

Emerson Network Power.

The global leader in enabling business-critical continuity.

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|--------------------|--------------------------------|--------------------------|-----------------------------|
| ■ AC Power Systems | ■ Embedded Power | ■ Power Switch & Control | ■ Site Monitoring |
| ■ Connectivity | ■ Integrated Cabinet Solutions | ■ Precision Cooling | ■ Surge & Signal Protection |
| ■ DC Power Systems | ■ Outside Plant | ■ Services | |

Precision Cooling for
Business-Critical Continuity

Liebert Hiross HPM
Designed for top level performance and reliability



 Liebert®


EMERSON™
Network Power

Emerson Network Power, a Division of Emerson, is a global company matching technology and design to supply innovative solutions for its customers' benefit.

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



Data Center



Financial networks

Precision Cooling is a key requirement to ensure safe working conditions to datacenters, computer rooms and other equipment that simultaneously need a high sensible heat discharge and a precise temperature and humidity control. **Liebert Hiross HPM** incorporates the whole experience of Emerson Network Power in a unique range of cabinet air coolers suitably designed to ensure performance and reliability. Flexible solutions and low running costs add value to the **IT facility**.



The product

Liebert Hiross HPM units are cabinet air conditioners.

They can feature EC fans, with several air delivery versions: downwards, that is with underfloor delivery, upwards and “displacement”.

Liebert Hiross HPM units are equipped with iCOM control, featuring an integrated Web connection and two optional graphic display types.

Liebert Hiross HPM combines different cooling systems for the ideal solution to every facility:

- **Direct expansion:** available with the air or water cooled Copeland Digital Scroll™ compressors.
- **Chilled water:** to be used with Liebert Hiross HPC.
- **Dual-Fluid:** matches low running costs and total reliability. It standard operates with chilled water, thus guaranteeing “business-continuity”, thanks to the spare compressors that can intervene in a few seconds, as soon as the central unit stops.
- **Freecooling:** no power consumption if needless. Working 365 days a year, it uses the low winter temperature to cool the rooms, without using compressors.

Reliability

Performance, equipment protection and fast business re-establishment

Design

Liebert Hiross HPM has been especially designed to achieve top reliability. All components have been sized for the lowest possible stress.

Models have been rigorously tested before being launched on the market. The Liebert Hiross HPM range is Eurovent certified.

Monitoring

The Emerson Network Power Monitoring solutions ensure the best control on energy and air conditioning within IT facilities.

Communication to all protocols (Modbus, Bacnet, Lonworks, HTTP and SNMP are just a few of the available ones) enables the integration both with the BMS system and with the facility software.

iCOM™

The iCOM control device handles the operation of the HPM units, using over twenty years of experience in the development of communication systems and controls.

The iCOM control is featured by a special control algorithm, ensuring top reliability under every condition. It directly connects with the facility network (Ethernet) and enables the communication among multiple HPM units for synchronized operations, guaranteeing top reliability and precise room control.

Teamwork

The HPM unit teamwork within the same room is available thanks to the integrated Ethernet connection.

The self-control of redundant units alternates the stand-by positions and gives priority to possible hot areas.





iCOM™ control

- *Several graphic display options*
- *On-line unit log*
- *Integrated Web communication*
- *Preventive maintenance through an advanced troubleshooting*
- *400 stored events/unit*
- *Up to 16 stored temperature and humidity days*



Ethernet

Flexibility

Business-tailored

EC fans

Variable speed fans achieve a wide range of air delivery and static pressure. They ensure a correct air distribution even when the facility expands.

Further installed devices need a higher cooling capacity.

EC fans can increase the air delivery to meet the demand, thanks to the continuous regulation through the iCOM control.

EC fans can even recover possible unexpected load losses due to new wiring or other elements inside the raised floor.

The special EC motors get the best performance vs. AC and DC motors. They do not emit electromagnetic noises, as they do not use power delivered by frequency converters. Further, EC motors feature a consumption about 30% lower than the one by traditional AC motors.

Copeland Digital Scroll I “

Copeland Digital Scroll™ compressors combine the sturdiness of scroll compressors with the capacity of operating with varying load.

