Liquid Cooling Package

Accessories for LCP Page 433 **Chillers for IT cooling** Page 441 **Network/server enclosures TS-IT** Page 92

Benefits:
- Maximum energy efficiency thanks to EC fan technology and IT-based control
- Minimal pressure loss at the air end, which in turn minimises the power consumption of the fans
- Control of the server inlet temperature
- With redundant temperature sensor integrated at the air end as standard
- Optimum adaptability thanks to dynamic, continuous control of the cold water volume flow
- By using high water inlet temperatures, the proportion of indirect free cooling is increased, which in turn reduces operating costs
- Targeted cooling output thanks to modular fan units
- Fan modules configurable as n+1 redundancy
- Standard 3-phase connection for electrical redundancy
- The separation of cooling and rack prevents water from entering the server enclosure
- Up to 55 kW cooling output on a footprint of just 0.36 m^2
- Minimal area load due to low weight

Functions:
The LCP draws in the air at the sides at the rear of the server enclosures, cools it using high-performance compact impellers, and blows the cooled air back into the front part of the server enclosure at the sides

Monitoring:
- Monitoring of all system-relevant parameters such as server air intake temperature, server waste air temperature, water inlet/return temperature, water flow, cooling output, fan speed, leakage
- Direct connection of the unit via SNMP over Ethernet

Temperature control:
- Linear fan control
- Two-way control valve

Colour:
- RAL 7035

Protection category IP to IEC 60 529:
- IP 20

Cooling medium:
- Water

Optional:
- Fully integrated fire detection and extinguisher system
- Automatic server enclosure door opening
- Various sensors
- Racks 2200 mm high

Technical details:
Available on the Internet

Photo shows a configuration example with equipment not included in the scope of supply

LCP Rack CW

Model No.	Packs of	**3311.130**	**3311.230**	**3311.260**	Page
Total cooling output/Number of fan modules required kW		**10 / 1 20 / 2 30 / 3**	**10 / 1 20 / 2 30 / 3**	**40 / 4 45 / 5 55 / 6**	
Number of fan modules in supplied state		1	1	4	
Width mm		300	300	300	
Height mm		2000	2000	2000	
Depth mm		1000	1200	1200	
Installation in bayed enclosure suite		Flush	Flush	Flush	
Rated operating voltage V, ~, Hz		230, 1~, 50/60 400, 3~, 50/60	230, 1~, 50/60 400, 3~, 50/60	230, 1~, 50/60 400, 3~, 50/60	
Type of electrical connection		Connector	Connector	Connector	
Air throughput at max. cooling output m^3/h		4800	4800	8000	
Fans may be exchanged with the system operational		■	■	■	
EC fan		■	■	■	
Water inlet temperature °C		15	15	15	
Permissible operating pressure (p. max.) bar		6	6	6	
Duty cycle %		100	100	100	
Water connection		1½" external thread	1½" external thread	1½" external thread	
Weight as delivered kg		214.0	214.0	235.0	
Accessories					
Fan module	1 pc(s).	3311.011	3311.011	3311.011	434
Touchscreen display, colour	1 pc(s).	3311.030	3311.030	3311.030	433
Connection hose, bottom and top	2 pc(s).	3311.040	3311.040	3311.040	433
Add-on cover	1 pc(s).	3301.221	3301.421	3301.421	433

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Benefits:
- Maximum energy efficiency thanks to EC fan technology and IT-based control
- Minimal pressure loss at the air end, which in turn minimises the power consumption of the fans
- Optimum adaptability due to dynamic, continuous control of the cold water volume flow
- By using high water inlet temperatures, the proportion of indirect free cooling is increased, which in turn reduces operating costs
- Targeted cooling output thanks to modular fan units
- Fan modules configurable as n+1 redundancy
- Standard 3-phase connection for electrical redundancy
- With redundant temperature sensor integrated at the air end as standard
- The separation of cooling and rack prevents the ingress of water into the server enclosure
- Up to 55 kW cooling output on a footprint of just 0.36 m²
- Minimal area load due to low weight

Functions:
The hot air is drawn in from the room or hot aisle at the rear of the device and expelled at the front into the cold aisle after cooling. The LCP achieves maximum performance and efficiency in conjunction with Rittal cold aisle containment. With this product, a raised floor is not necessary.

