

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

Easy

Impossible

Impossible

Modular Closed Loop system

COMPARISON OF DIFFERENT COOLTEG PLUS TYPES					
	CW	DX	ХС		
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		

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

## TARGETED COOLING & AIRFLOW MANAGEMENT

# 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

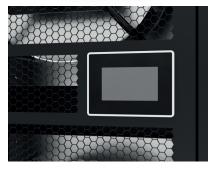
- Small occupied floor area
- Brings chilled air directly to server rack
- Raised floor unnecessary for air distribution
- Very low power consumption, due to EC fans and control software
- > Modern "server-friendly" control system
- > Flexibility of room arrangement
- Perfect compatibility with CONTEG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









# AIR-COOLED CHILLER PRECISE AIR-CONDITIONING UNIT COOLTOP PRECISE AIR-CONDITIONING UNIT COOLTEG DATA CENTER

#### 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 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 controling humidity levels
- > Maintains water temperature between 6 °C and 30 °C

COLOR: **A** 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 <sup>1</sup>	-	Open or closed	Open	Open		
Nominal cooling capacity <sup>2</sup>	kW	28,5	38,5	61,0		
Nominal net cooling capacity <sup>3</sup>	kW	27,5	36,0	58,1		
Power supply	V/f/Hz	230/1	/50-60	400/3/50-60		
Running current	Α	6,2	10,8	4,2		
Maximum current	Α	7,2	11,8	5,2		
Nominal power consumption	W	850	2 450	3 000		
Nominal airflow <sup>4</sup>	m³/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 <sup>5</sup>	-		G4			
DIMENSIONS						
Height <sup>6</sup>	mm (U)	1978 (42U), 2111 (45U), 2245 (48U)				
Width	mm	300	300	600		
Depth <sup>7</sup>	mm		1000 nebo 1200			
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		

'CoolTeg 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. 

<sup>2</sup>CoolTing 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), chilled water temp. 6/12 °C (for CW). 

<sup>3</sup>Net cooling capacity is the cooling capacity minus fan heat load—the actual unit cooling capacity available to IT equipment. 

<sup>4</sup>Airflow is changed by the controller; nominal airflow matches nominal cooling capacity. 

<sup>5</sup>Units in Modular Closed Loop architecture (MCL) are delivered without filters. 

<sup>6</sup>Without plinth or transport trolley. 

<sup>7</sup>Units for Modular Closed Loop architecture (MCL) are available in 1200 mm depth only.