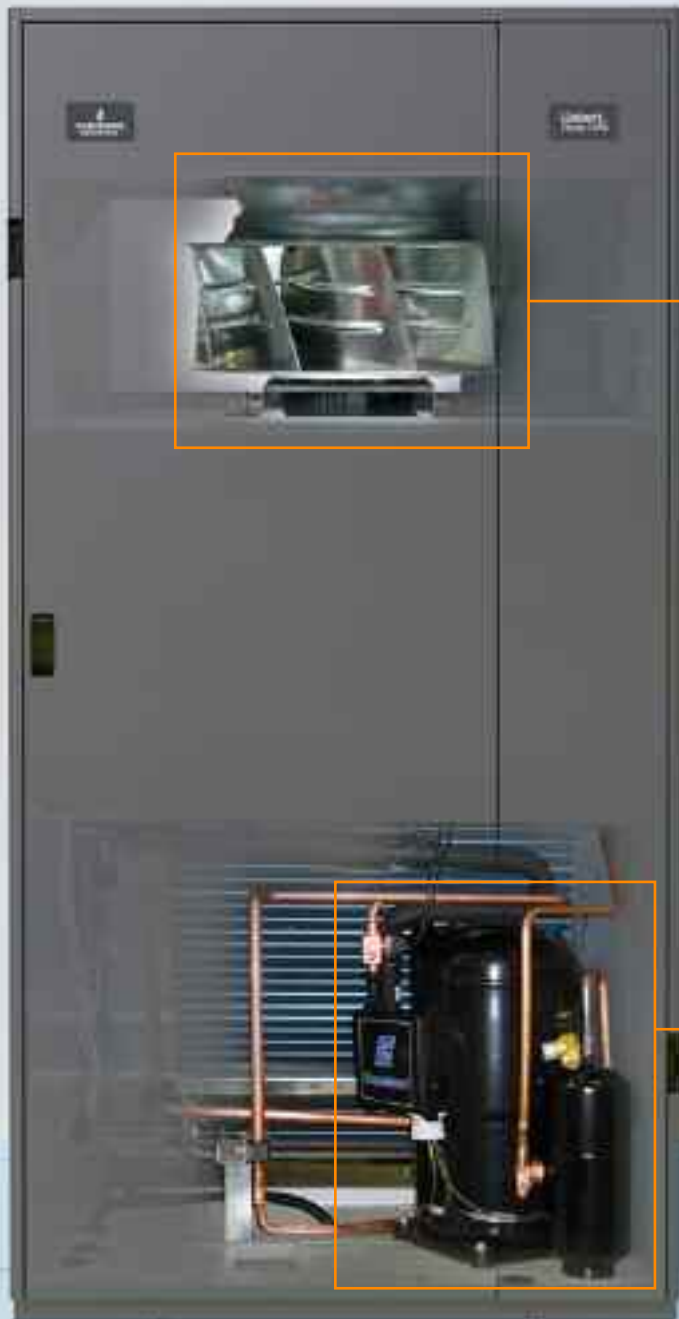
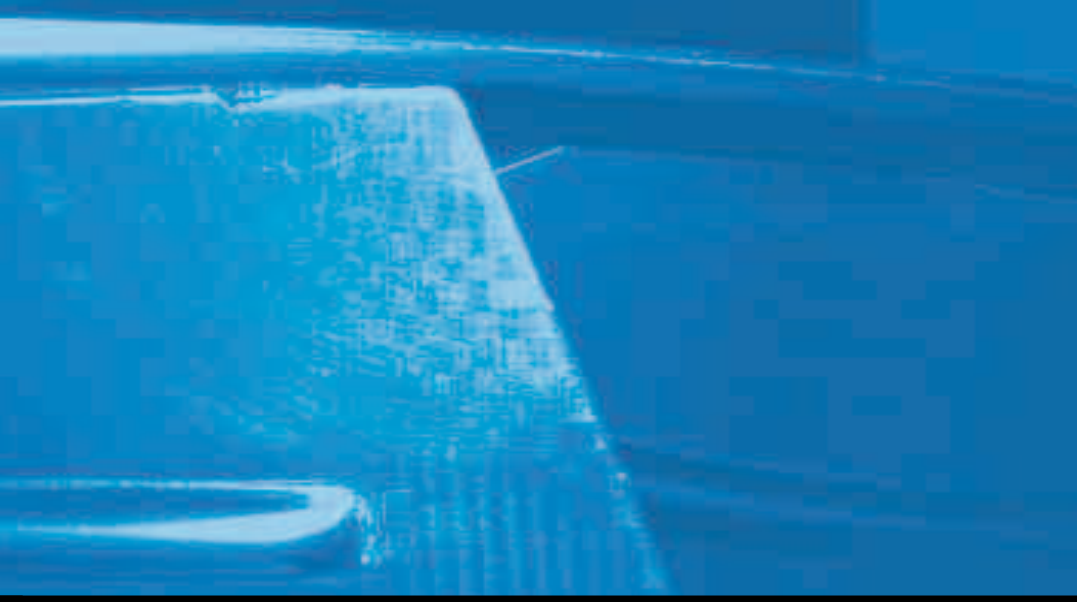
When the traffic managed by the equipment faces sudden changes, the facility experiences thermal load peaks.

