



**Vertiv™ Liebert® DM**  
7 kW to 27 kW  
High Performance Thermal  
Management Solution for  
Small Technological Rooms



## About Vertiv™

Vertiv brings together hardware, software, analytics and ongoing services to ensure its customers' vital applications run continuously, perform optimally and grow with their business needs. Vertiv solves the most important challenges facing today's data centers, communication networks and commercial and industrial facilities with a portfolio of power, cooling, and IT infrastructure solutions and services that extends from the cloud to the edge of the network. Headquartered in Columbus, Ohio, USA, Vertiv employs around 20,000 people and does business in more than 130 countries. For more information, and for the latest news and content from Vertiv, visit [Vertiv.com](https://www.vertiv.com).

### OUR PURPOSE

We believe there is a better way to meet the world's accelerating demand for data - one driven by passion and innovation.

### OUR PRESENCE

#### GLOBAL PRESENCE

Manuf. and Assembly Locations **19**  
Service Centers **270+**  
Service Field Engineers **2,700+**  
Technical Support/Response **330+**  
Customer Experience Centers/Labs **17**



#### US AND CANADA

Manuf. and Assembly Locations **7**  
Service Centers **120+**  
Service Field Engineers **850+**  
Technical Support/Response **120+**  
Customer Experience Centers/Labs **4**



#### LATIN AMERICA

Manuf. and Assembly Locations **1**  
Service Centers **20+**  
Service Field Engineers **300+**  
Technical Support/Response **25+**  
Customer Experience Centers/Labs **2**



#### EUROPE, MIDDLE EAST AND AFRICA

Manuf. and Assembly Locations **5**  
Service Centers **70+**  
Service Field Engineers **600+**  
Technical Support/Response **95+**  
Customer Experience Centers/Labs **6**

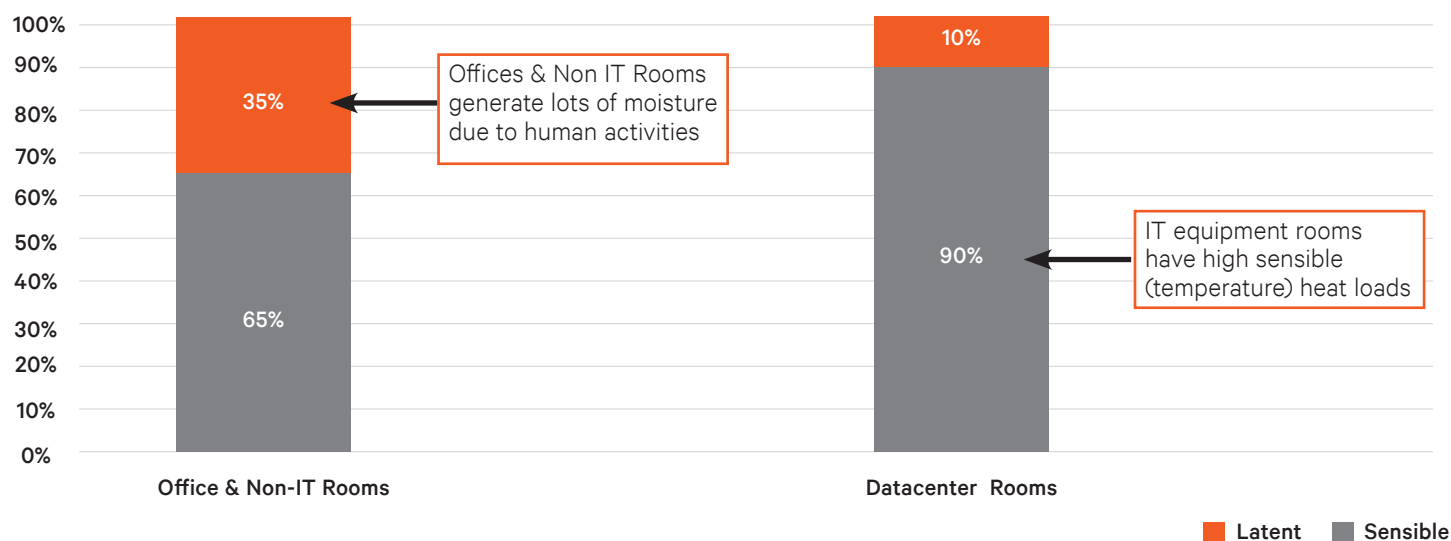


#### ASIA PACIFIC

Manuf. and Assembly Locations **6**  
Service Centers **60+**  
Service Field Engineers **950+**  
Technical Support/Response **90+**  
Customer Experience Centers/Labs **5**

