



DATASHEET

CoolTeg Plus CW

CoolTeg Plus DX

CoolTeg Plus XC

COTEG

COMPARISON OF DIFFERENT DATA CENTER COOLING PRINCIPLES

	CoolTop	CoolTeg Plus	CRAC
Cooling layout	Above racks	In row of racks	Perimeter of the room
Air delivery	Only where needed	Only where needed	To the whole room
Different power and temperature zones in one room	Simple	Simple	Impossible
Future system expansion	Easy	Easy	Very high
Redundancy cost	Low; in-row combo possible	Low	Very high
Occupied floor area	None	Small	Large
Contained Hot Aisle arrangement	Possible	Easy	Difficult
Contained Cold Aisle arrangement	Easy	Easy	Easy
Modular Closed Loop system	Impossible	Easy	Impossible

COMPARISON OF DIFFERENT COOLTEG PLUS TYPES

	CW	DX	XC
System	Indoor units CoolTeg CW + water piping system + battery of chillers (variable number of units in each system)	CoolTeg DX indoor unit + refrigerant piping system + outdoor compressor unit AC-PUHZ (always 1+1 in each system)	CoolTeg XC indoor unit + refrigerant piping system + outdoor condenser (always 1+1 in each system)
Installation	Between IT racks	Between IT racks	Between IT racks
Cooling medium	Water/Anti-freezing mixture	Refrigerant R410A	Refrigerant R410A
Cooling capacity per unit (kW) ¹	CW30—27 kW CW30 Super C—38 kW CW60—61 kW	DXSmall—7 kW DX12—12 kW DX20—20 kW DX25—23 kW	XC30—22 kW XC40—42 kW
Outdoor unit	Chiller	AC-PUHZ	AC-CONDx
CAPEX	Reasonable for bigger systems (over 50 kW)	Reasonable for smaller systems (up to 120 kW)	Reasonable for mid-sized systems (up to 200 kW)
OPEX	Very low, due to variable temperature of water and free-cooling possibility	Higher, in comparison to CW system	Higher, in comparison to CW system
Advantage	Free-cooling possibility	Simple installation, no water in DC	For wide ambient temperature limits (from -40 °C up to +55 °C); quiet outdoor unit
System size	Unlimited	Limited by maximal distance and height difference	Limited by maximal distance and height difference

¹ Nominal capacity at these conditions: air temperature in hot zone 35 °C, water temperature 6/12 °C, without condensation, resp. evaporation temperature 6 °C.

COOLING UNITS COOLTEG PLUS



➤ **CoolTeg Plus** equipment represents a family of precision cooling 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..

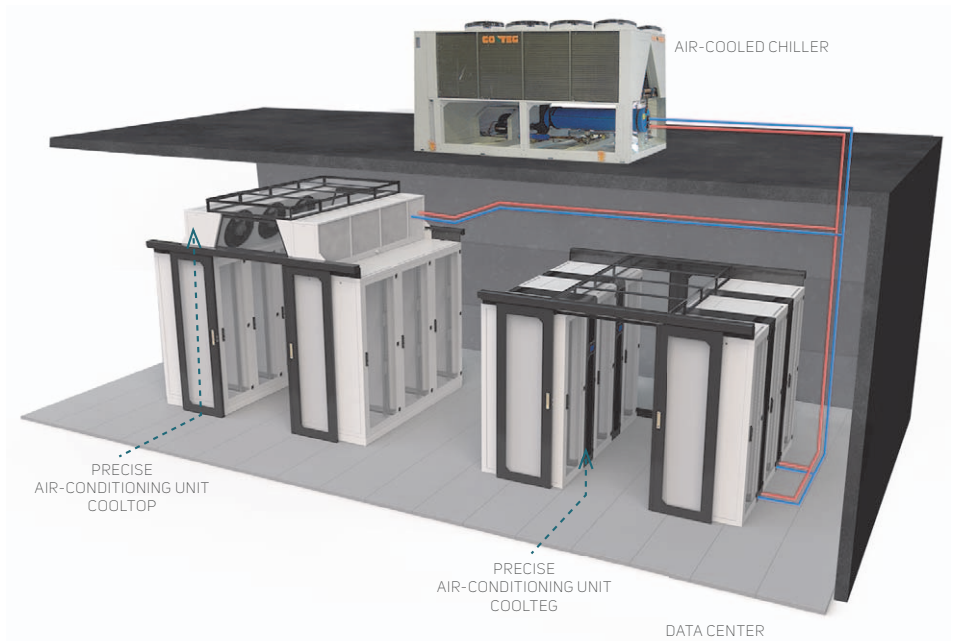
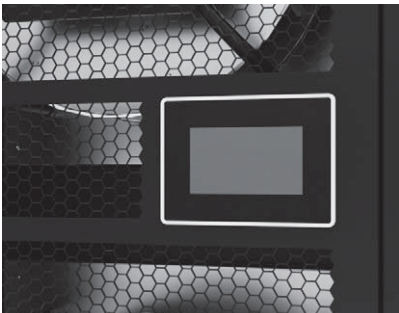
MAIN ADVANTAGES

