

***motivair***<sup>®</sup>  
COOLING SOLUTIONS



**CDU** coolant  
distribution  
unit

Floor Mount & In-Rack Models

OUR BUSINESS IS COOLING YOURS<sup>™</sup>

[motivaircorp.com](http://motivaircorp.com)



# COMPREHENSIVE COOLING FOR YOUR DIGITAL WORLD

## From Hyperscale to Exascale

A Coolant Distribution Unit (CDU) is designed to control and separate colder facility water supplies from the IT cooling infrastructure. It allows you to deploy higher density, load diverse IT equipment in a smaller footprint & improve efficiency.

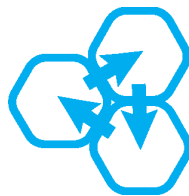
This action of “decoupling” allows the CDU to accurately monitor and control the flow and temperature of clean, cool fluid to all types of IT cooling systems, including Active and Passive Rear Door Heat Exchangers or Liquid-Cooled Computer Systems (Direct-to-Chip or On-Chip).

The CDU maintains a secondary loop water temperature above the dew point in the data center to eliminate the possibility of condensation.



### MODELS

MCDU-4U 105 kW  
MCDU15 310 kW  
MCDU 25 625kW  
MCDU 40 1250kW



### APPLICATION

ChilledDoor®  
Rack Cooling System &  
Liquid-Cooled Computer Systems

## KEY REASONS TO USE A MOTIVAIR® CDU

- Isolates a clean water supply for IT cooling system
- Maintains water temperature above data center dew point eliminating the possibility of condensation
- Automatically adjusts water flow and temperature for scale-on-demand IT loads
- Offers inherent redundancies for maximized uptime
- Ideal for W1 – W5 cooling systems
- Made in the USA

### Custom OEM Solutions

Motivair offers flexible CDU designs for unique liquid cooling applications, including custom OEM solutions.





## DECOUPLE

Isolate computer cooling loop  
from facility cooling water



## CONTROL

Exact temperature and flow to IT  
cooling system above room dew point



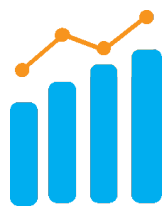
## MONITOR

Record, trend and report updates  
on cooling system profiles



## REDUNDANCY

Redundant pumps ensure reliable  
cooling to server equipment



## SCALE

Adapt cooling system in real time  
with server load demand

# HOW IT WORKS

The Motivair® Coolant Distribution Unit (CDU) creates an isolated water loop and pumps this through the cooling system to operate at maximum efficiency. It automatically adjusts the coolant flow and temperature to provide 100% sensible cooling up to 1.25MW, depending on the model.

Each CDU uses a stainless-steel heat exchanger, which transfers the heat removed from the IT equipment in the secondary loop to the primary (building) chilled water supply. The primary chilled water supply can be a chiller, cooling tower, or natural resource. The redundant dual pumps deliver a secondary coolant loop with water supply temperatures ranging from 55F - 113F+ (W1 - W5), which removes up to 1.25MW of IT equipment waste heat. Each CDU precisely controls required coolant flow based on IT cooling system needs. A complete range of CDUs with varying capacities allow for flexibility in design to best fit your application.

A modulating 2-way valve constantly adjusts the CDU cooling capacity based on IT demand. Operation is completely automatic with adjustable water temperature set points, dew point control and alarm thresholds that are easily accessible through the PLC control system mounted on the front of the CDU. A powerful PLC controls the entire CDU operation and provides remote control and communication via BACnet MS/TP, BACnet IP, Modbus, or LON.