## Machine Cooling Vs. Comfort Cooling

### Computers Generate Heat, But Not Humidity



90% to 95% of a thermal management system's energy and capacity are designed to remove the dry heat that electronic equipments produce. Comfort cooling systems are designed to keep people comfortable and are only capable of using about 60% to 65% of their cooling capacity to remove heat generated by computers. The other 35% to 40% is used to remove moisture, commonly found in the office space, but not in the server or network rooms. This can lower humidity too much causing static-electricity problems and even electronic equipment failure.

## Why Run the Risk of Relying on Building Air?

**RISK:** These systems shut down overnight and weekends.

**RISK:** Systems designed to operate 5 X 8 vs. continuous operation.

**RISK:** Insufficient filtration for IT equipment and no humidity control.

**RISK:** Building air removes too much moisture, introducing the risk of static discharge.

**RISK:** Insufficient airflow causes overheating in the IT equipment.

## Cost

- Building air is designed to cool the people (heat and perspiration)
- As a consequence, a lot of energy (cost) goes into removing the moisture.
- Energy is wasted where building air is used to cool the IT equipment.

## Introduction of Vertiv™ Liebert® DM 7 kW to 27 kW

*Vertiv™ Liebert® DM delivers enterprise-level thermal management to small computer rooms and network closets. It is designed for year-round temperature and humidity control for IT applications across the critical infrastructure, and equipped with an air-filtration feature.*

*The Liebert® DM offers a selection of variants to fit your infrastructure's requirements and conditions. It also features communication capabilities to the critical infrastructure manager for easy monitoring of the temperature across the IT infrastructure.*

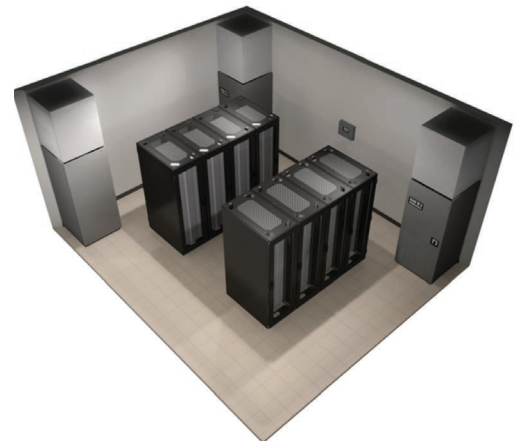
### **Liebert® DM variants:**

Air Cooled 7 kW to 27 kW

It is a perfect thermal management solution for small computer rooms, where uninterruptible (24 X 7 X 365 basis) thermal management is focus of the attention.

### **The Liebert DM is ideally suitable for:**

- Small and medium sized computer rooms
- UPS and batteries rooms
- Outdoor electronic and communication equipment rooms
- Transformer stations and substation
- Small control rooms



### **Communication**

The Liebert® DM series can be managed through your IP network. As a standalone network management device, it provides the following features:

- Browser access through HTTP protocol
- Email notifications of critical events and potential operational impacts
- SMS alerts through your SMS gateway
- SNMP management through GET/SET requests and industry standard MIB

It is also compatible with Vertiv management and monitoring systems for comprehensive integration with computer rooms and critical applications.

## Features and Benefits

### Energy Savings:

- High sensible heat ratio and high energy efficiency
- Equipped with scroll compressors
- Provides stable temperature and humidity condition
- Fans for outdoor units feature easy to access full range speed regulation
- Manageable and unique ECO-Mode option
- Energy saving component options

### Space Saving:

- Small footprint - 100% front door access

### Intelligent Controller:

- 7-inch HMI Colourscreen & easy to use interface
- 3 level password protection to prevent unauthorized operation
- Graphical representation of return air temperature & relative humidity display in real time
- Email and SMS notification (thru Vertiv™ Liebert® RDU™ ) for remote monitoring functions
- Store up to 999 alarm history



### User Friendly and Maintenance Free:

- 24/7 operation capable
- Ultra wide input voltage range: multiple power protection functions
- Environment adaptability: adoption to outdoor temperature while meeting cooling requirements
- Adaptive to heat dissipation of the main equipment