- 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 Aisles
- Contained Cold Aisle
- Contained Hot Aisle
- Modular Closed Loop – 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 Webserver)
- Other protocols available
- Humidity sensors in both cold and hot zones
- Humidification and dehumidification mode in each unit
- Four temperature sensors per unit
- Three cooling systems:
 - CW—chilled water system
 - DX—direct expansion system with compressor (in outdoor unit)
 - XC—direct expansion system with compressor (within CoolTeg unit)

CHILLED WATER UNIT

COOLTEG PLUS CW



CoolTeg Plus CW30



CoolTeg Plus CW60

- **CoolTeg Plus CW** chilled water units are designed to be connected to any system with chillers producing cold water.

MAIN ADVANTAGES

- Unlimited number of units connectible to any single water system
- Free-cooling system conserves ample amounts of energy
- Variable chiller types fulfill any requirements (outdoor noise level, extreme ambient temperatures, etc.)
- Water temperatures variable during the year, conserving energy while controlling humidity levels
- Maintains water temperature between 6 °C and 30 °C

COLOR:  RAL 9005  RAL 7035

COOLTEG PLUS CW				
		CW30	CW30 Super C	CW60
Indoor unit code	Unit	AC-TCW-42-30/XX-XXX	AC-TCW-42-30/XX-XXX	AC-TCW-42-60/XX-XXX
Connected outdoor unit code		Chilled water system		
BASIC DATA				
Cooling system	-	Chilled water		
Architecture ¹	-	Open or closed	Open	Open
Nominal cooling capacity ²	kW	28,5	38,5	61,0
Nominal net cooling capacity ³	kW	27,5	36,0	58,1
Power supply	V/f/Hz	230/1/50-60		400/3/50-60
Running current	A	6,2	10,8	4,2
Maximum current	A	7,2	11,8	5,2
Nominal power consumption	W	850	2 450	3 000
Nominal airflow ⁴	m ³ /h	4 000	6 000	10 500
Number of fans	ks	5	5	3
Motor fan technology	-	EC		
Water flow	l/h	3 900	5 500	8 800
Filter class ⁵	-	G4		
DIMENSIONS				
Height ⁶	mm (U)	1978 (42U), 2 111 (45U), 2 245 (48U)		
Width	mm	300	300	600
Depth ⁷	mm	1 000 nebo 1 200		
Weight—depth 1 000 mm, height 42/45/48U	kg	163/168/173	164/169/174	248/256/264
Weight—depth 1 200 mm, height 42/45/48U	kg	173/179/185	174/180/186	260/270/280
PIPING CONNECTION				
Supply pipe diameter and type	-	5/4" female	5/4" female	6/4" female
Return pipe diameter and type	-	5/4" female	5/4" female	6/4" female

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), chilled water temp. 6/12 °C (for CW). ³Net cooling capacity is the cooling capacity minus fan heat load—the actual unit cooling capacity available to IT equipment. ⁴Airflow is changed by the controller; nominal airflow matches nominal cooling capacity. ⁵Units in Modular Closed Loop architecture (MCL) are delivered without filters. ⁶Without plinth or transport trolley. ⁷Units for Modular Closed Loop architecture (MCL) are available in 1200 mm depth only.

DIRECT EXPANSION

COOLTEG PLUS DX



CoolTeg Plus DX30



CoolTeg Plus DXSmall

➤ **CoolTeg Plus DX** units work on the direct expansion principle, with refrigerant circulating between one indoor and one outdoor unit (equipped by compressor).

