filters. ⁷Units for Modular Closed Loop architecture (MCL) are available in 1200 mm depth only.

FOR COOLTEG PLUS 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 CoolTeg Plus XC** are listed in the table below. They are sorted according to the maximum ambient temperature.

AIR-COOLED FINS AND TUBES												
Indoor unit	Max. temp.	CONTEG P/N	Sound pressure level		Number of fans	Power supply			Length (mm)	Width (mm)	Height (mm)	Weight (kg)
			Lw(A)	Lp(A) 10m		ph/V/Hz	A	kW				
XC30	35 °C	AC-COND4-01-35	75 dB	55 dB	1	1/230/50-60	2,2	0,45	1284	1088	936	118
XC30	45 °C	AC-COND4-01-45	79 dB	59 dB	2	1/230/50-60	1,65	0,76	1884	888	885	145
XC30	55 °C	AC-COND4-01-55	73 dB	53 dB	2	1/230/50-60	1,15	0,48	2 484	1088	936	217
XC40	35 °C	AC-COND2-03-35	87 dB	56 dB	2	3/400/50-60	4,2	2,59	1884	888	957	158
XC40	45 °C	AC-COND2-02-45	93 dB	61 dB	2	3/400/50-60	6,2	4,02	2 484	1088	961	236
XC40	55 °C	AC-COND2-03-55	96 dB	64 dB	2	3/400/50-60	8,6	5,77	2 484	1088	961	267

FOLLOW THE STEPS FOR DETERMINING THE CODE OF THE REQUIRED COOLTEG PLUS UNIT

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

An example of a correct code:

AC - TDX - 42 - 30 / 10F - BOW - 0 1 0 2 0 0 0 0

Description of the example of a correct code: CoolTeg Plus (facelift) in-row cooling unit with EC fans, suitable for connection to an outdoor condenser unit, open loop architecture, 300 mm width; 1000 mm depth and 42 U height. 4.3" color touch screen, 1x USB, 2x Ethernet port, proprietary CONTEG SW, installed in the front door. Bottom connection. Condensate pump installed in the cooling unit. pCO WEB card for SNMP communication. Prepared for a Mitsubishi Electric outdoor condensing unit. Standard warranty: 2 years.

1. CoolTeg COOLING SYSTEM

Code	Model
TCW	Chilled water
TDS	Direct expansion (small)
TDX	Direct expansion
TXC	With internal compressor
TDF	Hybrid system

2. HEIGHT

Code	Options
41	42U (RF1/RB1)
47	47U (RF1/RB1)
52	52U (RF1/RB1)
42	42U (iSEVEN Server)
45	45U (iSEVEN Server)
48	48U (iSEVEN Server)

3. WIDTH

Code	Width (mm)
30	300
40	400
60	600

4. DEPTH *

Code	Depth (mm)
10F	1000
12F	1200

* F indicates a unit after a facelift. Units before a facelift have a 0 instead of an F.

5.1. PIPE CONNECTION

Code	Options
B	Bottom connection
T	Top connection

5.2. ARCHITECTURE

Code	Options
O	Open
C	MCL—modular closed loop

5.3. DISPLAY

Code	Options
W	Not present
D	With screen

6. HUMIDIFIER

Code	Options
0	Not present
1	Humidifier (standard)
2	Humidifier (low water conductivity)

7. CONDENSATE PUMP

Code	Options
0	Not present
1	Condensate pump (standard)
2	Leak detection sensor rope
3	Condensate pump (powerful) *
A	Leak detection sensor rope + condensate pump (standard)
B	Leak detection sensor rope + condensate pump (powerful)

* Used in combination with a humidifier, or if displacement height is over 5 m. Max. height—30 m.

8. POWER SUPPLY

Code	Options
O	Standard 230V/1f/50Hz
A	Dual power supply

9. COMMUNICATION

Code	Options
O	Not present
M	Modbus
W	SNMP

10. REGULATION

Code	Options
O	Standard
P	Control based on pressure
H	Communication with HMI (Mitsubishi Heavy Industry) units
R	Control based on pressure + communication with HMI (Mitsubishi Heavy Industry) units
E	Control based on pressure in combination with CoolTop units

11. CONTROL VALVES

Code	Options
0	Standard (3-way valve)
2	2-way valve

12. FANS

Code	Options
0	Standard
S	Extra powerful fans (only for CW30)

13. SPECIAL MODIFICATIONS

Code	Options
O	Standard
R	External relay—unit status
6	6-row heat exchanger



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.



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



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.



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 CoolTeg Plus unit is powered separately.
- You can choose from 2 boiling vessels depending on water hardness.



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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