

## BENEFITS

### Highest efficiency

- Mechanical PUE of 1.05 - 1.20
- Up to 75% more efficient than DX systems
- 26-53% higher SCOP at full load v. ASHRAE 90.1 standard
- Automated transitions capture every economization hour
- Expansion valves increase DX efficiency at low ambient temperatures

### Highly Flexible

- More than two dozen combinations of capacity, airflow and application
- Available as split-systems for indoor perimeter and gallery configurations

### Advanced Control

- Liebert iCOM™ controls provide smooth economization transitions for more stable thermal management
- Advanced, automated component protection routines
- Multi-unit teamwork modes eliminate unit fighting and increases efficiency
- Easy integration to BMS using onboard protocols
- Lead / Lag setting for automated emergency rotation of operating and standby units

### Low Maintenance

- No water-related servicing
- No outside air dampers or louvers to adjust and maintain
- Fewer moving parts than other data center cooling systems
- Lower refrigerant charge than DX systems

### Water-Free Operation

- No water, no water treatment, no piping or water infrastructure to maintain

Liebert DSE 50-165kW units are certified by AHRI for efficiency and performance.



## More Efficient. More Flexible. Smoother Transitions.

Reduce cooling costs and increase available economization hours with the highly efficient Liebert DSE free-cooling economization solution. The Liebert DSE is the world's most widely deployed pumped refrigerant economization platform for data centers, with more than 6000 installations in diverse environments. Advantages include:

- Up to 75% more efficient than traditional DX systems, PUE 1.05 - 1.20
- 600% higher efficiency than ASHRAE 90.1 minimum requirements for cooling equipment
- Advanced controls for smooth economization transitions
- More than two dozen combinations of capacity, airflow and form factor
- Water-free operation cuts cost and complexity
- Complete separation of outdoor and data center air to eliminate cross-contamination
- Meets California Title 24 Building Energy Efficiency Standards

## How It Works

The system's main components — compressors, condenser fans, CRAC fans and refrigerant pumps - are coordinated by the Liebert iCOM controls. The controls automatically transition the system between economization, mixed and full compressor phases, based on IT load, return air temperature and outdoor temperature. The Liebert iCOM controls work to maximize the annual energy savings and economization hours while maintaining the desired setpoints in the data center.

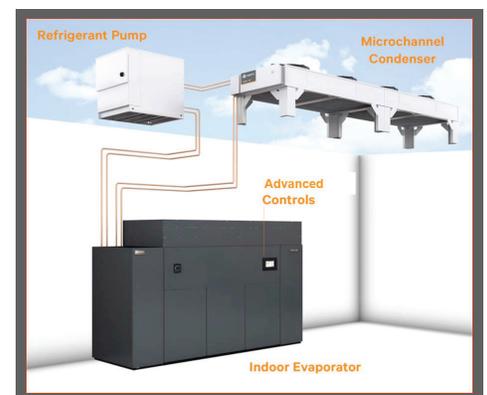
In cold temperatures, iCOM deactivates the compressors and activates the economizer pumps which move refrigerant at a fraction of the energy usage. During the hottest temperatures, compressors are activated, bypassing the economizer pumps. In moderate temperatures — fall, spring or even during the night — iCOM may activate one compressor and one refrigerant pump to gain partial economization and energy savings.

## Save More Money



Liebert DSE controls include an optimization feature that improves upon the already industry-leading efficiency of the solution.

- 50% more efficient via optimized controls
- Standard on all new Liebert DSE units
- Available as retrofit to existing Liebert DSE units
- 18 month average payback period on retrofits



Liebert® DSE™ performance and dimensional data

PUMPED REFRIGERANT ECONOMIZER SAVINGS			
Location: San Francisco			
1 MW Data Center / 500-200 Racks / 4,000-5,000 Servers / 7500 Sq Ft.			
Reference Example: Energy and Water Savings			
	Chilled Water	Pure Refrigerant Economizer	Savings
Electricity	1.9MWh	1.6MWh	16%
Water	4 million gallons	0 gallons	4 million gallons
PUE	1.21	1.18	-

Source: California Energy Commission

Technical data		MODEL <sup>1</sup>					
		DA050	DA080	DA085	DA125	DA150	DA165
95°F DB, 52°F DP	Total Capacity kW (net)	54	92	99	146	181	193
	Sensible Capacity kW (net)	54	92	99	146	181	192
	Full-load SCOP @ 95°F ambient	2.9	4.0	3.3	3.6	3.4	3.2
	SCOP @ 35°F ambient (kW/kW) <sup>2</sup>	8.5	12.0	11.0	10.0	8.6	8.6
85°F DB, 52°F DP <sup>2</sup>	Total Capacity kW (net)	49	84	90	130	165	177
	Sensible Capacity kW (net)	49	81	87	130	159	166
	Full-load SCOP @ 95°F ambient	2.7	3.0	2.9	3.2	3.0	2.8
	SCOP @ 35°F ambient (kW/kW) <sup>2</sup>	7.0	10.4	9.6	9.2	7.7	7.7

Notes:

1. Certified in accordance with the AHRI Datacom Cooling Certification Program at AHRI Standard 1360 Standard Rating Conditions. Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org).
2. Economizer mode operating at 100% of DX capacity.



BASIC DIMENSIONS			
Model	Length (A)	Width (B)	Height (C)
DA050	77"	35"	76"
DA080	100"	35"	76"
DA085	100"	35"	76"
DA125	144"	47"	76**
DA150	144"	47"	76**
DA165	144"	47"	76"

\*Add minimum 18" height for separate filter plenum, plus floorstand height