MAIN ADVANTAGES

- No water in datacenter
- Independent indoor and outdoor unit systems ensure 100% redundancy
- Easy installation and additional capacity expansion
- Ecological refrigerant R410A
- Fluent cooling capacity controll from 30 to 100 %

COLOR:  RAL 9005  RAL 7035

COOLTEG PLUS DX					
		DXSmall	DX30		
Indoor unit code	Unit	AC-TDS-42-30/ XX-XXX	AC-TDX-42-30/ XX-XXX	AC-TDX-42-30/ XX-XXX	AC-TDX-42-30/ XX-XXX
Connected outdoor unit code		AC-PUHZ- ZRP71V	AC-PUHZ- ZRP125Y	AC-PUHZ- ZRP200Y	AC-PUHZ- ZRP250Y
BASIC DATA					
Cooling system	-	Direct expansion			
Architecture ¹	-	Open or closed			
Nominal cooling capacity ²	kW	7,0	12,1	19,7	22,8
Nominal net cooling capacity ³	kW	6,8	11,9	18,8	21,9
Power supply ⁴	V/f/Hz	230/1/50-60			
Running current	A	3,8	6,2	6,2	6,2
Maximum current	A	4,8	7,2	7,2	7,2
Nominal power consumption	W	510	850	850	850
Nominal airflow ⁵	m ³ /h	2 100	4 000	4 000	4 000
Number of fans	ks	3	5		
Motor fan technology	-	EC			
Refrigerant type	-	R410A			
Filter class ⁶	-	G4			
DIMENSIONS					
Height ⁷	mm (U)	1 978 (42U), 2 111 (45U), 2 245 (48U)			
Width	mm	300			
Depth ⁸	mm	1 000 or 1 200			
Weight—depth 1 000 mm, height 42/45/48U	kg	153/158/163	163/168/173		
Weight—depth 1 200 mm, height 42/45/48U	kg	163/169/175	173/179/185		
PIPING CONNECTION					
Supply pipe diameter and type ⁹	mm	16	16		
Return pipe diameter and type ⁹	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 (heatexchanger's temperature above dew-point), outdoor temp. +35 °C, clean filters. ³Net cooling capacity is the cooling capacity minus fan heat load—the actual unit cooling capacity available to the IT equipment. ⁴Outdoor condensing units AC-PUHZ-ZRP-xx are powered by 50Hz only. ⁵Airflow is changed by the controller; nominal airflow matches nominal cooling capacity. ⁶Units in Modular Closed Loop architecture (MCL) are delivered without filters. ⁷Without plinth or transport trolley. ⁸Units for Modular Closed Loop architecture (MCL) are available in 1 200 mm depth only. ⁹Only connection diameter is mentioned. Please design the refrigerant piping according manual of outdoor condensing unit, depending on the piping length.

OUTDOOR CONDENSING UNITS



➤ **CoolTeg Plus DX** cooling unit can be connected with outdoor condensing unit, which contains 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 of outdoor units with direct expansion

BASIC DATA	Unit	AC-PUHZ- -ZRP71V	AC-PUHZ- -ZRP125Y	AC-PUHZ- -ZRP200Y	AC-PUHZ- -ZRP250Y
Nominal cooling capacity	kW	7,1	12,5	19,7	22,8
Power supply	V/f/Hz	230/1/50	400/3/50 ¹	400/3/50	400/3/50
Operation current	A	7,63	5,93	7,77	8,28
Maximum current	A	19	9,5	19	21
Nominal current	kW	1,72	3,78	5,46	8,3
Compressor control	-	Inverter			
Control valve	-	Linear expansion valve			
Refrigerant volume R410A ²	kg	3,5	5,0	7,1	7,7
DIMENSIONS					
Width	mm	950	1050	1050	1050
Depth	mm	330	330	330	330
Height	mm	943	1338	1338	1338
Weight	kg	67	126	135	144
PIPING CONNECTION					
Supply pipe diameter (liquid) ³	mm	10	10	10	10
Return pipe diameter (gas) ³	mm	16	16	25	25
Max. pipe length	m	50	70	100	100
Max. height difference	m	30	30	30	30
Operation conditions	°C	-15 až +46			

¹Outdoor unit AC-PUHZ-ZRP125 requires power supply: 400V/3ph/50Hz, it is also available in 1ph version.

²Outdoor units are prefilled with the refrigerant R410A for piping length 30 m. ³This datasheet considers piping dimensions only. Please follow outdoor unit's manual to design the proper diameters of refrigerant piping.