Copeland Digital Scroll™ compressors quickly follow the temperature and supply a load-balanced cooling capacity.

The Copeland Digital Scroll™ technology has no adverse effect on electronic equipment, unlike other solutions.

Thus, it can be used also in industries and sectors where sensible equipment - such as computers that must not be subject to any EMI - operate.





EC fans

- AC powered 50/60 Hz without frequency converter
- Static pressure continuous adjustment
- Energy consumption lower by approx. 30% vs. AC motors
- No maintenance
- Long life transmission

Copeland Digital Scroll I “

- Better room control
- Energy saving with partial load
- Quick adjustment to load changes
- Simple and reliable mechanics
- AC powered 50/60 Hz without frequency converter
- EMC free

Ethernet

Running cost

Keeping profitability

Efficiency

Cooling a computer room needs high power. Energy efficiency is the top target in Liebert Hiross HPM designing.

Over-sized heat exchangers and optimized aerodynamics allow one of the lowest energy consumption in the Precision Conditioning Cooling field.

Maintenance

The handy user interface and the quick front access to mechanical adjustments shorten the routine maintenance time.

Compactness

Liebert Hiross HPM units take less space thanks to their reduced plan dimensions.

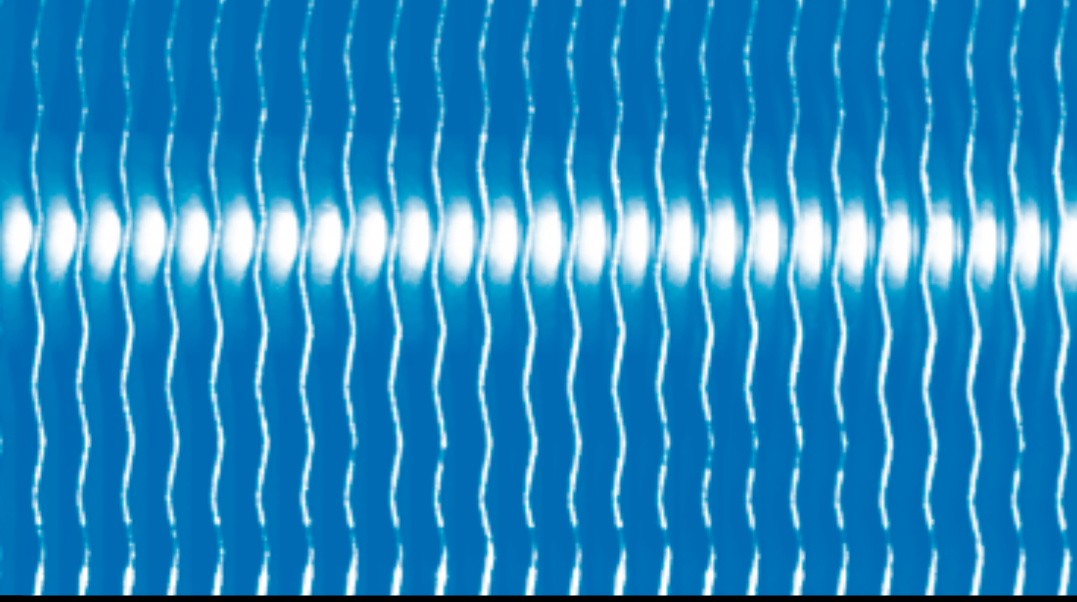
The compact design still ensures the best performance thanks to fluideo-dynamic analyses and several lab tests.

Freecooling

Freecooling units minimize energy consumption.

Working 365 days a year, they use the low winter temperature to cool the rooms, without using compressors.





Heat exchange surface

- *High Energy Efficiency Ratio (EER). It basically depends on the heat exchange surface. Refrigerating circuits consume less energy.*
- *High Sensible Heat ratio (SHR). Sensible heat vs. latent heat. Technological applications require a high sensible heat discharge, without lowering the room humidity too much, as it would need to be restored through a humidifier.*

