

Vertiv™ CoolPhase CDU

Liquid-to-Refrigerant Coolant Distribution Unit



Overview

Internet of things (IoT), artificial intelligence (AI), and other data-intensive technologies like virtual reality are requiring data centers and colocation environments to deploy servers with ever-higher power and cooling requirements. And where these higher heat loads are required to be supported, Vertiv CoolPhase CDU can pair with direct-to-chip cold plates, making it an ideal solution without increasing the rack footprint!

The Vertiv CoolPhase CDU combines CDU, chiller, fluid pump, filtration system, and thermal controls all into one easy to deploy product. A direct replacement for existing Vertiv™ Liebert® DSE 265 perimeter units and pairing with the Liebert® MCV direct expansion outdoor condenser, Vertiv CoolPhase CDU allows data centers to scale existing deployments while utilizing as much of their existing infrastructure as possible.... All without the need to deploy chilled water on site!

Benefits

- Cost-effectively incorporate liquid-cooling in your existing air-cooled environment
- Support both Direct-to-Chip and RDHx applications
- Teamwork Mode enhances system flexibility and redundancy
- Leverage existing deployed DX condensers
- Mix and match air cooled and liquid cooled units to future-proof your data center design

With its compact, modular format, and up to 320 kW of heat rejection, the Vertiv™ CoolPhase CDU removes the traditional barriers of a centralized chiller to deploy direct-to-chip liquid cooling, giving you a cost-effective, flexible means for deploying high density racks where you need them to support advanced applications.

The new Vertiv CoolPhase CDU makes it possible for data centers to deploy direct-to-chip liquid cooling without a centralized facility chiller with coolant distributed directly to the cold plates through overhead or underfloor manifolds with full control of temperature, volume, and flowrate.

The perimeter-based unit is designed to be modular for flexibility and to support immediate deployments and growth requirements. With integrated Vertiv™ Liebert® Liqui-Tect™ leak detection and unit-to-unit teamworking, the Vertiv CoolPhase CDU brings peace of mind to data center teams.

The Vertiv CoolPhase CDU connects directly to cold plates mounted on the heat-generating components of accelerators and provides circulation and control of the secondary fluid circuit.

The Vertiv CoolPhase CDU primary circuit uses R410A and is compatible with Vertiv™ Liebert® MCV High Density Condenser with premium efficiency control and EC fans with operational efficiency in EconoPhase mode.

Reliable, efficient chilled coolant distribution

With up to 320kW of heat rejection, the Vertiv CoolPhase CDU offers the cooling power to support multiple racks of direct-to-chip servers or Vertiv™ Liebert® DCD passive or active rear door heat exchangers, making it ideal for efficiently handling the thermal needs of advanced IT equipment while giving you the capability to scale over time.

The redundant modular design ensures the reliability of your mission critical load. The variable-speed pump controls coolant flow to match heat load with your efficiency goals. The Flexibility of allowing you to set the flow rate based on facility conditions.

Complete visibility and control

For further peace of mind, the Vertiv™ Liebert® iCOM™ control display affords complete visibility into unit status and operating conditions, which can also be monitored remotely. You can set flow rates and receive alerts if operational parameters are outside of boundary conditions or if the unit ever requires to switch to a backup unit.



Technical Specifications

Max Cooling Capacity*	362kW Water / 348kW PG25%
L x H x W mm (L x H x W in)	3041 x 3173 x 609 (120 x 125 x 24)
Weight Dry +/- 5% kg (lbs.)	3289 (1491)
Shipping Dimensions mm (in)	3251 x 1676 x 2567 (128 x 66 x 97)
Packaging Weight +/- 5% kg (lbs.)	220 (484)
Primary Loop (Refrigerant)	1-3/8" O.D. Cu
Secondary Loop (Chilled Water)	3" Stainless Steel
Primary Loop Fluid (refrigerant)	R410A
Secondary Loop Fluid	Water / Water-glycol
Secondary Loop Filtration	50, 100 or 500µm
Secondary Loop Valves Max Water Pressure	400PSI (2758kPA)
Pumps (VFD Driven)	10 or 15 Hp
Max Flow Rate for 15HP	200 Gpm
Max Flow Rate for 10HP	150 Gpm
Available Head Pressure for 15HP**	35 Psi
Available Head Pressure for 10HP**	45 Psi
Service Access	Front and Top

*Max Capacity at 83 °F CWS, 95 °F ODT.

**Available head pressure out of the unit with 50µ filter.

Electrical Specifications

Power Supply US	460V/60Hz, 3Ph		
SCCR (Short Circuit Current Rating)	65,000		
Dual Power Feeds (ATS)	Single Disconnect (15HP, MCV440, PRE)	Dual Disconnect (15HP, MCV440, PRE)	Dual Disconnect w UPS (15HP, MCV440, PRE)
FLA (Full Load Amps)	141.6	164	130 (34 UPS)
WSA (Wire Size Amps)	148.3	170.7	136.7 (38.3 UPS)
OPD (Overcurrent Protection Device Amps)	175	175	150 (50 UPS)

Remote Monitoring and Control

Liebert® iCOM™	SNMPv1/v2c/v3, HTTP, SMTP, SMS
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Compatibility Data

Outdoor Heat Rejection	Vertiv™ Liebert® MCV430 / 440
Liebert® DSE Unit Retrofit	Vertiv™ Liebert® DSE 265
Liquid Cooling Module	Direct to Chip (DTC) or RDHx (Liebert® DCD 35/47/50)

Cooling Capacity (kW)

CWS (°F)	PG25				
	95°F ODT	103.5°F ODT	105°F ODT	110°F ODT	120°F ODT
OHT	MCV430		MCV440		
60	272.0	252.1	248.6	236.9	213.5
66	298.4	276.0	272.1	259.0	232.7
70	316.0	292.0	287.8	273.7	245.4
73	329.1	303.9	299.5	284.7	255.0
80	359.9	331.8	326.9	310.4	277.4
83	348.1	325.9	322.0	308.9	282.8
86	336.3	320.0	317.1	307.5	288.3
95	332.4	319.2	316.9	309.2	293.7
105	328.4	317.9	316.1	310.0	297.7

95°F ODT	Water			
	103.5°F ODT	105°F ODT	110°F ODT	120°F ODT
MCV430		MCV440		
282.9	262.2	258.6	246.4	222.0
310.3	287.1	283.0	269.3	242.0
328.6	303.7	299.3	284.6	255.3
342.3	316.1	311.5	296.1	265.2
374.3	345.1	340.0	322.8	288.5
362.0	338.9	334.9	321.3	294.2
349.8	332.8	329.8	319.8	299.8
345.7	332.0	329.6	321.5	305.4
341.5	330.7	328.7	322.3	309.6

CWS = Chilled Water Supply

ODT = Outdoor Design Temperature

OHT = Outdoor Heat Rejection

Assumptions:

1. Cooling capacity calculated using the 15HP pump

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