DIRECT EXPANSION WITH INTEGRATED COMPRESSOR

COOLTEG PLUS XC30



CoolTeg Plus XC 30


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 unit up to 60 m

➤ **CoolTeg Plus XC** in-row units are based on the direct expansion principal. A compressor is integrated into the indoor unit, which is connected to its outdoor condenser.

MAIN ADVANTAGES

- Cooling capacity up to 22 kW
- Operation temperatures from -40 up to +55 °C
- Fluent cooling capacity control 10-100 %
- Keeps datacenter free of water
- Compressor safely positioned inside data center
- Low noise of outdoor unit
- Refrigerant R410A

COLOR:  RAL 9005  RAL 7035

COOLTEG PLUS XC		
		XC30
Indoor unit type	Unit	AC-TXC-42-30/XX-XXX
Connected outdoor unit		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/f/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	pcs	5
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
Depth ⁷	mm	1 000 or 1 200
Weight—depth 1 000 mm, height 42/45/48U	kg	194/199/204
Weight—depth 1 200 mm, height 42/45/48U	kg	204/209/214
CONNECTION DIMENSION		
Piping diameter—liquid line	mm	12
Piping diameter—gas line	mm	16

¹CoolTeg Plus units can be used either independently (in rack rows), or integrated in a Modular Closed Loop (MCL)—closed architecture rack systems and cooling units. Indoor unit type is changed as per ordering matrix. ²Cooling capacity is changed by controller. Nominal cooling capacity is calculated at indoor hot air temperature 35 °C without condensation (heat-exchanger's temperature above dew-point), outdoor temp. +35 °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 45 °C and evaporation temperature 10 °C ⁵Airflow is automatically changed by controller. Nominal airflow matches nominal cooling capacity. ⁶Units in Modular Closed Loop architecture (MCL) are delivered without filters (standard). ⁷Units in Modular Closed Loop architecture (MCL) are available in 1 200 mm depth only.

DIRECT EXPANSION WITH INTEGRATED COMPRESSOR

COOLTEG PLUS XC40



CoolTeg Plus XC 40

DESCRIPTION

- The most efficient compressor to date
- Inverter-driven compressor built into internal unit
- Environmentally-friendly refrigerant R410a
- 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

➤ **CoolTeg Plus XC** in-row units are based on the direct expansion principal. A compressor is integrated into the indoor unit, which is connected to its outdoor condenser.

MAIN ADVANTAGES

- Cooling capacity up to 42 kW
- Operation temperatures from -40 up to +55 °C
- Very high energy efficiency and stepless capacity control
- Keeps datacenter free of water
- Compressor safely positioned inside data center
- Low noise of outdoor unit
- Perfect oil management for piping system
- Refrigerant R410A

COLOR:  RAL 9005  RAL 7035

COOLTEG PLUS XC		
		XC40
Indoor unit type	Unit	AC-TXC-42-40/XX-XXX
Connected outdoor unit		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/f/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 (maximum)	kW	12,3
Nominal airflow ⁴	m ³ /h	9 000
Number of radial fans	pcs	3
Motor fan technology	-	EC
Refrigerant type	-	R410A
Filter class ⁵		G4
DIMENSIONS		
Height	mm (U)	1978 (42U), 2 111 (45U), 2 245 (48U)
Width	mm	400
Depth ⁶	mm	1 000 or 1 200
Weight—depth 1 000 mm, height 42/45/48U	kg	262/270/278
Weight—depth 1 200 mm, height 42/45/48U	kg	274/284/294
CONNECTION DIMENSION		
Piping diameter—liquid line	mm	16
Piping diameter—gas line	mm	22

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COOLTEG PLUS XC

OUTDOOR AIR-COOLED CONDENSERS



➤ Outdoor air-cooled condensers dissipates 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 its requirements.

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

AIR-COOLED—FINS AND TUBES

CONDENSERS

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		f/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	2484	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	2484	1088	961	236
XC40	55 °C	AC-COND2-03-55	96 dB	64 dB	2	3/400/50-60	8,6	5,77	2484	1088	961	267

PLEASE FOLLOW THE STEPS TO GET PROPER CODE OF 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 - BOD - 0 1 0 2 0 0 0 0

Correct code example: Cooling unit CoolTeg Plus (facelift) with EC fans, direct expansion prepared for connection to outdoor compressor unit, for open architecture, 300 mm wide; 1000 mm deep, and 42 U high. 4,3" colour touch display, 1x USB, 2x ethernet port, with special Conteg SW, installed in the unit door. Bottom pipe connection. Pump is mounted and connected in unit. pCO WEB serial card for SNMP communication. Ready for outdoor Mitsubishi Electric condensing unit. Standard warranty 2 years.

