

Precision Cooling for
Business-Critical Continuity™

Liebert CRV

The Efficient Cooling For IT Equipment





Emerson Network Power, a division of Emerson, is a global company that combines technology with design to supply innovative solutions for the benefit of its customers.

Emerson Network Power is the leader in the “**business-critical continuity**” field, thanks to the company’s products and services.

Emerson Network Power’s broad technology base and global expertise support a full spectrum of enterprise-wide solutions for today’s vital business needs.



Regardless of your size, you can’t afford for your critical business systems to go down and you can’t waste time recovering your IT infrastructure after a disruption.

Leave that to us, the experts in *business-critical continuity*: from grid to chip, from the biggest to the smallest data centers, we are ready to serve your needs with the solutions we have developed.

More standardization, so you don’t need further budget allocations to install it. More simplification so you don’t need to be a specialist to get the best for your business. More support, so while you are enjoying doing business, we are protecting you.

That’s why we can say we OptimizeIT!

optimizeIT
Infrastructure Simplified.
Support Unparalleled.

*Today, energy efficiency
is a priority to save
money and respect
the environment.*





The Liebert CRV: Your Business Deserves The Best Overcome Your It Challenges And Optimize Your Performance

IT environments are facing a growing number of challenges.

To start with, consolidation, virtualization and blade technology are just a few criticalities of the IT infrastructure.

Business-critical continuity is as vital for a computer room as it is for a large data center.

Too often, the budget allocated is not enough.

Nowadays, energy efficiency is a priority - both for saving money and for respecting the environment.

If you don't want such challenges to become a threat to your business, you need to meet them head-on.

The Liebert CRV Is A Self-Contained Precision Cooling Unit, Ideally Designed For Cooling Rows Of Racks In Small And Medium Data Centers.

Placed close to the heat source, the Liebert CRV is continuously monitoring any variations in heat load and instantly delivers the most efficient and effective cooling possible.

Liebert CRV: Simple, Safe, Adaptable.

A New Precision Cooling Unit To Tackle New Challenges

The Liebert CRV is a plug-and-play unit, designed for open or contained applications.

Simple. The cooling is provided at the server rack level instead of at the room level. Liebert CRV removes and filters hot air from the aisles, and returns cooled air to the servers. The integrated air diffusers can precisely direct the airflow towards the heat load: to the left, to the right or both directions if necessary.

Safe. Designed to comply with the mission-critical requirements and ensure that the server always remains at the correct temperature and humidity.

Adaptable. The Liebert CRV provides the exact level of cooling required by the servers, modulating the airflow and cooling capacity.

It is available in different versions, depending on your needs:

- As a stand-alone cooling system with up to 36 kW for the direct expansion version, equipped with its own roof or wall-mounted condenser
- Integrated into the building chilled water cooling system, with up to 40 kW capacity

The Liebert CRV is a multi-option, precision air conditioner that offers temperature and humidity control, filtration and notification management so you can keep your data center under control.



The Liebert CRV is the self-contained precision cooling unit, ideally designed for cooling rows of racks in small and medium data centers.



Your IT Infrastructure Availability Is Crucial To Us. That's Why We Developed Liebert CRV

Keep Your IT Infrastructure Up And Running

Fast changes need faster answers: as the iCom Control monitors variations in temperature, the Liebert CRV instantly adapts its performance to match the conditions. Your IT equipment is kept safe and available, and you don't have to worry about it.

The Liebert CRV adapts itself to suit changing load conditions.

Availability is ensured under all working conditions, thanks to constant temperature monitoring that keeps your server

working properly, and the teamwork functionality enables the management of a configuration N+1.

Meeting Your Primary IT Needs

The Liebert CRV ability to modulate capacity allows precise and constant room temperature and humidity levels to be maintained. The variable capacity increases data center availability during both standard operations and if load variations occur. In fact, the reduction in stop/start cycling will result in a longer unit lifecycle for critical components by reducing fatigue-related failure.

