CONTEG DATASHEET

TARGETED COOLING

CoolTeg Plus
Chilled Water (CW) version:
AC-TCW

CONTEG, spol. s r.o.

Czech Republic Headquarters:

Na Vítězné pláni 1719/4
140 00 Prague 4

Tel.: +420 261 219 182
Fax: +420 261 219 192

Production plant in the Czech Republic:

K Silu 2179
393 01 Pelhřimov

Tel.: +420 565 300 300
Fax: +420 565 533 955

Local Branches/Offices

Austria:	+420 724 723 184
Benelux:	+32 477 957 126
Eastern Europe / Nordics:	+49 172 8484 346
France, Maghreb:	+33 686 074 386
Germany / Switzerland / Baltics / Denmark / Italy:	+49 170 523 4958
India:	+919 916 95 07 73
Middle East:	+971 555 08 32 41
Russia, CIS:	+7 495 967 3840

conteg@conteg.com
www.conteg.com

APPLICATION

CoolTeg Plus air-conditioning units for data centers are designed to fit perfectly the Conteg IT cabinet (rack) row. Their main task is to take the hot air out from the rear side of the racks, cool it down, and blow it to the front side of the racks to cool servers and other IT equipment.

We recommend to mechanically separate the hot and cold zones in the IT room and increase the temperature in the hot zone. This will increase the CoolTeg Plus unit cooling capacity; the water temperature can also be increased for higher power efficiency. The most typical application is the Conteg Modular Closed Loop (MCL). It is a custom-made container with various number of server racks and cooling units incorporated inside the loop.
CoolTeg Plus CW units are ready to be connected to the building chilled-water system, especially for free-cooling.

FUNCTION

The main parts and their functions:

Heat exchanger – to transfer heat from the hot air to the cold water. It is made of copper pipes with aluminum fins. The cross position of the HX inside the unit ensures maximum cooling capacity. The fin hydrophilic surface helps manage the condensate droplets. A condensation pan collects water buildup and drains them through a hosepipe (Ø 22 mm). The condensate pump is available as an accessory.

Fans – to transfer air from the room hot zone through the air-conditioning unit to the cold zone. We only use high efficiency radial fans with EC motors with variable speed control to maintain the required airflow with minimum energy consumption. A failure of each fan is reported to the controller.

Filters – to clean the air and protect interior components. The Zick-zack filters made from synthetic material in paper frames maintain the EU4 filtration class. They are easily replaceable if they become clogged.

Valve – to maintain the required cooling capacity. A three-way water valve is used with a servo drive as standard. It can be easily adjusted by the controller. The valve Kv value calculation is based on the system requirements.

Sensors – for real feedback. The temperature is measured at two points on the rear panel and two points on the front panel (at the upper and bottom positions). Thanks to this arrangement, the controller always has up-to-date information. The air humidity is measured at the top position on the unit's front and rear panels. A differential pressure meter monitors the filter cleanness, and alerts if filters become dirty.

Control box – for electric power distribution, function control, safety and communication. There is a circuit breaker on the power supply; one for the fan motors and second for the controller. The controller that comes with the original Conteg software also manages all the functions for the CoolTeg Plus unit. According to the values set by the user, the controller can change the speed of the fans, adjust the water valve opening grade and operate various accessories.

Display – for user-friendly communication with the unit controller. The standard way for communication is through a 4.3" color touch display, which can be placed on the unit front door or separately in the room. One display can maintain communication with up to 30 units. An RS485 port and two ethernet ports enable remote control and monitoring via various building systems. A USB port is mainly used for easy software updates. Color touch displays 7" or larger are available for the whole room or facility monitoring.

FOLLOW THE STEPS TO SET UP DESIRED CoolTeg Plus COOLING UNITS PRODUCT CODE!

AC	-	1.	-	2.	-	3.	/	4.	-	5.	6.	7.