## Exascale Approved

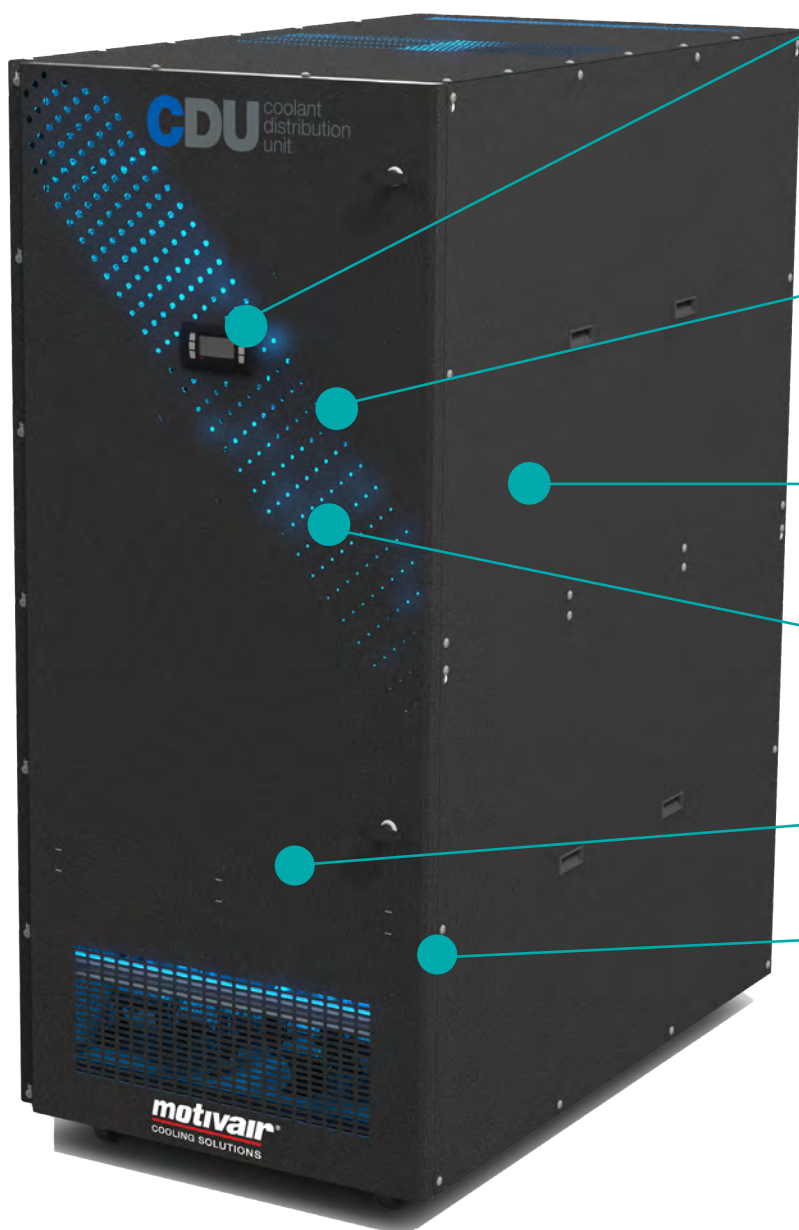
The world's next generation of supercomputers have been designed with intense processing power that requires direct liquid cooling (DLC).

Exascale class systems need CDU's that are capable of managing dense thermal loads and communicating directly with the computer itself to ensure maximum performance and reliability.

As a trusted partner to the leading chip and computer manufacturers, Motivair has earned the distinct honor of cooling the world's first exascale computer systems.

# Features

## Floor-Mounted CDUs



### PLC CONTROL SYSTEM

Simple navigation, adjustable set points and alarms provide individual setup, control and monitoring