The digital scroll compressor doesn't use ON-OFF control. This avoids peaks in absorbed power and reduces the stress placed on components.

The Liebert CRV uses a dedicated control that also enables the compressor to operate when the external air temperature increases above standard limits.



*Service level agreements are becoming
the benchmark of IT's commitments*



Flexibility To Adapt To Your Needs: Liebert CRV Can Be Used In Open Architecture Or With Cold Aisle Containment.

Suitable For Different Environments

The Liebert CRV is designed for both new and existing buildings, with or without raised floors. It is particularly suitable for data centers with up to 30 racks irrespective of heat load.

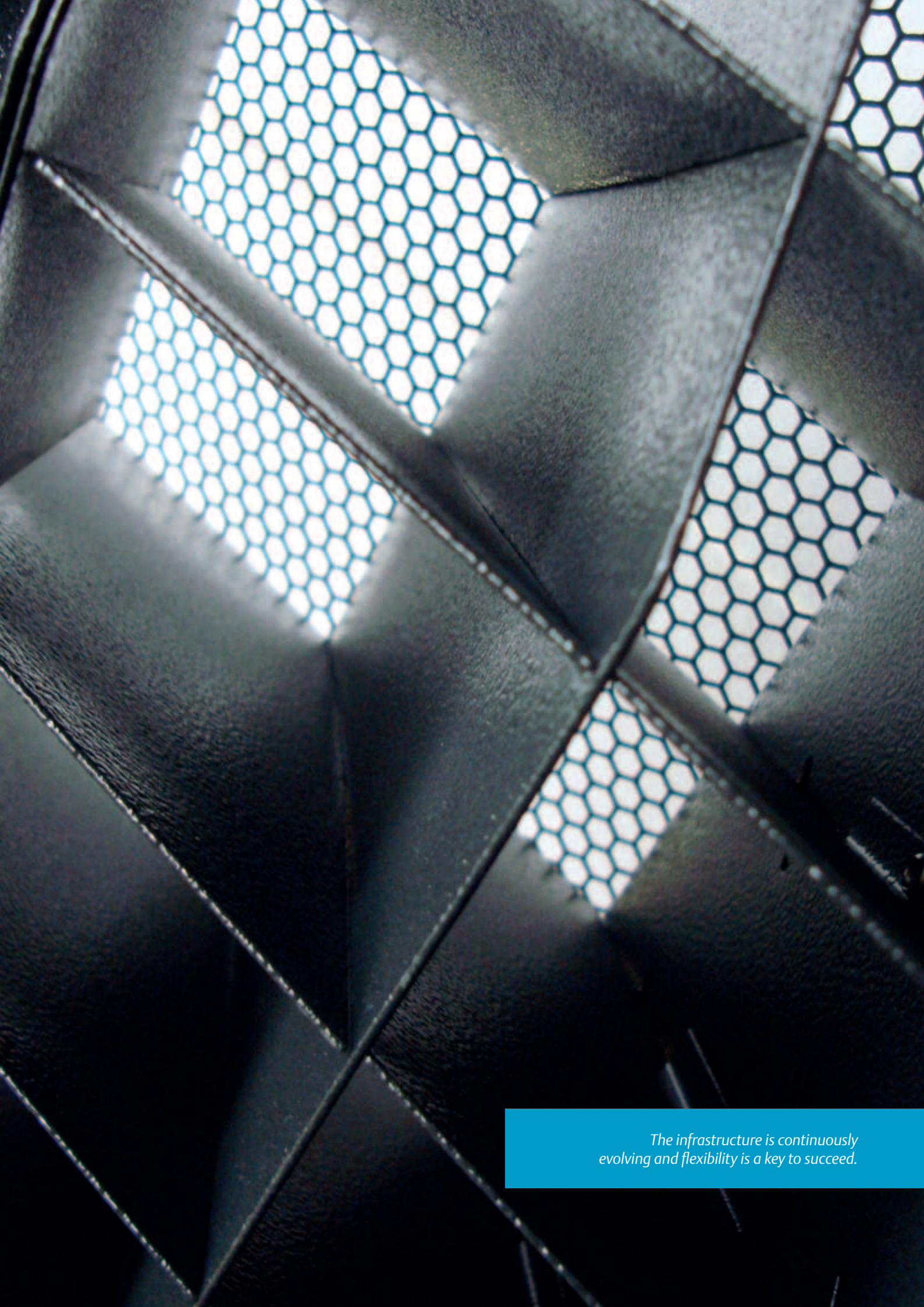
For large scale applications, Liebert CRV can also be used in combination with Liebert X-treme Density solutions in order to achieve the best cooling control.