1 CoolTeg Plus COOLING SYSTEM

Code	Options
TCW	Chilled water
TDX	Direct expansion
TXC	Integrated compressor

2 HEIGHT *

Code	Height in U	External height in mm
42	42	1978
45	45	2111
48	48	2245

* without plinth and transport trolley

3 WIDTH

Code	Width in mm
30	300
40	400*
60	600**

* only for XC unit
** only for CW unit

4 DEPTH

Code	Depth in mm
100	1000*
120	1200

* not for XC unit

5 CONNECTION

Code	Options
T	Top
B	Bottom

6 ARCHITECTURE

Code	Options
O	Open architecture
C	Closed architecture - MCL

7 DISPLAY

Code	Options
D	Display in the door
W	Without display

An example of the correct product code

AC-TCW-42-30/120-TOD

TECHNICAL DATA – CoolTeg Plus UNITS

	Unit	CW30	CW60
Indoor unit type		AC-TCW-42-30...	AC-TCW-42-60...
Connected outdoor unit		Chilled - water system	
BASIC DATA			
Cooling system	-	Chilled water	
Architecture [1]	-	Open or Closed	Open
Nominal cooling capacity [2]	kW	26	61
Nominal nett cooling capacity [3]	kW	25	58
Power supply	V/ph/Hz	230 / 1 / 50	400 / 3 / 50
Nominal power consumption	W	770	2930
Running current	A	4,2	4,8
Maximum current	A	6,0	6,0
Nominal airflow [4]	m^3/h	3800	10500
Number of fans	pcs	5	3
Motor fan technology		EC	
Water flow (or refrigerant type)	kg/h	3700	8750
Filter class [5]		G4	
DIMENSIONS			
Height [6]	mm (U)	1978 (42U), 2111 (45U), 2245 (48U)	
Width	mm	300	600
Depth [7]	mm	1000 or 1200	
Weight – depth 1000 mm, height 42/45/48U	kg	163/168/173	248/256/264
Weight – depth 1200 mm, height 42/45/48U	kg	173/179/185	260/270/280
PIPING CONNECTION			
Supply pipe diameter and type		1¼" female	1 ½" female
Return pipe diameter and type		1¼" female	1 ½" female

[1] CoolTeg Plus units can be used independently in a row of racks or integrated in a Modular Closed Loop (MCL) - closed-architecture system of racks and cooling units. Type code is changed according to the key.
[2] Cooling capacity is changed by controller. The nominal one is calculated at an indoor hot air temperature of 35°C without condensation (air humidity below dew-point), chilled water temp. 6/12°C (for CW), outdoor temp. +35°C (for DX and XC), clean filters
[3] Nett cooling capacity is the total capacity reduced for fan heat loads. It is the available cooling capacity of the unit.
[4] Airflow is changed by controller. The nominal one matches the nominal cooling capacity
[5] Closed-Architecture (MCL) units are standardly delivered without filters
[6] Without any Plinth or Transport Trolley
[7] Closed-Architecture (MCL) units are only available in depths of 1200mm

CONTROL FUNCTION

Each CoolTeg Plus unit includes an independent controller inside the control box. This controller sends a signal to the fans and the water valve to change the airflow and water flow through the heat exchanger in order to maintain the temperature setting in the cold and hot zone.

The cold zone temperature setting affects the water valve opening. The user can set limits for minimum and maximum opening.

The temperature difference setting (the difference between the cold and hot zone) affects the speed of the fans. The goal is to maintain balanced airflow in the whole system (the cooling units and IT equipment). The user can set limits for minimum and maximum fan speed.

The humidity setting can start dehumidifying mode if the value is too high. During the dehumidifying mode, the fan speed is minimized and the heat exchanger surface temperature is decreased to minimum by maximum water flow. It causes maximum condensation on the cooler surface. The condensate water is collected in the bottom pan and drained away.

If the unit is equipped with a humidifier, the humidifying mode is also available.