### LED STATUS INDICATOR

Provides the data center team with visual CDU status

### REDUNDANT VARIABLE SPEED DRIVES

### STAINLESS STEEL HEAT EXCHANGER

### REDUNDANT PUMPS

### 3X FLOOR-MOUNTED MODELS

with cooling capacity up to 2.3 MW, depending on model

## In-Rack CDUs



### REDUNDANT CIRCULATING PUMPS

### 4U IN-RACK DESIGN

Placement in top or bottom of any standard 19" rack enclosure

### COOLING CAPACITY OF 80KW

with ChilledDoor® or 105kW with other IT computer cooling systems

# Motivair® Coolant Distribution Unit

## TECHNICAL SPECIFICATIONS:

MODELS:	MCDU 4U	MCDU - 15	MCDU - 25	MCDU - 40	MCDU-50	MCDU-60
Rated Cooling Capacities (kW)*:						
Primary (Building) Supply @ 90F Secondary Supply/Return 25% PG @ 113F/149F	102	310	625	1250	1725	2350
Primary (Building) Supply @ 90F Secondary Supply/Return 25% PG @ 112F/122F	28	85	170	337	478	633
Primary (Building) Supply @ 45F Secondary Supply/Return @ 60F/84F	70**	210	410	840	1190	1575
Coolant Fluids Available (Type)***:	Water, Glycol	Water, Glycol	Water, Glycol	Water, Glycol	Water, Glycol	Water, Glycol
Nominal [Primary   Secondary] Flowrate (GPM   GPM): 30   20		90   60	185   120	420   240	420   340	800   450
Primary & Secondary Connections (Inch)****:	1-1/2"	1-1/2"	2-1/2"	4"	4"	6"
Primary & Secondary Connection Locations (Type):	Rear	Top/Bottom	Top/Bottom	Top/Bottom	Top/Bottom	Bottom
Nominal Available Pump Head Pressure (Psi):	15	25	37	32	30	32
Number of Pumps (Std.   Optional):	2	2   1	2   1	2   1	2   1	2   1
Integrated Variable Speed Drives (VFD's):	√	√	√	√	√	√
Number of Power Feeds (Qty.):	2	2	2	2	2	2
MCDU Dimensions (Inch):						
Height :	7"	73-5/8"	73-5/8"	80-1/4"	80-1/4"	98-3/8"
Length:	37"	42-1/2"	42-1/2"	60-1/4"	60-1/4"	63
Width:	17-3/4"	31-1/2"	31-1/2"	35-1/2"	35-1/2"	48-1/8"
Electrical Power Supply Options Available (V/Ph/Hz):						
200-240V/1Ph/50-60Hz	√					
230V, 460V, 575V/3PH/60HZ		√	√	√	√	√
400V/3PH/50HZ		√	√	√	√	√
Redundant A/B Power Connections	√	√	√	√	√	√
Full Load Amps (FLA) (460V/3PH/60HZ):	3.5*****	4.8	11	19	24	35
PLC Controls:	√	√	√	√	√	√
Communication Platforms Available (Type):	BACnet, SNMP, (optional) Modbus	BACnet, SNMP, Modbus	BACnet, SNMP, Modbus	BACnet, SNMP, Modbus	BACnet, SNMP, Modbus	BACnet, SNMP, Modbus
Sound Data Rated at 3 ft [1m] (dBA):	<55 dBA	<64 dBA	<68 dBA	<70 dBA	<75 dBA	<72 dBA
Safety Approvals:	UL/CSA/CE	UL/CSA/CE	UL/CSA/CE	UL/CSA/CE	UL/CSA/CE	UL/CSA
Leak Detection (WDS Single   Redundant):	Std.   Optional	Std.   N/A	Std.   N/A	Std.   Optional	Std.   Optional	Std.   Optional
Dew Point Monitoring	√	√	√	√	√	√
Optional Secondary Strainer	N/A	N/A	√	√	√	Standard
Primary Flow Meter	Standard	N/A	N/A	√	√	√

\* Capacities are rated with 100% Water - Capacities will vary depending on application

\*\* Primary (Building) Supply @ 45F; Secondary Supply/Return @ 60F/84F

\*\*\* Consult Factory for Custom Fluids

\*\*\*\* Consult Factory for optional connection types

\*\*\*\*\* Full Load Amps (FLA) at 230V/1PH/50-60HZ

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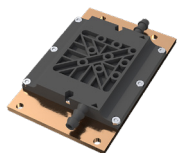
# ***motivair***<sup>®</sup>

## COOLING SOLUTIONS



### **CHILLED DOOR<sup>®</sup> RACK COOLING SYSTEM**

Advanced server rack cooling system fits any standard or OEM computer rack. Removes up to 75 kW of server heat per door.



### **DYNAMIC COLD PLATE<sup>™</sup>**

Motivair's Dynamic Cold Plate<sup>™</sup> harnesses innovative fluid dynamics to redefine direct liquid cooling. Our patent pending technology enables robust performance without the use of skived microchannels. It allows CPUs and GPUs to operate at peak performance while reducing the possibility of cooling degradation and costly system failures.



### **SERVICE & MAINTENANCE PROGRAM**

Motivair<sup>®</sup> provides customer-focused service and support for your mission critical equipment. We offer site surveys, installation services, Level III Commissioning support, service agreements, and extended warranties on parts.



### **HEAT DISSIPATION UNIT<sup>™</sup>**

The Motivair HDU is connected directly to the computer cooling loop and sits adjacent to or proximate to the computer racks. Circulation pumps located inside the HDU move hot water from the computer system to the HDU's air-cooled heat exchanger. High-efficiency EC fans draw cool room air across the HDU's internal heat exchanger, removing heat from the computer cooling system. A high-powered PLC controls and monitors all aspects of HDU performance ensuring the HPC system can operate within thermal specifications and without dependence on a building water supply.



### **MODULAR DATA CENTER**

Backed by our ChilledDoor<sup>®</sup> and Coolant Distribution Unit (CDU) technology, our Modular HPC Data Center can accommodate power densities of up to 75 kw/rack in air cooled systems and 150 kw/rack for modern liquid-cooled supercomputers and HPC clusters. Each system can be equipped with Motivair's integrated Free-Cooling Chiller technology or warm water fluid cooling systems for maximum uptime and efficiency.

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