## Operation Analysis for One Year

Description	Precision Air Cooling (20 kW Capacity)	Comfort Air Cooling (25 kW Capacity)
Sensible Cooling Capacity (kW)	18	18
Total Cooling Capacity (kW)	<b>20 (18 sensible + 2 latent)</b>	<b>25 (18 sensible + 7 latent)</b>
Unit EER	3	3
Input Power (kW)	20/3=6.6	25/3=8.3
Re-humidification (kW)	0	5
Total Input Power (kW)	6.6	13.3
Cost/yr @ \$0.15/kW-hr	6.6 kW * \$ 0.15 / kW-hr * 8760hr = \$ 8,672	13.3 kW * \$ 0.15 / kW-hr * 8760hr = \$ 17,476
<b>Savings</b>	<b>Savings = \$ 8,804 by Precision AC</b>	

## Vertiv™ Liebert® DM: System Architecture



Compressor

**Scroll Compressor:** High energy efficiency; features with low vibration, low noise, and high reliability.



Centrifugal Fan

**Centrifugal Fan:** Features with large airflow, long blowing distance, direct driving and easy maintenance. Fan orientation within unit changes as per configurations (upflow & downflow), EC fan is available upon request.



Expansion Valve

**Expansion Valve:** Collects temperature and pressure signals at the same time to regulate the refrigerant flow accurately.

**Infrared Humidifier:** This humidifier consists of an infrared humidifying lamp, a water injection valve, a humidifying water pan, a temperature alarm protection device, and a water level warning device.

**PTC Heater\*:** It is safe and reliable. When the surface temperature is too high, it will reduce the heating power to avoid danger caused by over-temperature.



PTC Heater

**Energy-efficient Refrigerant (R410A):** This refrigerant is used in all models of Vertiv™ Liebert® DM Series.

**Filter:** Washable nylon filters ensure that room conditions are kept clean.

¥: (Available on request)

## Indoor Unit



Vertiv™ Liebert® DM (Indoor Unit)

## Vertiv™ Liebert® DM Condensor

- Fan motor: Continuously on variable transmission
- Energy saving
- Anti-corrosion, heavy duty
- Easy installation
- Small size & light weight
- Low noise

## Outdoor Unit



Vertiv™ Liebert® DM (Outdoor Unit)

## Vertiv™ Liebert® DM: Advanced Controller for the Most Intelligent Solution

Every Vertiv™ Liebert® DM comes with one of the most advanced controller in the segment as a standard offering, which has a clear and easy to read screen display that enables simple and convenient unit management.



7" large touch screen color display standard in the bracket.



Advanced algorithms helps the unit to run efficiently.



Alarms can be clearly and easily viewed on the screen.



Thermal group control distinctly helps to cool the room as the units work together.



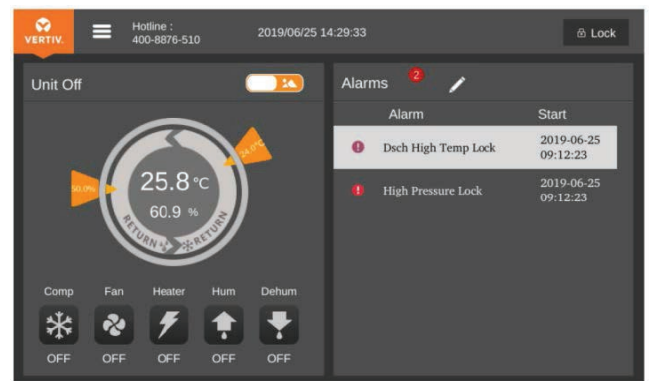
Round the clock monitoring of common problems and solutions.



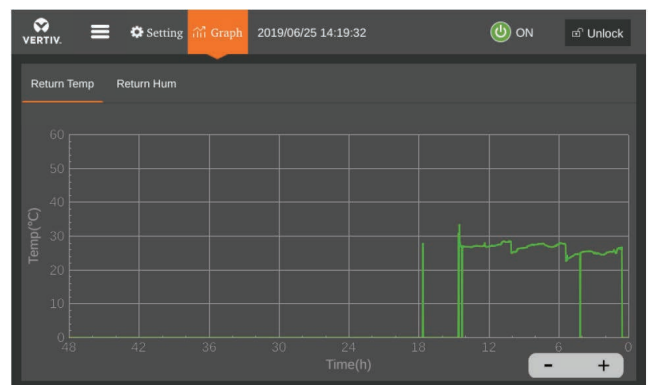
Shows the unit abnormality help function.