Ethernet



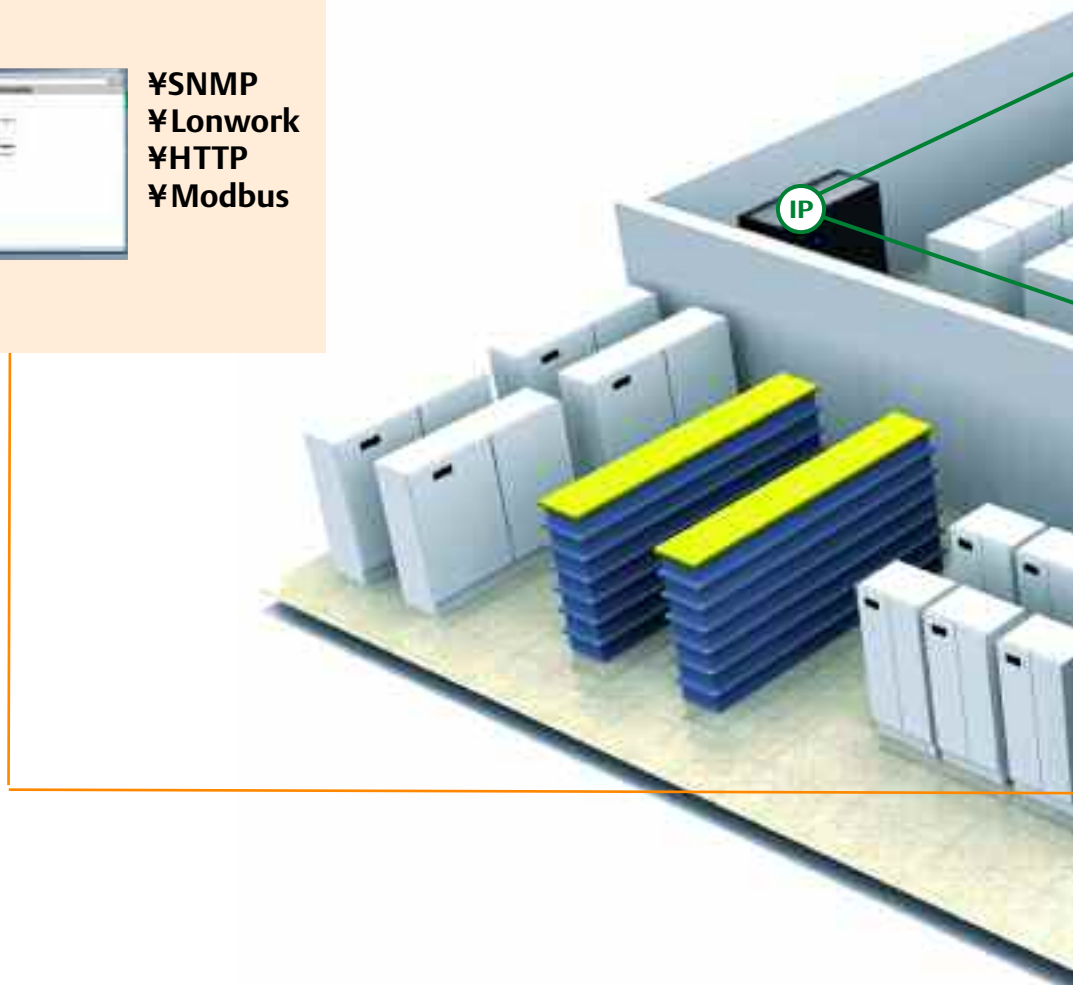
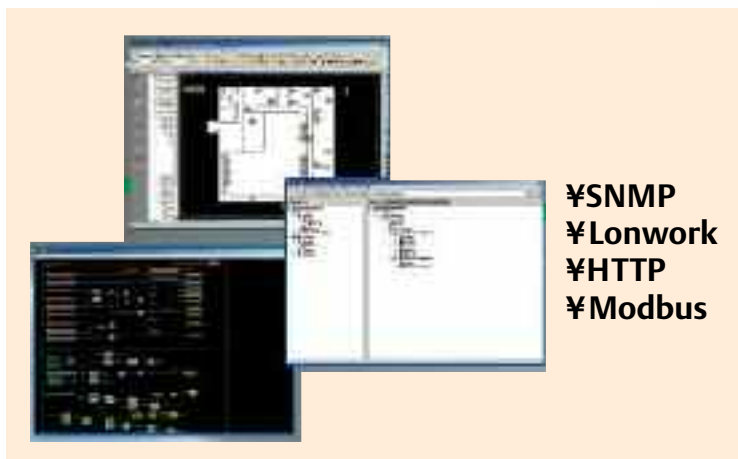
Leading Precision Cooling Over IP