## **DIRECT EXPANSION**

# **COOLTEG PLUS DX**





**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

DXSmall	COOLTEG PLUS DX									
Indoor unit code         Unit         XX-XXX         XX-XXX <t< th=""><th></th><th colspan="9">DXSmall DX30</th></t<>		DXSmall DX30								
Connected outdoor unit code         ZRP7IV         ZRP125Y         ZRP200Y         ZRP250Y           BASIC DATA           Cooling system         -         Direct expansion           Architecture¹         -         Open or closed           Nominal cooling capacity²         kW         7,0         12,1         19,7         22,8           Nominal net cooling capacity³         kW         6,8         11,9         18,8         21,9           Power supply⁴         V/f/Hz         230/1/50-60         2         6,2         6,2           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 airflow⁵         m³/h         2100         4000         4000         4000           Number of fans         ks         3         5           Motor fan technology         -         EC           Refrigerant type         -         G4           DIMENSIONS           Height²         mm	Indoor unit code	Unit				AC-TDX-42-30/ XX-XXX				
Cooling system - Direct expansion  Architecture¹ - Open or closed  Nominal cooling capacity² kW 7,0 12,1 19,7 22,8  Nominal net cooling capacity³ kW 6,8 11,9 18,8 21,9  Power supply⁴ 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 airflow⁵ m³/h 2100 4 000 4 000 4 000  Number of fans ks 3 5  Motor fan technology - EC  Refrigerant type - R410A  Filter class⁶ - G4  DIMENSIONS  Height² mm (U) 1978 (42U), 2111 (45U), 2 245 (48U)  Width mm 300  Depthゅ mm 1000 or 1 200  Weight—depth 1 000 mm,	Connected outdoor unit code									
Architecture¹ - Open or closed  Nominal cooling capacity² kW 7,0 12,1 19,7 22,8  Nominal net cooling capacity³ kW 6,8 11,9 18,8 21,9  Power supply⁴ V/f/Hz 230/1/50-60  Running current A 3,8 6,2 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 airflow⁵ m³/h 2100 4000 4000 4000  Number of fans ks 3 5  Motor fan technology - EC  Refrigerant type - R410A  Filter class⁶ - G4  DIMENSIONS  Height² mm (U) 1978 (42U), 2111 (45U), 2 245 (48U)  Width mm 300  Depth⁶ mm 1000 or 1200  Weight—depth 1000 mm, kg 153/158/163	BASIC DATA									
Nominal cooling capacity²         kW         7,0         12,1         19,7         22,8           Nominal net cooling capacity³         kW         6,8         11,9         18,8         21,9           Power supply⁴         V/f/Hz         230/1/50-60         20         6,2         6,2         6,2           Running current         A         3,8         6,2         6,2         6,2         6,2           Maximum current         A         4,8         7,2         7,2         7,2         7,2           Nominal power consumption         W         510         850         850         850         850           Nominal airflow⁵         m³/h         2100         4 000         4 000         4 000         4 000           Number of fans         ks         3         5         5         6         6           Motor fan technology         -         EC         R410A         Filter class⁶         -         G4           DIMENSIONS           Height²         mm (U)         1978 (42U), 2 111 (45U), 2 245 (48U)           Width         mm         1000 or 1200           Weight—depth 1 000 mm,         kg         153/158/163         163/168/173	Cooling system	-		Direct ex	rpansion					
Nominal net cooling capacity³         kW         6,8         11,9         18,8         21,9           Power supply⁴         V/f/Hz         230/1/50-60         2         6,2         6,2         6,2         6,2         6,2         6,2         6,2         6,2         6,2         6,2         7,2         7,2         7,2         7,2         7,2         7,2         7,2         Nominal power consumption         W         510         850         850         850         850         850         Nominal airflow⁵         m³/h         2 100         4 000         4 000         4 000         4 000         4 000         A 000	Architecture <sup>1</sup>	-		Open o	rclosed					
Power supply <sup>4</sup> 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 <sup>5</sup> m³/h         2100         4 000         4 000         4 000           Number of fans         ks         3         5           Motor fan technology         -         EC           Refrigerant type         -         R410A           Filter class <sup>6</sup> -         G4           DIMENSIONS         -         G4           Height <sup>7</sup> mm (U)         1978 (42U), 2111 (45U), 2 245 (48U)           Width         mm         1000 or 1200           Weight—depth 1000 mm,         kg         153/158/163         163/168/173	Nominal cooling capacity <sup>2</sup>	kW	7,0	12,1	19,7	22,8				
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 <sup>5</sup> m³/h       2100       4 000       4 000       4 000         Number of fans       ks       3       5         Motor fan technology       -       EC         Refrigerant type       -       R410A         Filter class <sup>6</sup> -       G4         DIMENSIONS         Height <sup>7</sup> mm (U)       1978 (42U), 2 111 (45U), 2 245 (48U)         Width       mm       300         Depth <sup>9</sup> mm       1000 or 1200         Weight—depth 1000 mm,       kg       153/158/163	Nominal net cooling capacity <sup>3</sup>	kW	6,8	11,9	18,8	21,9				