1. COOLING SYSTEM CoolTeg		2. HEIGHT		3. WIDTH		4. DEPTH*		5.1. PIPING CONNECTION	
Code	Model	Code	Options	Code	Width (mm)	Code	Depth (mm)	Code	Options
TCW	Chilled water	42	42U	30	300	10F	1000	B	Bottom
TDX	Direct expansion	45	45U	40	400	12F	1200	T	Top
TDS	Direct expansion (small)	48	48U	60	600	* letter F indicates facelift. Older units are marked by O.			
TXC	Integrated compressor								

5.2. ARCHITECTURE		5.3. DISPLAY		6. HUMIDIFIER		7. CONDENSATE PUMP		8. POWER SUPPLY	
Code	Options	Code	Options	Code	Options	Code	Options	Code	Options
O	Open	W	Without	0	Without	0	Without	O	Standard 230V/1f/50Hz
C	Closed (MCL – modulární closed loop)	D	With	1	Humidifier (standard)	1	Condensate pump (standard)	A	Dual power supply
				2	Humidifier (low water conductivity)	2	Water rope detector		
						3	Condensate pump (powerful)*		
						A	Water rope detector + condensate pump (standard)		
						B	Water rope detector + condensate pump (strong)		

9. COMMUNICATION		10. CONTROL		11. CONTROL VALVES		12. FANS		13. SPECIAL MODIFICATION	
Code	Options	Code	Options	Code	Options	Code	Options	Code	Options
O	Without	O	Standard	0	Standard (3-way valve)	O	Standard	O	Standard
M	Modbus	P	Pressure control	2	2-way valve	S	Super strong fans (only for CW30)	R	Relay—unit's status
W	SNMP	H	Outdoor unit HMI (Mitsubishi heavy industry)					6	6-row heat exchanger
		R	Pressure control + outdoor unit HMI (Mitsubishi heavy industry)						
		E	Pressure control combined with CoolTop units						

FOR COOLTEG PLUS UNIT

ACCESSORIES

TOUCH-SCREEN DISPLAY

- For user-friendly communication with the unit controller, you can use the 4.3-inch color touch-screen display.
- One touch screen can control up to 16 cooling units. We recommend using up to 8 units for fast communication and full BMS functionality.
- RS485 port and the Ethernet port enables remote control and tracking using different superior systems. The micro USB allows easy software update and download of historical data.
- The touch-screen display has many features. Such as customer network connectivity, remote control, ModBus communication and many more.
- The display can be placed directly on the CoolTop unit, on the side of the cabinet, or on the wall of the data room.



PRESSURE CONTROL

- Airflow can be controlled even based on temperature difference between hot and cold zones or based on pressure difference.
- Pressure difference airflow control ensures that the air is supplied to the servers at exactly the same amount as the air sucked by the servers.
- Airflow control ensures perfect environment for servers (no risk of server damage caused by over- or under-pressure).
- Pressure control minimizes power consumption of entire cooling system due to precise delivery of conditioned air.



CONDENSATE PUMP

- All Conteg precision cooling units can be connected to a standard gravity drainage system.
- If drainage system is not available under the cooling units, it is possible to equip the unit with condensate pump to reject the water out of the condensate pan to the drainage system in different room.
- Each unit includes water detection sensor to start operation of the condensation pump and water level sensor to stop the unit if high water level is detected.



DUAL POWER SUPPLY

- Electrical switchboard for two power supply systems. This device ensures to supply the unit from two independent power sources.

STEAM HUMIDIFIER

- Steam humidifier keeps required relative humidity inside the datacenter.
- Capacity of the humidifier is 3 kg of water steam per hour
- It is powered separately.
- Available in two variants according to the water hardness.



COMMUNICATION CARD „pCO WEB“

- Accessory compatible with CoolTop controllers.
- Enables additional individual communication (monitoring and control).
- Communication via Ethernet networks protocols.
- Functions: Web server, E-mail, FTP, SNMP, BACNet, ModBus TCP/IP and others.



SUPER STRONG FANS

- Fans with strong motors airflow up to 6 000 m³/h.



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