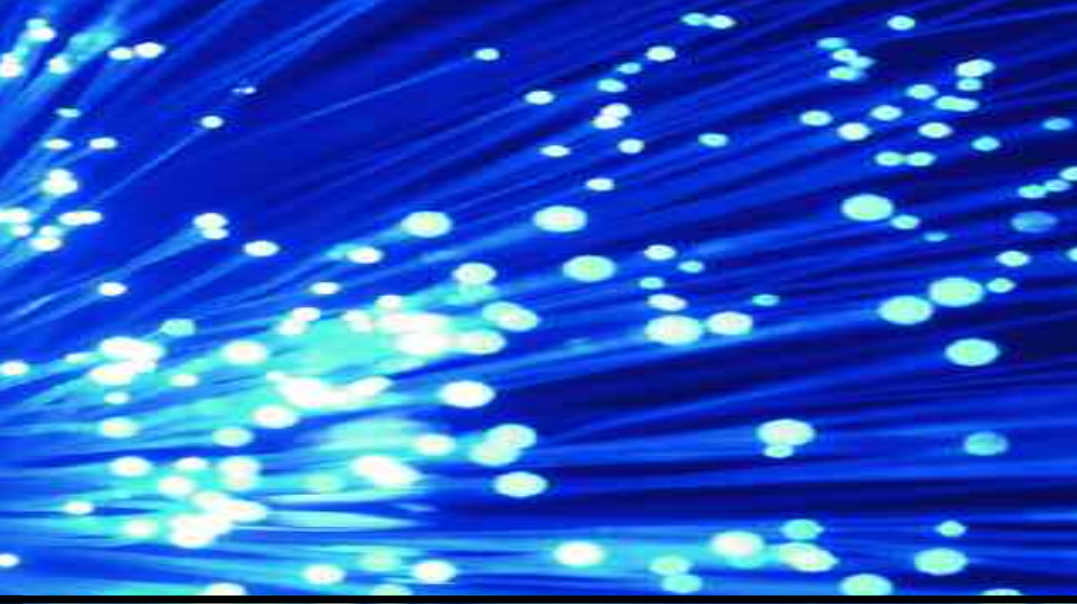
Integrate your Network Management

■ Connectivity and monitoring solutions

Whether you have a Network Management System or a BMS and you need to integrate Liebert Hiross HPM, this can be simply done through a Web card: SNMP, Modbus, HTTP and Lonworks are just a few of the protocols available.

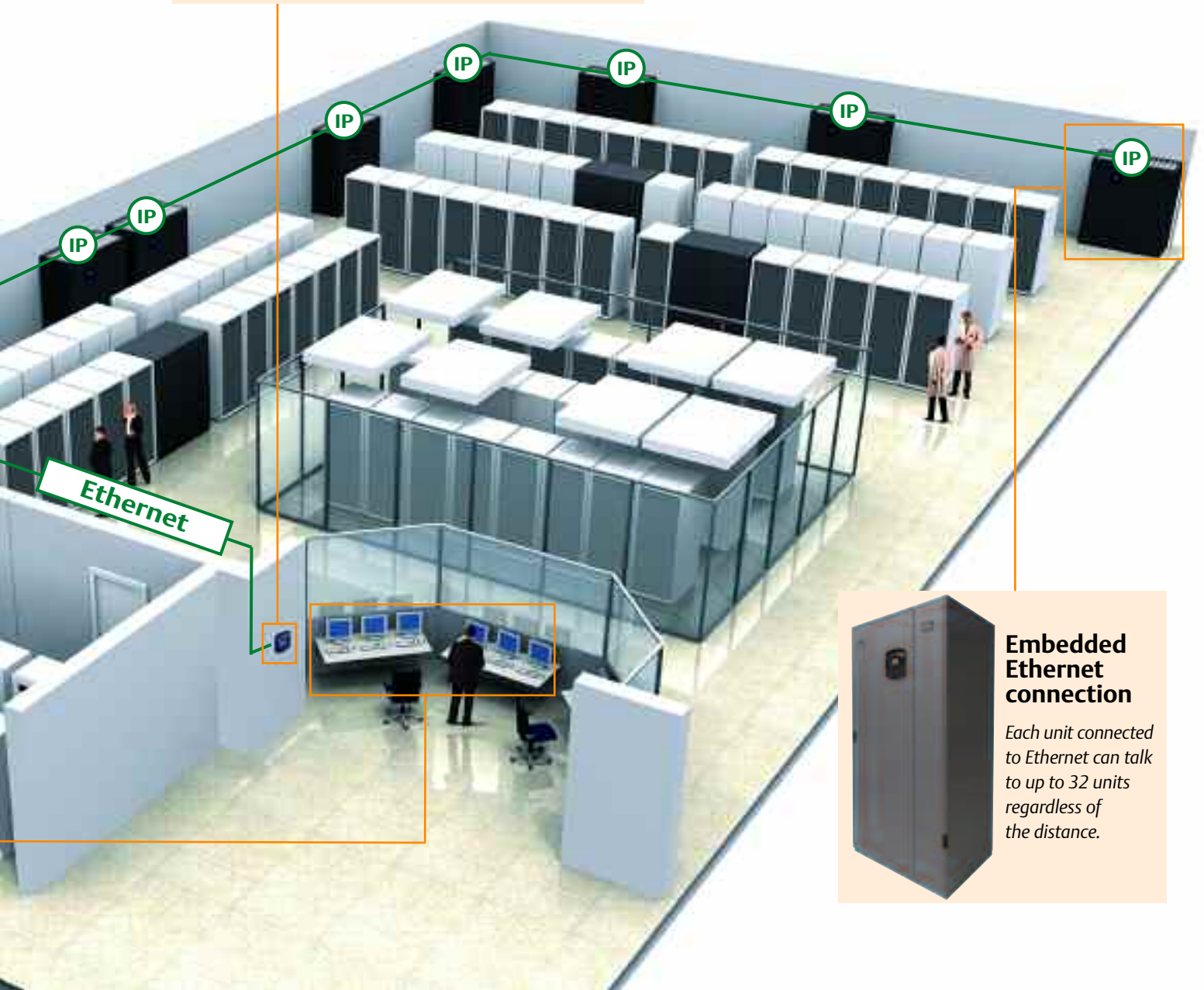
Liebert Sitescan and Hirovisor IP, advanced monitoring solutions that can be offered for both local and remote monitoring either through a dial up line or through internet.