Maximum current         A         4,8         7,2         7,2         7,2           Nominal power consumption         W         510         850         850         850           Nominal airflow <sup>5</sup> m³/h         2100         4 000         4 000         4 000           Number of fans         ks         3         5           Motor fan technology         -         EC           Refrigerant type         -         R410A           Filter class <sup>6</sup> -         G4           DIMENSIONS           Height <sup>7</sup> mm (U)         1978 (42U), 2 111 (45U), 2 245 (48U)           Width         mm         300           Depth <sup>9</sup> mm         1000 or 1200           Weight—depth 1 000 mm,         kg         153/158/163         163/168/173	Power supply <sup>4</sup>	V/f/Hz		230/1/	50-60					
Nominal power consumption         W         510         850         850         850           Nominal airflow <sup>5</sup> m³/h         2 100         4 000         4 000         4 000           Number of fans         ks         3         5           Motor fan technology         -         EC           Refrigerant type         -         R410A           Filter class <sup>6</sup> -         G4           DIMENSIONS           Height <sup>7</sup> mm (U)         1978 (42U), 2 111 (45U), 2 245 (48U)           Width         mm         300           Depth <sup>9</sup> mm         1000 or 1200           Weight—depth 1 000 mm,         kg         153/158/163         163/168/173	Running current	Α	3,8	6,2	6,2	6,2				
Nominal airflow <sup>5</sup> m³/h         2100         4 000         4 000         4 000           Number of fans         ks         3         5           Motor fan technology         -         EC           Refrigerant type         -         R410A           Filter class <sup>6</sup> -         G4           DIMENSIONS           Height <sup>7</sup> mm (U)         1 978 (42U), 2 111 (45U), 2 245 (48U)           Width         mm         300           Depth <sup>9</sup> mm         1 000 or 1 200           Weight—depth 1 000 mm,         kg         153/158/163         163/168/173	Maximum current	Α	4,8	7,2	7,2	7,2				
Number of fans         ks         3         5           Motor fan technology         -         EC           Refrigerant type         -         R410A           Filter class <sup>6</sup> -         G4           DIMENSIONS         -         1978 (42U), 2111 (45U), 2 245 (48U)           Width         mm         300           Depth <sup>8</sup> mm         1000 or 1200           Weight—depth 1000 mm,         kg         153/158/163	Nominal power consumption	W	510	850	850	850				
Motor fan technology         EC           Refrigerant type         -         R410A           Filter class <sup>6</sup> -         G4           DIMENSIONS           Height <sup>7</sup> mm (U)         1978 (42U), 2111 (45U), 2 245 (48U)           Width         mm         300           Depth <sup>9</sup> mm         1000 or 1200           Weight—depth 1000 mm,         kg         153/158/163           153/158/163         163/168/173	Nominal airflow <sup>5</sup>	m³/h	2100	4 000	4 000	4 000				
Refrigerant type - R410A  Filter class <sup>6</sup> - G4  DIMENSIONS  Height <sup>7</sup> mm (U) 1978 (42U), 2111 (45U), 2 245 (48U)  Width mm 300  Depth <sup>9</sup> mm 1000 or 1200  Weight—depth 1000 mm, kg 153/158/163	Number of fans	ks	3		5					
Filter class <sup>6</sup> - G4  DIMENSIONS  Height <sup>7</sup> mm (U) 1978 (42U), 2111 (45U), 2 245 (48U)  Width mm 300  Depth <sup>6</sup> mm 1000 or 1200  Weight—depth 1000 mm, kg 153/158/163	Motor fan technology	-		E	С					
DIMENSIONS       Height <sup>7</sup> mm (U)     1978 (42U), 2111 (45U), 2 245 (48U)       Width     mm     300       Depth <sup>8</sup> mm     1000 or 1 200       Weight—depth 1 000 mm,     kg     153/158/163       153/158/163     163/168/173	Refrigerant type	-		R4	10A					
Height <sup>7</sup> mm (U) 1978 (42U), 2111 (45U), 2245 (48U)  Width mm 300  Depth <sup>8</sup> mm 1000 or 1200  Weight—depth 1000 mm, kg 153/158/163	Filter class <sup>6</sup>	-		G	4					
Width         mm         300           Depth <sup>8</sup> mm         1000 or 1200           Weight—depth 1000 mm,         kg         153/158/163         163/168/173	DIMENSIONS									
Depth <sup>8</sup> mm 1000 or 1200 Weight—depth 1000 mm, kg 153/158/163 163/168/173	Height <sup>7</sup>	mm (U)		1978 (42U), 2111 (	45U), 2 245 (48U)					
Weight—depth 1 000 mm, kg 153/158/163 163/168/173	Width	mm		30	00					
	Depth <sup>8</sup>	mm	1000 or 1200							
		kg	153/158/163 163/168/173							
Weight—depth 1 200 mm, height 42/45/48U kg 163/169/175 173/179/185	, ,	kg	163/169/175 173/179/185							
PIPING CONNECTION	PIPING CONNECTION									
Supply pipe diameter and type <sup>9</sup> mm 16 16		mm	16	16						
Return pipe diameter and type <sup>9</sup> mm 16 22	Return pipe diameter and type <sup>9</sup>	mm	16		22					

