



Black Box Cold Front Data Center Cooling Solutions

Use passive liquid cooling at the rack level and cut power and cooling costs by 50%.



Cold Front Coolant Management Systems



Cold Front Heat Transfer Door



Passive liquid cooling for your data center.

- Heat Transfer Doors use liquid to neutralize heat at the source.
- Coolant Management System intelligently moves liquid through Heat Transfer Doors.
- Supports five times the computing power of air-cooled facilities.
- Installs easily and requires no rearrangement of your enclosure.
- Saves on energy bills. Reduces energy consumption of indoor cooling units by 90% or more!
- Neutralizes heat at the source, returning cooled air into the data center and providing up to 35 kW of cooling.
- Eliminates the need for hot-aisle/cold-aisle configurations—place your computing equipment where you want it.

Nothing cools like chilled water. Now you can harness the cooling power of liquid in your data center with Cold Front.

Cold Front is the perfect solution for tightly packed server rooms or high-density enclosures. It works to sensibly cool a data center enclosure—and can lower data center total cost of ownership by as much as 50% because it reduces both energy and space requirements.

Heat Transfer Door

The Heat Transfer Door (HTD) neutralizes heat at the source. Chilled liquid passing through the door cools the exhaust air before it re-enters the data center. It requires no fans or electricity because it uses the server fans to move the hot air through the door.

The door uses a closed-loop circulatory system, and its specially designed perforations and coil maintain airflow through the cabinet.

Because the Heat Transfer Door features a passive design with no moving parts, it increases efficiency and eliminates the need for fans (and reduces noise).

The door replaces the existing rear door and installs easily, requiring little if any regular maintenance. Plus, it can be installed without the need for pressurized raised floors, air plenums, or exhaust chimneys. It also eliminates secondary pump systems for condensate.

Choose from top- or bottom-feed versions, as well as models that support 100% neutralization (maximum) of the heat load for 22–35 kW of cooling capacity*. The door works with most enclosures and can be ordered for many standard cabinet sizes.†

Use the door with our Coolant Management System ([facing page](#)) for consistent data center cooling that grows as your computing capacity increases.



* Maximum cooling capacities are for 100% neutralization of heat load using ASHRAE allowable conditions: EWT @ 55° F (13° C); flow rate @ 12 GPM (45 LPM); EAT to the rack @ 90° F (32° C); 2500 CFM; dew point @ 54° F (10° C) or lower.

† Compatible with Black Box® Elite™ cabinets and most other major cabinet brands, including APC®, Rittal®, HP®, CPI®, and others.

Coolant Management System

The advanced Coolant Management System (CMS) works with enclosure-mounted Heat Transfer Doors (**facing page**) to keep data center equipment running cool and lower your overall energy consumption.

On a primary loop, it attaches to your chilled water system or a dedicated chiller. On its secondary loop, the system connects to the Heat Transfer Doors, providing up to 20 or 150 kW of cooling capacity, depending on the model.

The system maintains the isolated secondary loop supply temperature above the dew point of the data center, preventing condensation and ensuring 100% sensible cooling.

The system does this by monitoring the temperature and pressure conditions and increases and decreases in flow as conditions change in your data center. Heat removed by connected Heat Transfer Doors is then ejected to the chilled water supply by using a stainless steel plate heat exchanger.

What's more, the system's controller provides intelligent monitoring, interfacing with building management systems and Web management tools for high reliability.

The versatile Coolant Management System features redundant variable speed pumps, actuators, and control valves to maximize system availability.

The system is available in two base versions:

- A floor-mount model that boasts up to 150 kW of cooling capacity, supports up to 12 Heat Transfer Doors, is easy to install and maintain, and can be placed next to your IT enclosures or outside of the white space entirely.
- A smaller, 6U-high rackmount system that supports up to 20 kW of cooling capacity and provides a cost-effective way to support one or two Heat Transfer Doors.

Cold Front Total Cost of Ownership:

Total Cost of Ownership (TCO)

The average operating cost of data centers has grown three times faster than capital investment in new IT equipment. Factors for uncontrolled TCO include cooling equipment capital expense, inefficient designs, high installation costs, rising energy bills, and ongoing maintenance. So, how can you add value while meeting your cooling challenges?