iCOM™ display

Whenever you are in the network you can plug iCOM user interface and browse the connected units thus enabling a first level of monitoring.



Embedded Ethernet connection

Each unit connected to Ethernet can talk to up to 32 units regardless of the distance.

Functional schemes



**A - Air-cooled
with remote condenser**



W - Water-cooled



D - Air-cooled Dual-Fluid



D - Water-cooled Dual-Fluid



F - Freecooling



C - Chilled water



Combination with condensers

Max. outdoor temperature 35j C

Model	Standard	Low Noise
S04 A	1 x HCE07	1 x HCE 07
S05 A	1 x HCE07	1 x HCE 07
S07 A	1 x HCE10	1 x HCE 14
S10 A	1 x HCE14	1 x HCE 14
S12 A	1 x HCE14	1 x HCE 17
S13 A/D	1 x HCE14	1 x HCE 17
S17 A/D	1 x HCE24	1 x HCE 24
S20 A/D	1 x HCE24	1 x HCE 24
S23 A/D	1 x HCE29	1 x HCE 29
M25 A/D	1 x HCE29	1 x HCE 29
M29 A	1 x HCE29	1 x HCE 33
M31 A/D	1 x HCE29	1 x HCE 33
M34 A/D	2 x HCE24 or 1 x HBE33	2 x HCE 24

Max. outdoor temperature 35j C

Model	Standard	Low Noise
M35 A/D	1 x HCE33	1 x HCE 42
M41 A/D	1 x HCE42	1 x HCE 49
M42 A/D	2 x HCE24	2 x HCE 24 or 1 x HBE 49
M47 A/D	1 x HCE49	1 x HCE 49
M50 A/D	2 x HCE29 or 1 x HBE49	2 x HCE 29
M58 A/D	2 x HCE29 or 1 x HBE49	2 x HCE 33
M66 A	2 x HCE33	2 x HCE 42
L83 A/D	2 x HCE 42 or 1 x HBE 87	2 xHCE 42 or 1 xHBE 87
L99 A	2 x HCE 49 or 1 x HBE 87	2 xHCE 49 or 1 xHBE 99

Combination with Dry Cooler

Max. outdoor temperature 35j C

Model	Standard	Low Noise
S04W	1 x DSM009	1 x DLM008
S05W	1 x DSM009	1 x DLM008
S07W	1 x DSM009	1 x DLM008
S10W	1 x DSM009	1 x DLM008
S12W	1 x DSM013	1 x DLM015
S13W/H/F	1 x DSM013	1 x DLM015
S17W/H/F	1 x DSM018	1 x DLM015
S20W/H/F	1 x DSM022	1 x DLM023
S23W/H/F	1 x DSM028	1 x DLT027
M25 W/H/F	1 x DSM028	1 x DLT027
M29 W	1 x DSM028	1 x DLT027