Monitoring:
- Monitoring of all system-relevant parameters such as server air intake temperature, server waste air temperature, water inlet/return temperature, water flow, cooling output, fan speed, leakage
- Direct connection of the unit via SNMP over Ethernet
- Integration into RiZone

Temperature control:
- Linear fan control
- Two-way control valve

Colour:
- RAL 7035

Protection category IP to IEC 60 529:
- IP 20

Cooling medium:
- Water

Optional:
- Various sensors
- Racks 2200 mm high

Technical details:
Available on the Internet

Photo shows a configuration example with equipment not included in the scope of supply

LCP Inline CW

Model No.	Packs of	**3311.530**	**3311.540**	**3311.560**	Page
Total cooling output/Number of fan modules required kW		**10 / 1 20 / 2 30 / 3**	**18 / 2 27 / 3 30 / 4**	**40 / 4 45 / 5 55 / 6**	
Number of fan modules in supplied state		1	2	4	
Width mm		300	300	300	
Height mm		2000	2000	2000	
Depth mm		1200	1200	1200	
Installation in bayed enclosure suite		Set forward	Flush	Set forward	
Rated operating voltage V, ~, Hz		230, 1~, 50/60 400, 3~, 50/60	230, 1~, 50/60 400, 3~, 50/60	230, 1~, 50/60 400, 3~, 50/60	
Type of electrical connection		Connector	Connector	Connector	
Air throughput at max. cooling output m³/h		4800	4800	8000	
Fans may be exchanged with the system operational		■	■	■	
EC fan		■	■	■	
Permissible operating pressure (p. max.) bar		6	6	6	
Duty cycle %		100	100	100	
Water connection		1½" external thread	1½" external thread	1½" external thread	
Water inlet temperature °C		15	15	15	
Weight as delivered kg		214.0	221.0	235.0	
Accessories					
Fan module	1 pc(s).	3311.011	3311.011	3311.011	434
Touchscreen display, colour	1 pc(s).	3311.030	3311.030	3311.030	433
Connection hose, bottom and top	2 pc(s).	3311.040	3311.040	3311.040	433
Add-on cover	1 pc(s).	3301.421	3301.421	3301.421	433
Rear adaptor	1 pc(s).	3311.080	–	3311.080	433

Liquid Cooling Package

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Benefits:
- Error-tolerant, efficient cooling of server racks with high thermal loads
- Fully redundant – two active cooling circuits and two switchable power circuits ensure optimum fail-safeness
- The built-in controllers are capable of adapting all device parameters automatically to preserve the required cooling outputs
- A separate decentralised intelligence which automatically recognises emergency situations and responds appropriately with the "auto-load balancing" and "auto-recovery" functions
- Interfaces which facilitate user-friendly operation and monitoring via the network or BSM systems

Functions:
The LCP draws in the air at the sides at the rear of the server enclosures, cools it using high-performance compact impellers, and blows the cooled air back into the front part of the server enclosure at the sides

Monitoring:
- Monitoring of all system-relevant parameters such as server air intake temperature, server waste air temperature, water inlet/return temperature, water flow, cooling output, fan speed, leakage

Temperature control:
- Linear fan control
- Two-way control valve

Colour:
- RAL 7035

Protection category IP to IEC 60 529:
- IP 20

Cooling medium:
- Water

Optional:
- Fully integrated fire detection and extinguisher system
- Automatic server enclosure door opening
- Various sensors

Photo shows a configuration example with equipment not included in the scope of supply

LCP T3+ CW

Model No.	**3300.239**	Page
Total cooling output kW	**20**	
Width mm	300	
Height mm	2200	
Depth mm	1200	
Rated operating voltage V, ~, Hz	230, 1~, 50/60	
Type of electrical connection	C19/C20	
Fans may be exchanged with the system operational	■	
EC fan	■	
Duty cycle %	100	
Weight as delivered kg	215.0	

Liquid Cooling Package

Accessories for LCP Page 433 **Chillers for IT cooling** Page 441 **Network/server enclosures TS-IT** Page 92

Benefits:
- Maximum energy efficiency due to EC fan technology and IT-based control
- Minimal pressure loss at the air end, which in turn minimises the power consumption of the fans
- Control of the server inlet temperature
- Due to the speed-regulated compressor, the cooling output is ideally adapted to actual requirements
- With redundant temperature sensor integrated at the air end as standard
- Specific maintenance of the LCP DX due to separation of cooling and server rack
- Absorbed thermal energy is emitted to the ambient air at the external condenser location, without heating up the installation room
- Ideal for IT cooling of small and medium-sized locations
- One or two racks can be cooled separately

Functions:
The LCP draws in the air at the sides at the rear of the server enclosures, cools it using high-performance compact impellers, and blows the cooled air back into the front part of the server enclosure at the sides

Temperature control:
- Linear fan control
- Inverter-regulated compressor

Colour:
- RAL 7035

Protection category IP to IEC 60 529:
- IP 20

Cooling medium:
R410a

Optional:
- Humidifier, reheater or condensate pump
- Higher cooling output

Photo shows a configuration example with equipment not included in the scope of supply