Optional SIC Card enables SNMP with SMS and email notifications.



Main Page for the Display



Temperature and Humidity Graph

The screenshot shows the 'Unit Abnormality Help' screen. It has a menu on the left with 'About', 'Version Information', and 'Unit Abnormality Help'. The main content area is titled 'Unit Abnormality Help' and lists 'Unit does not start' with four reasons and solutions:
 

- Reason1: No power to unit. Solution1: Check unit input voltage.
- Reason2: Circuit breaker that controls voltage (at the transformer) is open. Solution2: Locate short circuit and reset circuit breaker.
- Reason3: Float switch relay has closed due to high water level in the condensate pump sump. Solution3: Check that drain pipes and pipelines are clogged or that the condensate pump is damaged.
- Reason4: Jumping cables not in place. Solution4: Check jumping cables on the control board.

 Below this, there are three more categories: 'No cooling', 'Heater does not operate', and 'Display Communication Lost'.

Unit Abnormality Help

## Comparative Analysis

Specification	Vertiv™ Liebert® DM	Comfort System	Benefits	Remarks
Temperature Control	±1 °C	±3 °C	Stable temperature ensures operational integrity and reliability of the IT equipment	Wide temperature fluctuations shorten operational life of IT equipments and will increase the risk of catastrophic failure
Humidity Control	±5% RH	≥/±15% RH	Only thermal management units can control the room humidity	High humidity can lead to condensation and corrosion, low humidity increases the risk of electrostatic discharge; both are major threat to IT equipments
Network Managed	Yes, IP Network Manager	No	Liebert® DM is a network managed device. It will notify you if there is a failure or potential threat to your equipment.	Standard IP connectivity: <ul style="list-style-type: none"> <li>• Email (SMTP)</li> <li>• SMS (through email gateway)</li> <li>• SNMP (MIB and trap support)</li> <li>• HTTP (browser)</li> <li>• Optional temperature and humidity sensors can be placed directly into the racks</li> </ul>
Reliability and Warranty for 24*7 Operation	Yes	No	Liebert® DM thermal management is designed to run effortlessly in emerging IT environments.	Domestic air conditioning warranty only covers applications for human comfort and explicitly not for the climatic control of electronic equipments
Load Sharing Duty Operation	Yes	No	Interconnected units provide stand by rotation and lead/lag operation through a single cable.	Domestic units require third party or customized management devices adding complexity, warranty and operational risk.
Operation Life	10 Years+	1 to 3 Years, not designed for IT operation	Liebert® DM is designed to run 24hrsX365 with a mean time of failure of 4 years. Domestic units typically designed to run only 2000 to 4000 hrs/yr.	If you run a Domestic unit 24hrs*365 the expected mean time to failure is one year!!
Operating Range	Operating Range	Most domestic units will only provide cooling when the outside temperature is above 10 °C	Liebert® DM™ provides continuous cooling operation down to -10 °C outdoor temperatures. (-30 °C optional). Most comfort systems can only cool if the outside temperature its above 10 °C.	Domestic systems are designed to cool in summer and heat in winter, IT equipment requires cooling all year round. Misapplication may lead to loss of cooling.



## Variant Offering

### Liebert® DM 7 kW

Footprint (WxDxH) (mm)	510X385X1850 U – Up flow
Nominal Capacity	7.5 kW (Performance based on 24 °C return air temperature, 50% relative humidity and 35 °C outdoor ambient temperature)
Airflow Volume	2000 CMH

### Liebert® DM 12 kW

Footprint (WxDxH) (mm)	600X500X1975 U – Up flow
Nominal Capacity	12.5 kW (Performance based on 24 °C return air temperature, 50% relative humidity and 35 °C outdoor ambient temperature)
Airflow Volume	3300 CMH

### Liebert® DM 17 kW

Footprint (WxDxH) (mm)	750X650X1975 U – Up flow
Nominal Capacity	17 kW (Performance based on 24 °C return air temperature, 50% relative humidity and 35 °C outdoor ambient temperature)
Airflow Volume	4300 CMH