Hit The Target:

Have The Right Airflow

EC Fan and **Digital Scroll Technology**, managed through an integrated **iCOM Control**, achieve variable capacity and airflow for the right operating conditions for IT equipment.

Liebert CRV, designed using advanced, computer-aided fluid dynamic technology, features the best possible air distribution across racks, tested and proved by large-scale laboratory and applied tests.



The infrastructure is continuously evolving and flexibility is a key to succeed.



OptimizeIT Is Our Commitment To Reduce Your Total Cost Of Ownership

Only Pay For What Your Server Needs

Ideally suited for rack-level cooling and specifically designed for high return air temperatures, the Liebert CRV optimizes air distribution and maximizes efficiency. This means savings - both in energy and in your wallet.

The simplified installation requires minimum labour costs for connection and start up procedures.

As it uses the environmentally-friendly refrigerant R410A, the Liebert CRV respects the environment as it runs, with the highest levels of energy efficiency compared to similar products.

The Liebert CRV is a cost-effective solution right from

the start, available as single unit to be integrated with existing racks or as bundled solution with racks, UPS and monitoring. It is also easy to install and does not require further budget allocations.

Stays Focused Between The Room And The Server

The integrated **iCOM control**, equipped with up to ten temperature sensors, continuously monitors the heat load of the racks and regulates the Liebert CRV accordingly so the highest energy saving can be achieved.

The **digital scroll** compressor modulates the cooling capacity and so reduces the input power with partial loads.

The **EC fan technology** works to regulate the air flow and reduce the fan input power.