Max. outdoor temperature 35j C

Model	Standard	Low Noise
M31 W/H/F	1 x DSM028	1 x DLT027
M34 W/H/F	1 x DST030	1 x DLT040
M35 W/H/F	1 x DST030	1 x DLT040
M41 W/H/F	1 x DST040	1 x DLT040
M42 W/H/F	1 x DST040	1 x DLT040
M47 W/H/F	1 x DST050	1 x DLT047
M50 W/H/F	1 x DST050	1 x DLT055
M58 W/H/F	1 x DST060	1 x DLT055
M66 W	1 x DST070	1 x DLT065
L83 W/H/F	1 x DST 080	1 x DLT 085
L99 W	1 x DST 110	1 x DLT 110

Technical data - C - Chilled water

Air delivery: downwards or upwards

Model		S06	S08	S11	S15	S18	S29	M44	M55	M66	M77	L90 ⁽⁶⁾	L10 ⁽⁶⁾	L12 ⁽⁶⁾	L14 ⁽⁶⁾	L15 ⁽⁶⁾
Performance																
Total cooling capacity ⁽²⁾	kW	6.2	9.2	12.6	17.5	22.4	28.8	43.6	58.6	68.8	83.5	90.7	103.4	117.9	142.8	158.9
Sensible cooling capacity ⁽²⁾	kW	5.6	8.5	11.2	16.7	20.3	25.0	34.7	49.7	56.2	64.8	76.8	83.9	97.4	111.7	121.5
SHR ⁽²⁾		0.90	0.92	0.89	0.95	0.91	0.87	0.80	0.85	0.82	0.78	0.85	0.81	0.83	0.78	0.76
Water flow rate ⁽²⁾	l/s	0.30	0.44	0.60	0.83	1.07	1.38	2.08	2.79	3.28	3.71	4.33	4.93	5.62	6.81	7.58
Number of fans	no.	1	1	1	1	1	1	1	2	2	2	2	2	3	3	3
Air delivery	m ³ /s	1395	2200	2800	4500	5200	6150	8150	12740	13650	14220	19060	20400	23100	25100	26070
Max. ESP ⁽⁷⁾ downward/upward delivery	Pa	170/190	190/190	30/50	220/220	400/400	180/180	170/170	340/350	250/250	170/190	270	180	290	180	110
Sound pressure level ⁽⁵⁾	dB(A)	46.1	48.3	50.5	50.4	51.4	54.5	55.1	58.2	60.3	62.2	58.7	61.0	62.1	62.1	63.8
Width	mm	750	750	750	750	750	750	1000	1750	1750	1750	2050	2050	2550	2550	2550
Depth	mm	400	500	500	750	750	750	850	850	850	850	890	890	890	890	890
Net weight	kg	135	150	165	190	210	230	330	480	550	600	620	630	790	800	810

Technical data - A/W – Direct expansion, air or water cooled

Air delivery: downwards or upwards

Model		S04	S05	S07	S10	S12	S13	S17	S20	S23	M25	M29	M31	M34	M35	M41
Performance⁽¹⁾																
Total cooling capacity ⁽¹⁾	kW	4.6	5.7	8.2	10.6	12.5	14.5	17.3	20.5	26.6	26.5	29.7	31.3	36.2	37.0	45.8
Sensible cooling capacity ⁽¹⁾	kW	4.3	5.3	7.7	10.1	11.0	13.8	16.4	19.2	23.6	24.2	27.2	30.3	34.1	35.1	43.4
SHR ⁽¹⁾		0.90	0.93	0.94	0.95	0.88	0.95	0.95	0.94	0.89	0.91	0.92	0.97	0.94	0.95	0.95
EER ⁽¹⁾⁽³⁾		3.29	3.35	3.28	3.66	3.57	3.82	3.68	3.42	3.41	3.56	3.35	3.51	3.62	3.58	3.52
Number of compressors	no.	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1
Number of fans	no.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
Air delivery	m ³ /h	1150	1350	2100	2600	2700	4200	4950	5200	5750	6340	7080	8850	9490	9540	11230
Max. ESP ⁽⁷⁾ downward/upward delivery	Pa	200/250	170/180	240/240	130/130	80/80	280/280	220/220	400/400	270/270	360/380	240/280	360/420	350/350	340/340	380/380
Sound pressure level ⁽⁴⁾	dB(A)	45.5	46.4	47.3	48.2	50.5	49.0	51.3	51.5	54.4	53.3	55.1	58.5	60.5	60.4	58.4
Width	mm	750	750	750	750	750	750	750	750	1000	1000	1750	1750	1750	1750	1750
Depth	mm	400	400	500	500	500	750	750	750	750	850	850	850	850	850	850
Net weight	kg	160	170	195	210	215	240	250	260	270	425	430	575	590	580	600