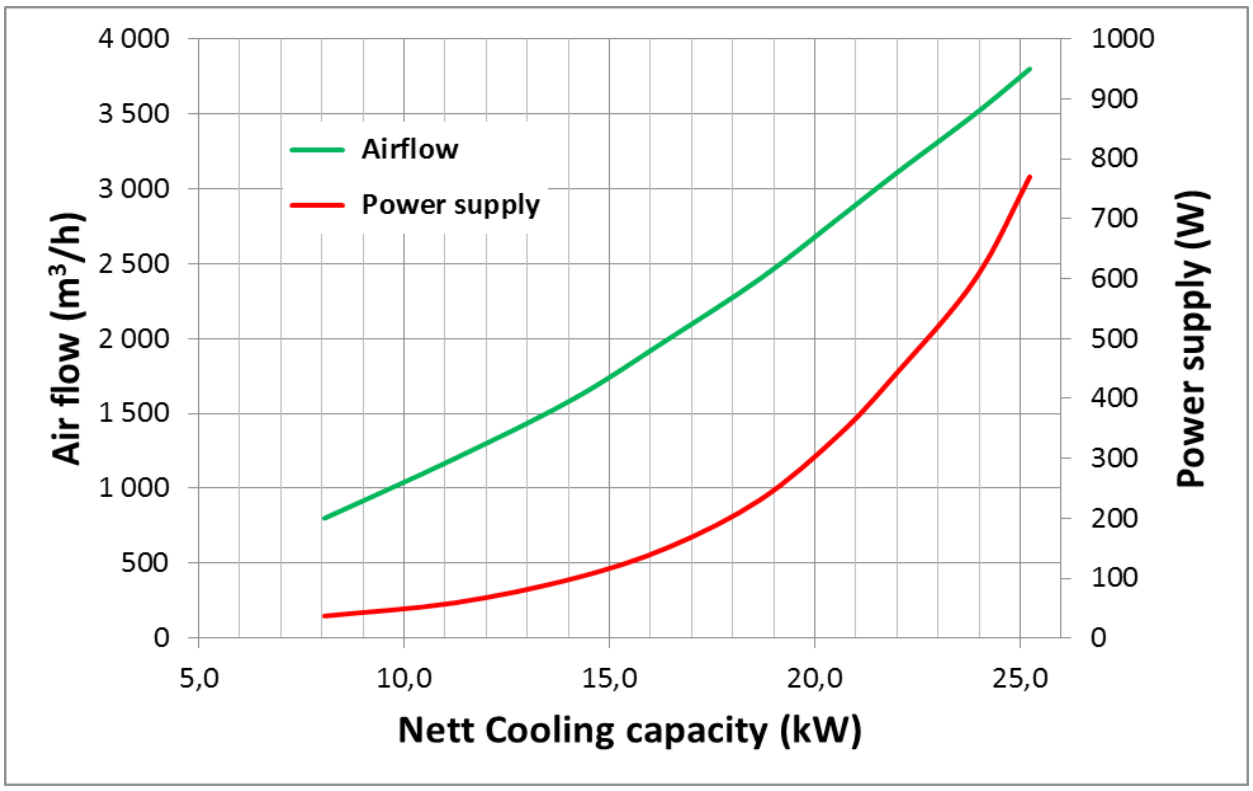
COMMUNICATION

Each air conditioner can be equipped with a touch display situated on the front door. If one display operates more than one unit, then all units in the group must be connected. Up to 30 units can be connected to one display. They can be divided into four zones with up to eight units each. The units connected to the zones can cooperate with each other. Zone functions - standby management and overload start - are available. When the number of units in a zone is established the following parameters must be set: number of running units (standby units are set automatically), changeover period (daily or weekly), overload start (temperature limit for start of standby units).