EMERSON
Network Power

UNIT 1
Liebert CRV
15.1 °C

29.2 °C
20 %RH

Rack Inlet Temp
Average: 22.7 °C
Max Inlet: 31.9 °C
Min Inlet: 11.8 °C

60%
80%

04/2010

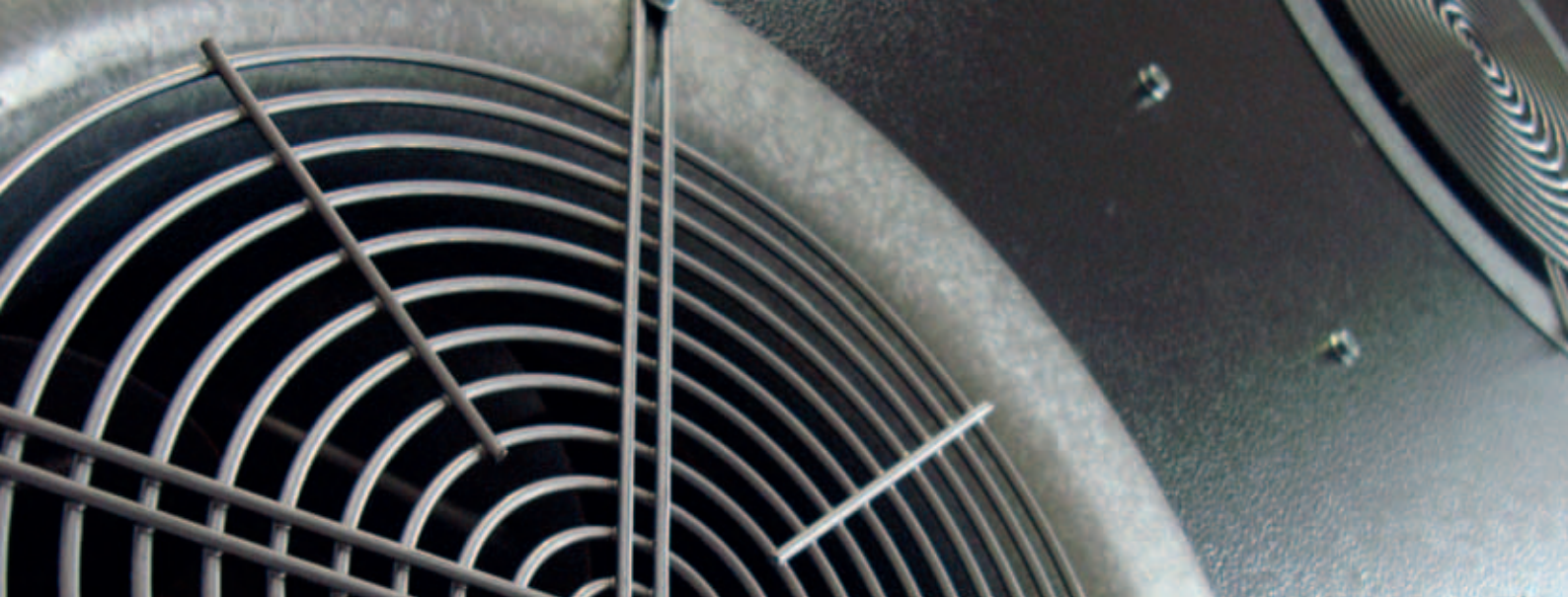
28.02.2009 15:03 UNIT ON
28.02.2009 14:07 (01) UNIT ON
28.02.2009 14:07 (01) POWER ON

press ← for next/prev unit, → for unit/system view
press ↵ for menu, [E] for prev-screen, ? for help



Liebert

Innovative world class technologies enable longer life-cycle and optimize IT investments.



Application Scenarios: Examples Of Data Center Rooms

Data Center Rooms With Up To 10 Racks

For network access cabinets or small computer rooms, whether the floor is raised or not, the Liebert CRV is placed close to the server. The precision cooling unit, equipped with ten temperature sensors, modulates the airflow to match the real-time cooling requirements of the server.

Direct Expansion Solution

When a building chilled water system is not available and a chiller can't be installed due to physical building limitations, a direct expansion solution is the right choice.

When the distances between internal and external units are not particularly high, direct expansion can lead to significant reductions in installation times and costs.

One of the advantages of the Liebert CRV with a direct expansion solution is eco-friendly refrigerant R410A. The unit also offers Digital

Scroll, which has the capability to immediately modulate and adapt in reaction to the server's requirements. Digital Scroll cuts down on start/stop cycling, increasing the life cycle of your cooling equipment. The Liebert CRV, working with a very high return air temperature, also maximises cooling capacity and increases efficiency without placing the compressor under stress.

| | | |
|--------------------|-----------------------------|--|
| 1° Scenario | N° of racks | Between 1 and 4 |
| | Heat Load | Up to 20 kW |
| | Space | Between 5 m ² and 15 m ² |
| | Raise Floor | Not Required |
| | Recommended Solution | Direct Expansion |



| | | |
|--------------------|-----------------------------|-------------------------|
| 2° Scenario | N° of racks | Up to 10 |
| | Heat Load | Up to 100 kW |
| | Space | Up to 30 m ² |
| | Raise Floor | Not Required |
| | Recommended Solution | Direct Expansion |





Data Center Rooms Up To 30 Racks

For small data centers, where the heat density needs to be increased without installing a raised floor or a higher roof, the Liebert CRV with Knürr CoolFlex will answer your needs perfectly. (Cold aisle containment)

Chilled Water Solution With Cold Aisle Containment

The CoolFlex separates hot returning air and cold supply air, optimizing the entire cooling solution. By increasing the room temperature, the floor-mounted cooling units can be significantly downsized, cutting further investment. The higher EER also improves energy savings and dramatically reduces running costs. The solution gets the best results in combination with the Liebert HPC - maximizing the free cooling effect and reducing running costs.