LCP Rack DX

Model No.	Packs of	**3311.410**	**3311.420**	Page
Total cooling output/Number of fan modules required kW		**12 / 4**	**12 / 4**	
Width mm		300	300	
Height mm		2000	2000	
Depth mm		1000	1200	
Installation in bayed enclosure suite		Flush	Flush	
Rated operating voltage V, ~, Hz		380, 3~, 50/60 480, 3~, 50/60	380, 3~, 50/60 480, 3~, 50/60	
Type of electrical connection		Connection clamp	Connection clamp	
Air throughput at max. cooling output m^3/h		4800	4800	
Fans may be exchanged with the system operational		■	■	
EC fan		■	■	
Duty cycle %		100	100	
Weight as delivered kg		181.0	181.0	
Accessories				
SNMP card	1 pc(s).	3311.320	3311.320	434
Condenser unit	1 pc(s).	3311.360	3311.360	433
Add-on cover	1 pc(s).	3301.221	3301.421	433

Liquid Cooling Package

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Benefits:
- Maximum energy efficiency due to EC fan technology and IT-based control
- Minimal pressure loss at the air end, which in turn minimises the power consumption of the fans
- Temperature monitoring and control
- Due to the speed-regulated compressor, the cooling output is ideally adapted to actual requirements
- With redundant temperature sensor integrated at the air end as standard
- Minimal area load due to low weight
- Specific maintenance of the LCP DX due to separation of cooling and server rack
- Absorbed thermal energy is emitted to the ambient air at the external condenser location, without heating up the installation room
- Ideal for IT cooling of small and medium-sized locations
- One or two racks can be cooled separately

Functions:
The LCP is designed for siting within a bayed enclosure suite. Hot air is drawn in from the aisle at the rear of the device, cooled by the high-capacity compact impellers, and blown back into the room or cold aisle after cooling

Temperature control:
- Linear fan control
- Inverter-regulated compressor

Colour:
- RAL 7035

Protection category IP to IEC 60 529:
- IP 20

Cooling medium:
- R410a

Optional:
- Humidifier, reheater or condensate pump
- Higher cooling output

Photo shows a configuration example with equipment not included in the scope of supply

LCP Inline DX

Model No.	Packs of	**3311.430**	**3311.440**	Page
Total cooling output/Number of fan modules required kW		**12 / 4**	**12 / 4**	
Width mm		300	300	
Height mm		2000	2000	
Depth mm		1000	1200	
Installation in bayed enclosure suite		Flush	Flush	
Rated operating voltage V, ~, Hz		380, 3~, 50/60 480, 3~, 50/60	380, 3~, 50/60 480, 3~, 50/60	
Type of electrical connection		Connection clamp	Connection clamp	
Air throughput at max. cooling output m³/h		4800	4800	
Fans may be exchanged with the system operational		■	■	
EC fan		■	■	
Duty cycle %		100	100	
Weight as delivered kg		181.0	181.0	
Accessories				
SNMP card	1 pc(s).	3311.320	3311.320	434
Condenser unit	1 pc(s).	3311.360	3311.360	433
Add-on cover	1 pc(s).	3301.221	3301.421	433

Accessories for LCP CW/DX

Touchscreen display

for LCP Rack, Inline, CW
The colour display offers the opportunity of directly monitoring key LCP functions and implementing settings.

For LCP CW	Packs of	Model No.
3311.130 3311.230 3311.260 3311.530 3311.540 3311.560	1 pc(s).	**3311.030**

Condenser unit

The condenser unit is needed to operate the refrigerant-based LCPs, and comprises the external condenser and fan.

Refrigerant:
– R410a

For LCP DX	Packs of	Model No.
3311.410 3311.420 3311.430 3311.440	1 pc(s).	**3311.360**

Note:
– The pipework between the LCP DX and the condenser is not included with the supply.

Vertical shielding

for enclosure height 2000 mm
To block the airflow on the left and right of the 482.6 mm (19˝) level.

Length: 1900 mm

Material:
– Cellular PU foam
– Flame-inhibiting to UL 94 (HF1)
– Self-adhesive on one side

For sealing between	For enclosure width mm	Packs of	Model No.
Side panel and 482.6 mm (19˝) level	600	1 pc(s).	**3301.380**
	800	1 pc(s).	**3301.390**
LCP and 482.6 mm (19˝) level	600	1 pc(s).	**3301.370**
	800	1 pc(s).	**3301.320**

Connection hose

bottom and top
Flexible connection hose, may be cut to required length, including union nuts on both sides for connecting the LCP to existing pipework.

For LCP CW	Thread	Water connection from	Packs of	Model No.
3311.130 3311.230 3311.260 3311.530 3311.540 3311.560	1½˝	bottom/top	2 pc(s).	**3311.040**

Rear adaptor

for LCP Inline CW
May be positioned to the rear of the set forward LCP Inline to close the existing gap in the rear section.