Scalable

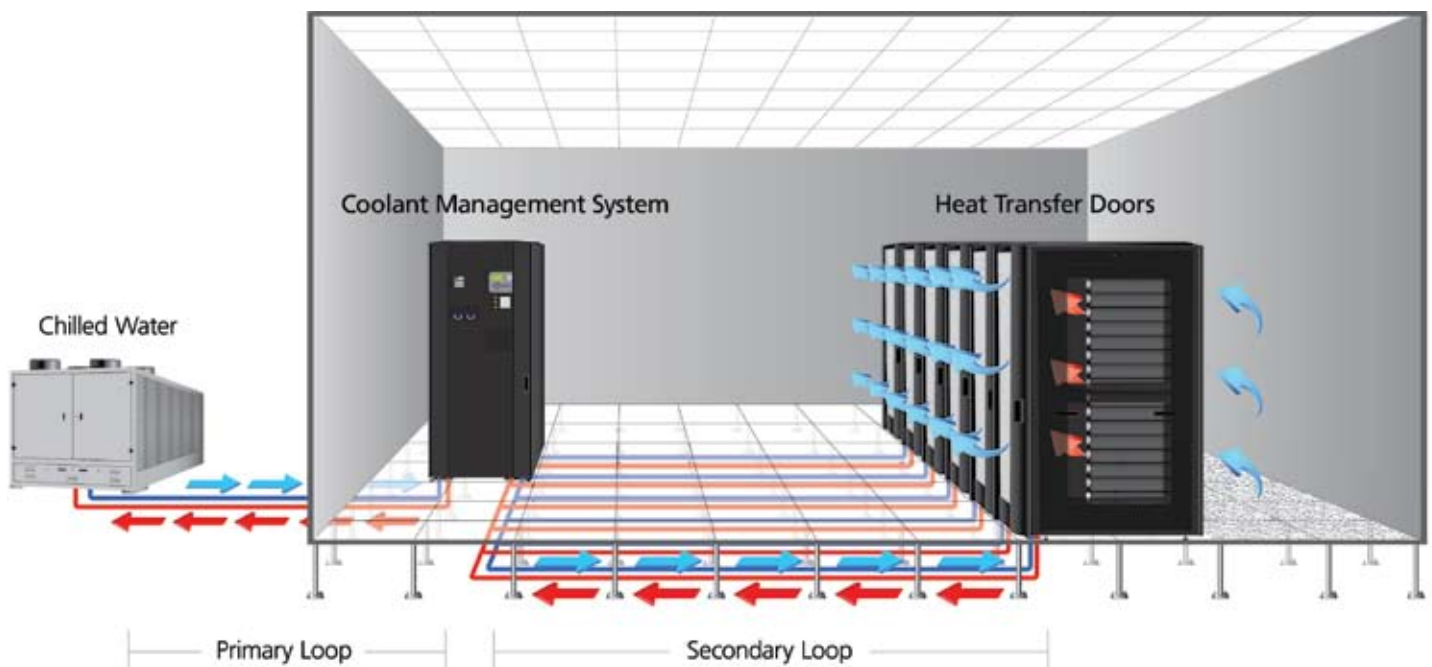
In typical data center installations, the infrastructure required to support perimeter or in-row cooling must be built in on Day One. Because the Cold Front solution can be installed quickly and easily and requires no pressurized raised floors, air plenums, exhaust chimneys, etc., you can build as you grow. Add units as you add computing. Don't pay for infrastructure that you don't need.

Reliable

With no moving parts, the Cold Front door requires little if any regular maintenance. In fact, we are so sure of the reliability of the Cold Front heat transfer door, it comes with a three-year limited warranty.

Predictable

The Cold Front cooling solution uses a closed-loop circulatory system and connects to a Coolant Management System (CMS) that monitors the temperature and pressure conditions, increasing and decreasing flow as conditions change in the data center. This approach offers data centers consistent and scalable cooling to meet their changing demands.



Coolant Management System (CMS) Specifications



Maximum Cooling Capacity	20 kW CMS	150 kW CMS
Coolant Type	Chilled liquid	Chilled liquid
Physical Configuration	Rackmount	Floor-mount
Design Pump Capacity	10.6 GPM (40 LPM)	63 GPM (240 LPM)
Available External Head	29 psi @ 10.6 GPM	36 psi @ 63 GPM
Primary Pressure Drop	7.2 psi @ 10.6 GPM	9.9 psi @ 63 GPM
Primary Connection	3/4" BSP flat face	42 mm/1.5" sweat
Secondary Connection	3/4" Quick Connects	3/4" Quick Connects or 1.5" Flex Tails
Secondary Coolant Volume	0.9 gallons (3.5 L)	8.9 gallons (33.5 L)
Approach Temperature at 100% Load	13.1° F (7.3° C)	8.3° F (4.6° C)
Number of RDHx supported	1-2 RDHx	Up to 12 RDHx
Power Supply	208 V, 10, 60 Hz or 230 V, 10, 50 Hz	208-230 V, 30, 50/60 Hz or 380-480 V, 30, 50/60 Hz
Maximum Power Consumption	690 W at 230 V	2.6 kW at 480 V
Noise Level at 3 meters	<55 dBA	<55 dBA
Size (H x W x D)	10.5" (6U) x 19" x 29" 27 x 48 x 73 cm	72" (36U) x 31.5" x 43" 183 x 80 x 109 cm
Dry Weight: Rackmount	101 lb. (46 kg)	N/A
Dry Weight: Floor-mount with Flex Tails	N/A	847 lb. (384 kg)
Dry Weight: Floor-mount with Internal Manifold	N/A	897 lb. (407 kg)

NOTE: Compatible with Black Box® Elite™ cabinets and most other major cabinet brands, including APC®, Rittal®, HP®, CPI®, and others.

Guard mission-critical IT equipment against physical threats with AlertWerks.

Complete environmental monitoring over
any IP network—even the Internet.

- » High or low temperatures
- » Water / humidity
- » Motion detection
- » Smoke detection
- » Fire
- » Security
- » Airflow
- » AC voltage

© Copyright 2011, Black Box Corporation. All rights reserved. Printed in U.S.A. Black Box®, and the Double Diamond logo are registered trademarks, and Elite™ and AlertWerks™ are trademarks, of BB Technologies, Inc. Any third-party trademarks appearing in this brochure are acknowledged to be the property of their respective owners.