Chilled Water Solution

If the heat load increases, a chilled water solution is the most simple

from an installation point of view. The Liebert HPC chiller is the recommended option for getting the best results. When a chilled water source is already available the Liebert CRV solution will fit perfectly into the existing system. There is no limitation to the distance between internal and external units.

Liebert CRV Advantages With The Liebert HPC Chiller

Chilled water solutions are optimised in order to reduce energy consumption:

- Thanks to the EC fan and the unit's close proximity to the racks, the Liebert CRV minimises fan power input and can be regulated based on server load
- As it is specifically designed for high return air temperatures, the Liebert CRV can work at high chilled water temperatures while maintaining capacity. This maximises the chiller free cooling effect.

| | | |
|--------------------|----------------------|-------------------------|
| 3° Scenario | N° of racks | Between 10 and 20 |
| | Heat Load | Up to 200 kW |
| | Space | Up to 50 m ² |
| | Raise Floor | Not Required |
| | Recommended Solution | Chilled Water |

| | | |
|--------------------|----------------------|--------------------------|
| 4° Scenario | N° of racks | Up to 30 |
| | Heat Load | Up to 300 kW |
| | Space | Up to 100 m ² |
| | Raise Floor | Not Required |
| | Recommended Solution | Chilled Water |



Liebert CRV technical data

| | | CR035RA | CR020RA | CR035RW | CR020RW | CR040RC |
|------------------------------|-------------------|-------------------|------------|---------------------|---------------------|-----------|
| Heat rejection | | air cooled | air cooled | water/glycol cooled | water/glycol cooled | CW cooled |
| Nominal Net Cooling Capacity | [kW] | 36,8 | 23,1 | 36,8 | 23,1 | 40,4 |
| Power input | [kW] | 9,6 | 6,1 | 9,6 | 6,1 | 1,3 |
| Nominal Air Flow | m ³ /h | 5540 | 4170 | 5540 | 4170 | 5650 |
| Weight | [kg] | 365 | 335 | 385 | 350 | 330 |
| Dimensions H x W x D | [mm] | 2000 x 600 x 1175 | | | | |

Note: The performances shown are referring to Nominal conditions, i.e. Air inlet Temperature 37°C, Condensing temperature for Air and Water/Glycol cooled units 45°C, Chilled Water temperature 10/15°C.



Standard Features and Options

- Crankcase heater
- Locking disconnect
- EC Plug Fans
- R410A
- Adjustable modular baffle system
- Simultaneous top and bottom connections
- Units provided with castors and levelling feet
- G4 (EU4) gravimetric & clog filter switch
- Steam Humidifier
- Electric reheat 1-stage
- CW 3-way valve
- Dual-float condensate pump
- (3) Remote Rack Sensors
- iCOM Large Graphic Display
- (1) Web Monitoring Card

Additional Options

- Other iCOM display
- Additional Remote Rack Sensors
- Smoke Sensor
- CW 2-way valve
- Additional alarm contact
- Reheat and Humidity Lockout
- High Temperature Stat
- Compressor Jacket
- F4 (EU5) gravimetric & clog filter switch
- 485 Monitoring Card