For LCP Inline CW	Packs of	Model No.
3311.530 3311.560	1 pc(s).	**3311.080**

Add-on cover

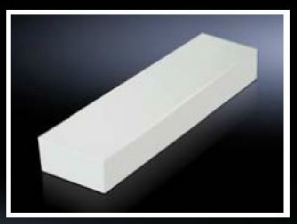
for 2000 mm high LCP
For height compensation in conjunction with 2200 mm high server enclosures.

Material:
– Sheet steel

Surface finish:
– Spray-finished

Colour:
– RAL 7035

For LCP	Packs of	Model No.
3300.239, 3311.230, 3311.260, 3311.420, 3311.440, 3311.530, 3311.540, 3311.560	1 pc(s).	**3301.421**



Accessories for LCP CW/DX

SNMP card

For connecting LCP Rack/Inline DX units to the network.

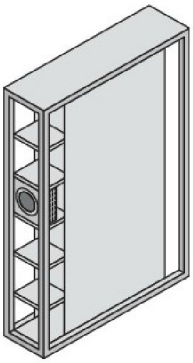
For LCP DX	Packs of	Model No.
3311.410 3311.420 3311.430 3311.440	1 pc(s).	**3311.320**

Fan module

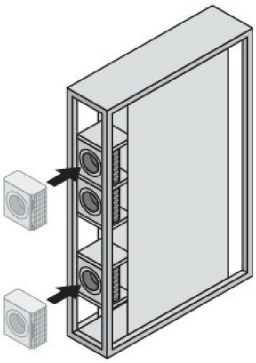
for LCP

To increase the cooling output, individual fan modules may be retro-fitted into the LCPs. This can also achieve redundancy or reduce the electric power consumption of the LCP.

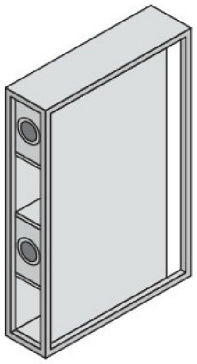
For LCP	Packs of	Model No.
3311.130, 3311.230, 3311.260, 3311.530, 3311.540, 3311.560	1 pc(s).	**3311.011**



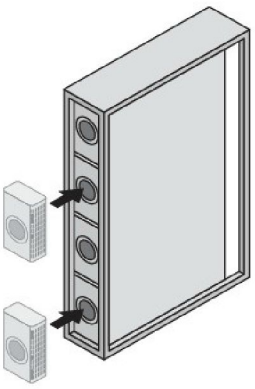
The LCP 3311.130/.230/.530 (max. 30 kW) is supplied with one fan module as standard.



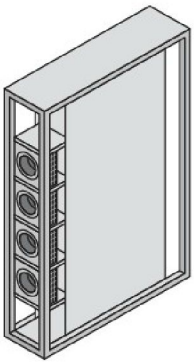
To achieve the max. cooling output of 30 kW, the customer/service should install two additional fan modules.



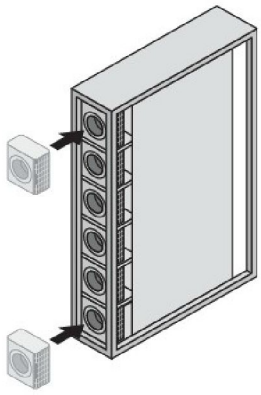
The LCP 3311.540 (max. 30 kW) is supplied with two fan modules as standard.



To achieve the max. cooling output of 30 kW, the customer/service should install two additional fan modules.



The LCP 3311.260/.560 (max. 55 kW) is supplied with four fan modules as standard.



To achieve the max. cooling output of 55 kW, the customer/service should install two additional fan modules.

Aisle containment

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Slimline door element with viewing window and sliding door. Stable roof elements in a composite metal with a high level of light permeability. Where required, safety glass may also be used.

Applications:
- Depending on the application, aisle containment may be used with CRAC systems or LCP Inline as hot or cold aisle containment.

Benefits:
- Increased energy efficiency and performance capability of climate control.
- Superior output density is facilitated, thanks to targeted cold air supply.
- Easily installed and retrofitted, as it is fully compatible with the TS 8 enclosure system.
- An inexpensive way to boost the performance of your existing plant, lengthening the investment cycle until a replacement needs to be purchased.

Functions:
Aisle containment is a combination of door and roof components which facilitate consistent separation of the hot and cold air in the data centre. Such separation is pivotal to saving energy and increasing the efficiency of the available climate control technology.

Note:
- Individual project planning only

Photo shows a configuration example with equipment not included in the scope of supply

Model No.		7999.922	Page