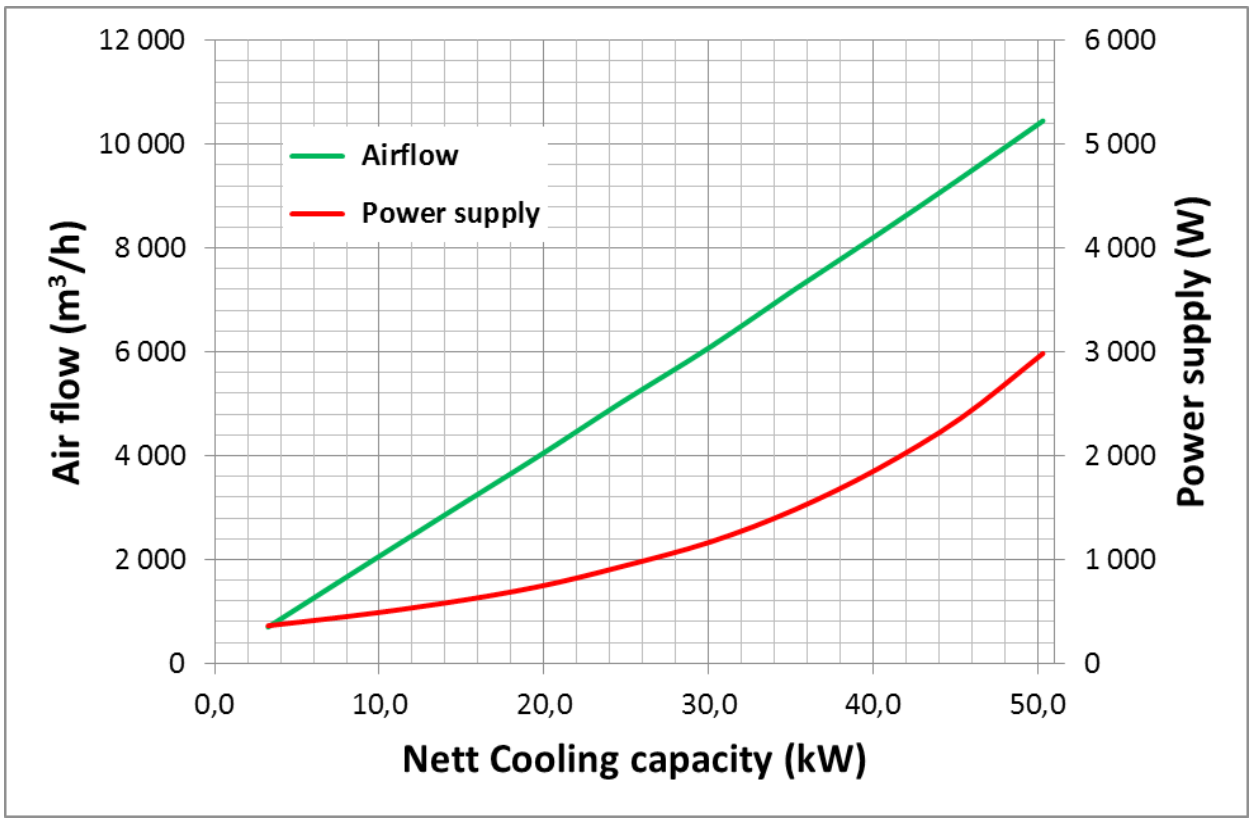
The display includes a web server application supporting an IP address access. The communication protocol is TCP/IP (ethernet connection). If needed, each controller can be equipped with an additional extension ModBus card (separate wiring is needed).

It is also possible to use both standard and additional digital inputs and outputs in each cooling unit, which are typically used for general warnings and alarms as well as sending other basic information.