Coupling Air Cooled Liebert CRV units with air cooled condensers

| Model | Ambient up to 35° C | | Ambient up to 40° C | | Ambient up to 46° C | |
|---------------|---------------------|-----------|---------------------|-----------|---------------------|-----------|
| | standard noise | low noise | standard noise | low noise | standard noise | low noise |
| CR20RA | 1 x HCR33 | 1 x HCR43 | 1 x HCR43 | 1 x HCR51 | 1 x HCR51 | 1 x HCR59 |
| CR35RA | 1 x HCR51 | 1 x HCR59 | 1 x HCR51 | 1 x HCR59 | 1 x HCR76 | 1 x HCR88 |

Condensers Dimensions

| | | Width | Depth | Height | Weight |
|-------|------|-------|-------|--------|--------|
| HCR33 | [mm] | 1340 | 831 | 1112 | 75 |
| HCR43 | [mm] | 2340 | 831 | 1112 | 92 |
| HCR51 | [mm] | 2340 | 831 | 1112 | 93 |
| HCR59 | [mm] | 2340 | 831 | 1112 | 102 |
| HCR76 | [mm] | 3340 | 831 | 1112 | 136 |
| HCR88 | [mm] | 3340 | 831 | 1112 | 165 |

Coupling Water/Glycol Cooled Liebert CRV units with drycoolers

| Model | Ambient up to 30° C | | Ambient up to 35° C | | Ambient up to 40° C | |
|---------------|---------------------|------------|---------------------|------------|---------------------|------------|
| | standard noise | low noise | standard noise | low noise | standard noise | low noise |
| CR20RW | 1 x ESM018 | 1 x ELM018 | 1 x EST028 | 1 x ELM027 | 1 x EST050 | 1 x ELT047 |
| CR35RW | 1 x EST028 | 1 x ELM027 | 1 x EST050 | 1 x ELT055 | 1 x EST070 | 1 x ELT065 |

Dry cooler Dimensions

| | | Width | Depth | Height | Weight |
|--------|------|-------|-------|--------|--------|
| ESM018 | [mm] | 2236 | 820 | 1030 | 82 |
| EST028 | [mm] | 2866 | 1250 | 1070 | 133 |
| EST050 | [mm] | 2866 | 1250 | 1070 | 193 |
| EST070 | [mm] | 4066 | 1250 | 1070 | 283 |
| ELM018 | [mm] | 2236 | 820 | 1030 | 94 |
| ELM027 | [mm] | 3136 | 820 | 1030 | 139 |
| ELT047 | [mm] | 4066 | 1250 | 1070 | 225 |
| ELT055 | [mm] | 4066 | 1250 | 1070 | 254 |
| ELT065 | [mm] | 5266 | 1250 | 1070 | 302 |

Chilled Water Cooled

Chilled water cooled unit CR040RC may be coupled to Emerson Networ Power chillers (Liebert HPC series). The Liebert HPC chiller serie offers wide range of chillers (air cooled, water cooled for indoor and outdoor installation). All chiller are available with different noise versions and with free cooling which can highly enhance the system energy saving. Liebert HPC chillers are available in a capacity range between 40 kW and 1500 kW.



Ensuring The High Availability Of Mission-Critical Data And Applications.

Emerson Network Power, a business of Emerson (NYSE:EMR), is the global leader in enabling *Business-Critical Continuity™* from grid to chip for telecommunication networks, data centers, health care and industrial facilities. Emerson Network Power provides innovative solutions and expertise in areas including AC and DC power and precision cooling systems, embedded computing and power, integrated racks and enclosures, power switching and controls, monitoring, and connectivity. All solutions are supported globally by local Emerson Network Power service technicians. Learn more about Emerson Network Power products and services at www.emersonnetworkpower.com

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Emerson Network Power

The global leader in enabling Business-Critical Continuity™

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- Outside Plant
- Rack & Integrated Cabinets
- Connectivity
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- Power Switching & Control
- Services
- DC Power
- Infrastructure Management & Monitoring
- Precision Cooling
- Surge Protection

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