Model		M42	M47	M50	M58	M66	L83 ⁽⁶⁾	L99 ⁽⁶⁾
Performance⁽¹⁾								
Total cooling capacity ⁽¹⁾	kW	42.8	53.7	54.9	60.1	70.3	86.3	104.6
Sensible cooling capacity ⁽¹⁾	kW	41.5	49.0	49.3	52.7	58.5	79.5	89.3
SHR ⁽¹⁾		0.97	0.91	0.90	0.88	0.83	0.92	0.85
EER ⁽¹⁾⁽³⁾		3.63	3.45	3.59	3.40	3.49	3.31	3.40
Number of compressors	no.	2	1	2	2	2	2	2
Number of fans	no.	2	2	2	2	2	2	2
Air delivery	m ³ /h	11370	12250	12240	12910	13470	20020	21100
Max. ESP ⁽⁷⁾ downward/upward delivery	Pa	380/390	300/300	300/300	240/250	170/180	170	90
Sound pressure level ⁽⁴⁾	dB(A)	58.1	60.4	59.3	61.1	63.4	66.2	66.9
Width	mm	1750	1750	1750	1750	1750	2550	2550
Depth	mm	850	850	850	850	850	890	890
Net weight	kg	600	620	635	650	670	950	1000

- (1) 24°Cdb-17°Cwb-, 50% R.H.; 45°C condensation; refrigerant R407C
- (2) 24°Cdb-17°Cwb-, 50% R.H.; 7/12°C water inlet/outlet.
- (3) 20 Pa ESP, downward delivery version.
50 Pa upward delivery version.
- (4) 1.5 m height, 2 m front distance; free field; compressor(s) and fan (s) working.
Downward delivery version.
- (5) 1.5 m height, 2 m front distance; free field; fan (s) working. Downward delivery version.
- (6) Available only in the downward delivery version.
- (7) Max. ESP available for the indicated air delivery.



Available versions

Version	A/W	C	F/D/H	Constant
S04	● ● ● ●	- - - -	- - - -	- ● - ●
S05	● ● ● ●	- - - -	- - - -	- ● - ●
S06	- - - -	● ● ● ●	- - - -	- ● - ●
S07	● ● ● ●	- - - -	- - - -	- ● - ●
S08	- - - -	● ● ● ●	- - - -	- ● - ●
S10	● ● ● ●	- - - -	- - - -	- ● - ●
S11	- - - -	● ● ● ●	- - - -	- ● - ●
S12	● ● ● ●	- - - -	- - - -	- ● - ●
S13	● ● ● ●	- - - -	- - - -	- ● - ●
S15	- - - -	● ● ● ●	- - - -	- ● - ●
S17	● ● ● ●	- - - -	● ●	- ● - ●
S18	- - - -	● ● ● ●	- - - -	- ● - ●
S20	● ● ● ●	- - - -	● ●	- ● - ●
S23	● ● ● ●	- - - -	● ●	- ● - ●
S29	- - - -	● ● ● ●	- - - -	- ● - ●
M25	● ● ● ●	- - - -	● ●	- ● - ●
M29	● ● ● ●	- - - -	- - - -	- ● - ●
M31	● ● ● ●	- - - -	● ●	- ● - ●
M34	● ● ● ●	- - - -	● ●	- ● - ●
M35	● ● ● ●	- - - -	● ●	- ● - ●
M41	● ● ● ●	- - - -	● ●	- ● - ●
M42	● ● ● ●	- - - -	● ●	- ● - ●
M44	- - - -	● ● ● ●	- - - -	- ● - ●
M47	● ● ● ●	- - - -	● ●	- ● - ●
M50	● ● ● ●	- - - -	● ●	- ● - ●
M55	- - - -	● ● ● ●	- - - -	- ● - ●
M58	● ● ● ●	- - - -	● ●	- ● - ●
M66	● ● ● ●	- - - -	● ●	- ● - ●
M77	- - - -	● ● ● ●	- - - -	- ● - ●
L83	● ● ● ●	- - - -	● ●	- ● - ●
L90	- - - -	● ● ● ●	- - - -	- ● - ●
L99	● ● ● ●	- - - -	- - - -	- ● - ●
L10	- - - -	● ● ● ●	- - - -	- ● - ●
L12	- - - -	● ● ● ●	- - - -	- ● - ●
L14	- - - -	● ● ● ●	- - - -	- ● - ●
L15	- - - -	● ● ● ●	- - - -	- ● - ●

- Downward air delivery
- Upward air delivery
- Displacement
- Front air delivery

A/W: Direct expansion, air or water cooled

F/D/H: Freecooling and Dual-Fluid

C: Chilled water

Constant version: see the product manual



Downward air delivery



Upward air delivery



Displacement



Front air delivery

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