'CoolTeg 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. 

<sup>2</sup>Cooling 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. 

<sup>3</sup>Net cooling capacity is the cooling capacity minus fan heat load—the actual unit cooling capacity available to the IT equipment. 

<sup>4</sup>Outdoor condensing units AC-PUHZ-ZRP-xx are powered by 50Hz only. 

<sup>5</sup>Airflow is changed by the controller; nominal airflow matches nominal cooling capacity. 

<sup>6</sup>Units in Modular Closed Loop architecture (MCL) are delivered without filters. 

<sup>7</sup>Without plinth or transport trolley. 

<sup>8</sup>Units for Modular Closed Loop architecture (MCL) are available in 1 200 mm depth only. 

<sup>9</sup>Only 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	400/3/501	400/3/50	400/3/50
Operation current	Α	7,63	5,93	7,77	8,28
Maximum current	Α	19	9,5	19	21
Nominal power consumption	kW	1,72	3,78	5,46	8,3
Compressor control	-		Inve	erter	
Control valve	-		Linear expa	nsion valve	
Refrigerant volume R410A <sup>2</sup>	kg	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) <sup>3</sup>	mm	10	10	10	10
Return pipe diameter (gas) <sup>3</sup>	mm	16	16	25	25
Max. pipe length	m	50	70	100	100
Max. height difference	m	30	30	30	30
Operation conditions °C from -15 up to +46					

<sup>1</sup>Outdoor unit AC-PUHZ-ZRP125 requires power supply: 400V/3ph/50Hz, it is also available in 1ph version. <sup>2</sup>Outdoor units are prefilled with the refrigerant R410A for piping length 30 m. <sup>3</sup>This 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 XC30

## **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					
		хс30			
Indoor unit type	Unit	AC-TXC-42-30/XX-XXX			
Connected outdoor unit		AC-CONDx-xx-xx			
BASIC DATA					
Cooling system	-	Direct expansion			
Architecture <sup>1</sup>	-	Open or closed			
Nominal cooling capacity <sup>2</sup>	kW	22,95			
Nominal net cooling capacity <sup>3</sup>	kW	22,10			
Power supply	V/f/Hz	400/3/50-60			
Running current	А	14,1			
Maximum current	А	15,8			
Fan power consumption (maximum)	kW	0,85			
Compressor power consumption <sup>4</sup>	kW	6,74			
Nominal airflow <sup>5</sup>	m³/h	4000			
Number of radial fans	pcs	5			
Motor fan technology	-	EC			
Refrigerant type	-	R410A			
Filter class <sup>6</sup>		G4			
DIMENSIONS					
Height	mm (U)	1978 (42U), 2111 (45U), 2245 (48U)			
Width	mm	300			
Depth <sup>7</sup>	mm	1000 or 1200			
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			

'CoolTeg 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. <sup>2</sup>Cooling 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. <sup>3</sup>Net cooling capacity is the total cooling capacity reduced for fan heat load. Useful unit cooling capacity. <sup>4</sup>Power consumption at condensing temperature 45 °C and evaporation temperature 10 °C <sup>5</sup>Airflow is automatically changed by controller. Nominal airflow matches nominal cooling capacity. <sup>6</sup>Units in Modular Closed Loop architecture (MCL) are delivered without filters (standard). <sup>7</sup>Units in Modular Closed Loop architecture (MCL) are available in 1 200 mm depth only.