Size CW30

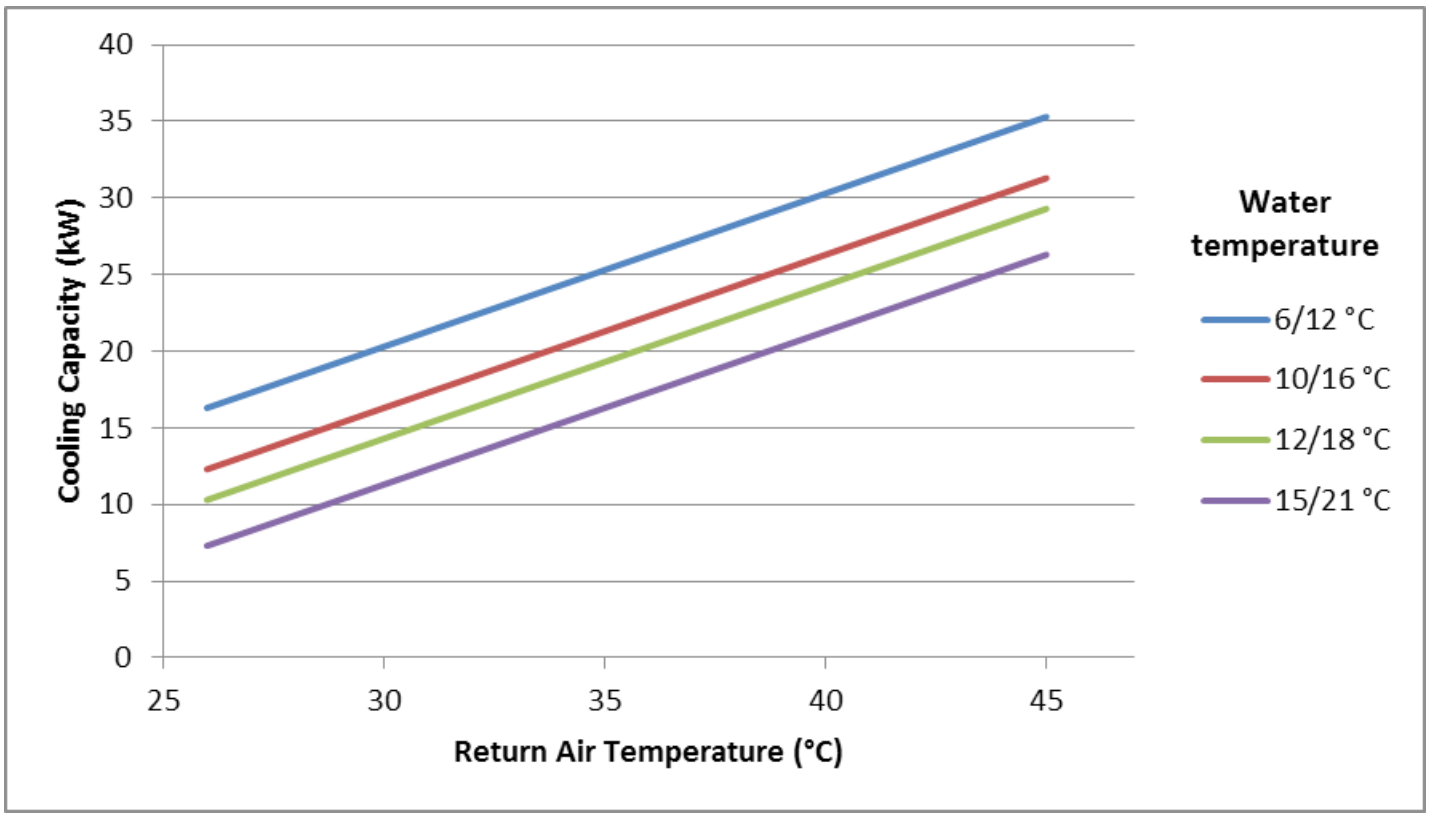


Size CW60

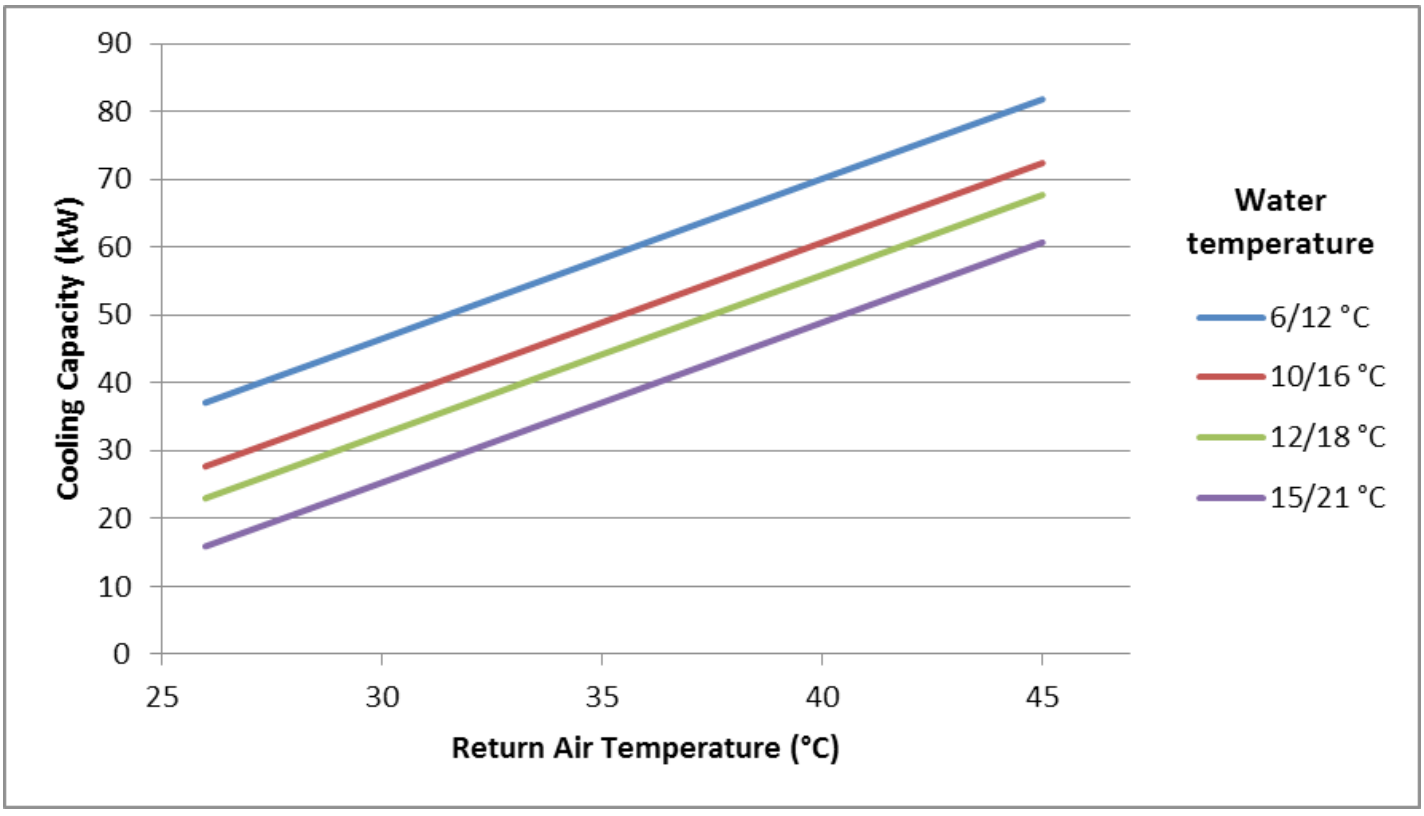


Conditions: Input air temperature = 35°C; cooling without condensation; water temperature = 6 / 12°C

Size CW30



Size CW60



Conditions: Maximal air flow; full water valve opening