### Liebert® DM 22 kW

Footprint (WxDxH) (mm)	800X765X1975 D – Downflow; U – Up flow
Nominal Capacity	22 kW (Performance based on 24 °C return air temperature, 50% relative humidity and 35 °C outdoor ambient temperature)
Airflow Volume	6250 CMH

### Liebert® DM 27 kW

Footprint (WxDxH) (mm)	850X835X1975 D – Downflow; U – Up flow
Nominal Capacity	28 kW (Performance based on 24 °C return air temperature, 50% relative humidity and 35 °C outdoor ambient temperature)
Airflow Volume	7300 CMH

## Indoor Unit



Vertiv™ Liebert® DM (Indoor Unit)

## Its All About Choosing the Right Cooling Solution

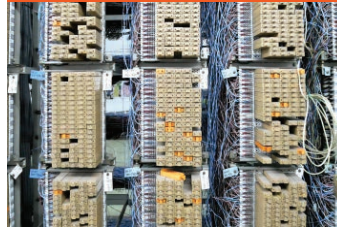
Rack Room



Network Room



Switch Room



UPS Room



Reliable  
24\*7\*365  
Operation

Highly  
Efficient  
Refrigerant  
Enabled

Advanced  
High-end  
Smart  
Controller

Innovative  
Design that  
Delivers  
SHR > 0.9

Sustains  
Ambient  
Temperature  
of up to 45 °C



Redefining the Cooling  
for Equipment Rooms

## Applicable for Following Market Segments

Airports



Railway



E-commerce (BFSI)



Mobile Base Station



Manufacturing



Healthcare



Satellite Earth Station



Network Management



## Technical Specifications

### Vertiv™ Liebert® Indoor Units

Parameters	Unit Model							
	DME07M*UA1	DME12M*UA1	DME17M*0UA1	DME22M*0UA1	DME22M*0FA1	DME27M*0UA1	DME27M*0FA1	
Net Cooling Capacity/ Net Sensible Cooling Capacity (24 °C DB,50 %RH 35 °C ambient outdoor temperature)	Net Cooling Capacity (W)	7500	12500	17000	22000	22000	28100	28100
	Net Sensible Cooling Capacity (W)	6750	11250	15300	19800	19800	25300	25300
Evaporator Fan	Standard Airflow Rate (m³/h)	2000	3300	4300	6000	6300	7300	8100
	Number of Fan	1	1	1	1	1	1	1
	External Static Pressure (ESP) (Pa)	0	0	0	0	20	0	20
No of Compressor	1	1	1	1	1	1	1	
Evaporator Coil	Surface Area (m²)	0.3	0.44	0.75	0.47*2	0.47*2	0.63*2	0.63*2
	Air Velocity (m/s)	1.85	1.88	1.58	1.77	1.86	1.61	1.79
Electric Heating (Optional)	Power (kW)	3	3	5.5	6	6	6	6
Humidifier (Optional Infrared or Electrode)	Humidification Capacity (kg/hr)	1.5	1.5	3	3	3	3	5
Operational Weight (kg)		85	125	230	253	248	283	290
Electrical Parameters	FLA (A)	15.2	23.3	28	35.9	35.9	36.5	36.5
	Recommended Circuit Breaker (A)	32	32	32	40	40	40	40

### Vertiv™ Liebert® Outdoor Units

Parameters	Unit Model				
	DMC07WA1	DMC12WA1	DMC17WA1	DMC22MA1	DMC27MA1
Air Volume (m³/h)	3800	6800	8200	10000	12500
Condenser Coil Surface Area (m²)	0.7046	1.705	1.38	1.77	2.07
No. of Condenser Coil Row	2	2	2	3	3
Motor Power (W)	160	320	450	480	500
Operating Temperature range (°C)	-15 °C to 45 °C (standard model) / -34 °C to 45 °C (with low temperature component )				
Liquid Pipe OD (mm)	9.72	12.7	12.7	16	16
Discharge Pipe OD (mm)	12.7	16	16	19	19



[Vertiv.com/en-in](https://www.vertiv.com/en-in) | E-mail : [marketing.india@vertiv.com](mailto:marketing.india@vertiv.com) | Toll free : 1-800-2096070

**Vertiv Energy Private Limited** | Plot C-20, Rd No.19, Wagle Ind Estate, Thane (W), 400604. India

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