## DIRECT EXPANSION WITH INTEGRATED COMPRESSOR

# **COOLTEG PLUS XC40**



CoolTeg Plus XC40

## **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: ARAL 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 <sup>1</sup>	-	Open or closed		
Nominal cooling capacity <sup>2</sup>	kW	42,2		
Nominal net cooling capacity <sup>3</sup>	kW	39,1		
Power supply	V/f/Hz	400/3/50-60		
Running current	Α	22,7		
Maximum current	Α	25,3		
Fan power consumption (maximum)	kW	3,1		
Compressor power consumption (maximum)	kW	12,3		
Nominal airflow <sup>4</sup>	m³/h	9 000		
Number of radial fans	pcs	3		
Motor fan technology	-	EC		
Refrigerant type	-	R410A		
Filter class <sup>5</sup>		G4		
DIMENSIONS				
Height	mm (U)	1978 (42U), 2111 (45U), 2245 (48U)		
Width	mm	400		
Depth <sup>6</sup>	mm	1000 or 1200		
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		

<sup>1</sup>CoolTeg 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. <sup>2</sup>Cooling 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. <sup>3</sup>Net cooling capacity is the total cooling capacity reduced for fan heat load. Useful unit cooling capacity. <sup>4</sup>Airflow is automatically changed by controller. Nominal airflow matches nominal cooling capacity. <sup>5</sup>Units in Modular Closed Loop architecture (MCL) are delivered without filters (standard). <sup>6</sup>Units in Modular Closed Loop architecture (MCL) are available in 1200 mm depth only.

## **COOLTEG PLUS XC**

# OUTDOOR AIR-COOLED CONDENSERS



Outdoor air-cooled condensers disipates 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

CONDEN	SEKS											
Indoor	Max.	Garage D/N	Sound pr	essure level	Number	Power	supply		Length	Width	Height	Weight
unit	temp.	Conteg P/N	Lw(A)	Lp(A) 10m	of fans	f/V/Hz	Α	kW	(mm)	(mm)	(mm)	(kg)
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 ℃	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

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, 1× USB, 2× 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				
Code	Model			
TCW	Chilled water			
TDX	Direct expansion			
TDS	Direct expansion (small)			
TXC	Integrated compressor			

2. HEIGHT				
Code	Options			
42	42U			
45	45U			
48	48U			

3. WIDTH				
Code	Width (mm)			
30	300			
40	400			
60	600			

4. DEPTH*					
Code Depth (mm )					
<b>10F</b> 1000					
<b>12F</b> 1200					
* letter F indicates facelift. Older					

units are marked by O.

5.1. PIPING CONNECTION	
Code	Options
В	Bottom
Т	Тор

5.2. ARCHITECTURE	
Code	Options
0	Open
С	Closed (MCL – modulární closed loop)

5.3. DISPLAY	
Code	Options
W	Without
D	With

10. CONTROL

6. HUMIDIFIER	
Code	Options
0	Without
1	Humidifier (standard)
2	Humidifier (low water conductivity)

7. CONDENSATE PUMP	
Code	Options
0	Without
1	Condensate pump (standard)
2	Water rope detector
3	Condensate pump (powerful)*
Α	Water rope detector + condensate pump (standard)
В	Water rope detector + condensate pump (strong)

\*used when humidifier is installed, or water pump elevation is higher then 5m (up to 30m).

8. PO	8. POWER SUPPLY	
Code	Options	
0	Standard 230V/1f/50Hz	
Α	Dual power supply	

9. COMMUNICATION	
Code	Options
0	Without
М	Modbus
W	SNMP

Code	Options
0	Standard
Р	Pressure control
н	Outdoor unit HMI (Mitsubishi heavy industry)
R	Pressure control + outdoor unit HMI (Mitsubishi heavy industry)
E	Pressure control combined with CoolTop units

11. CONTROL VALVES	
Code	Options
0	Standard (3-way valve)
2	2-way valve

12. FANS	
Code	Options
0	Standard
s	Super strong fans (only for CW30)

13. SPECIAL MODIFICATION	
Code	Options
0	Standard
R	Relay—unit's status
6	6-row heat exchanger

## 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 airfl ow 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 the water hardeness.



# 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 m<sup>3</sup>/h.



