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## SK 3312.550

# Liquid Cooling Package

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FRIEDHELM LOH GROUP



# SK 3312.550 - Liquid Cooling Package LCP Inline CW, LCP Inline CWG

Bayed climate control designed for siting within a bayed enclosure suite. The hot air is extracted at the rear of the unit, cooled and then expelled forwards to the cold aisle.

## Features

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model No.          | SK 3312.550                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Benefits           | <p>Maximum energy efficiency due to EC fan technology and IT-based control</p> <p>Minimal pressure loss at the air end, which in turn minimises the power consumption of the fans</p> <p>Optimum adaptability due to dynamic, continuous control of the cold water volume flow</p> <p>By using high water inlet temperatures, the proportion of indirect free cooling is increased, which in turn reduces operating costs</p> <p>Targeted cooling output due to modular fan units</p> <p>Fan modules configurable as n+1 redundancy</p> <p>Standard 3-phase connection for electrical redundancy</p> <p>With redundant temperature sensor integrated at the air end as standard</p> <p>The separation of cooling and enclosure prevents the ingress of water into the server enclosure</p> <p>A footprint of max. 0.36 m<sup>2</sup> for all cooling services</p> <p>Improved heat recovery, thanks to high water return temperatures when using LCP CW glycol variants, for example in combination with a heat pump</p> <p>Optimum access for maintenance and servicing from the front and rear</p> <p>Tool-free replacement of the fan modules</p> |
| Function principle | <p>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.</p> <p>With this product, a raised floor is not necessary.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Material           | Sheet steel, spray-finished                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Colour             | RAL 7035                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

# Features

|                                                   |                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Options                                           | Direct connection of additional CMC III sensors is supported<br>Racks 2200 mm high                                                                                                                                                                                                  |
| Design                                            | Suite cooling                                                                                                                                                                                                                                                                       |
| 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<br>Direct connection of the unit via SNMP over Ethernet<br>Integration into RiZone |
| Total cooling output/Number of fan modules        | 16 kW/2<br>25 kW/3<br>28 kW/4                                                                                                                                                                                                                                                       |
| Air throughput (unimpeded air flow)               | At 50 Hz: 5,000 m³/h                                                                                                                                                                                                                                                                |
| Number of fan modules in supplied state           | 2                                                                                                                                                                                                                                                                                   |
| Dimensions                                        | Width: 300 mm<br>Height: 2,000 mm<br>Depth: 1,200 mm                                                                                                                                                                                                                                |
| Installation in bayed enclosure suite             | Flush                                                                                                                                                                                                                                                                               |
| Rated operating voltage                           | 230 V, 1~, 50 Hz/60 Hz<br>400 V, 3~, 50 Hz/60 Hz                                                                                                                                                                                                                                    |
| Max. cooling output                               | 28 kW                                                                                                                                                                                                                                                                               |
| Type of electrical connection                     | Connector                                                                                                                                                                                                                                                                           |
| Duty cycle                                        | 100 %                                                                                                                                                                                                                                                                               |
| Cooling medium                                    | Water/glycol                                                                                                                                                                                                                                                                        |
| EC fan                                            | Yes                                                                                                                                                                                                                                                                                 |
| Fans may be exchanged with the system operational | Yes                                                                                                                                                                                                                                                                                 |
| Temperature control                               | Linear fan control<br>Two-way control valve                                                                                                                                                                                                                                         |
| Water connections                                 | DN 40 (G 1½" external thread)                                                                                                                                                                                                                                                       |

# Features

|                                                                     |                                                                                    |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Permissible operating pressure (p. max.)                            | 10 bar                                                                             |
| Water inlet temperature                                             | 15 °C                                                                              |
| Protection category to IEC 60 529                                   | IP 20                                                                              |
| Optimized condensate management even at low water flow temperatures | Yes                                                                                |
| Options                                                             | Direct connection of additional CMC III sensors is supported<br>Racks 2200 mm high |
| Packs of                                                            | 1 pc(s).                                                                           |
| Net weight                                                          | 241                                                                                |
| Gross weight                                                        | 260                                                                                |
| EAN                                                                 | 4028177811621                                                                      |
| ETIM 9                                                              | EC002515                                                                           |
| ETIM 8                                                              | EC002515                                                                           |
| ECLASS 8.0                                                          | 27180712                                                                           |

# Approvals

|              |     |
|--------------|-----|
| Certificates | EAC |
|--------------|-----|

# Tender text

LCP Inline CW, flush, 3312.550 WHD (mm) 300 x 2000 x 1200

LCP Inline CW, flush, 3312.550:

Construction of the device optimised for data centres.

The integrated air/water heat exchanger ensures a cooling output of up to 30kW and has been specially designed for a high cooling output during operation with a water/glycol mixture.

Due to the design of the heat exchanger, the unit is also ideal for the downstream operation of a heat pump for heat recovery.

The heat exchanger is mounted laterally on the rack.

LCP Inline DX extracts the hot exhaust air from the server via a perforated rear door and blows the cooled air forward via a perforated front door in front of the perforated doors of the server racks, so that it is thus available again for the 19" components.

The LCP Inline aligns flush with the server racks in the front and rear areas, forming one continuous alignment.

Maximum efficiency is achieved and the consumption of electrical energy is minimised by using two built-in EC fan modules (cooling output up to 16kW).

The maximum cooling output of 28 kW is achieved by installing two additional fan modules (accessories).

This provides investment security if the full cooling output does not need to be used at the beginning of the installation.

The device is ready to take a maximum of four EC fan modules. A full fan configuration is therefore possible for reasons of redundancy or to minimise electrical power consumption.

The air/water heat exchanger and server rack are arranged in rows though access is separate in each case. This prevents water penetrating into the server rack and makes installation and service easier.

Access to the adjacent IT rack via the LCP is not possible.

A leak detection feature is integrated. A sensor installed in the condensate tray detects leaks, the main controller then issues an alarm message and/or interrupts the supply of cooling medium into the device.

A completely new and patented condensate management system means that it is also possible to operate the device with water flow temperatures below the dew point.

All the components in the condensate section are made of stainless steel

to prevent corrosion.

The water connection can be made optionally downwards or upwards by means of an accessory kit (1 1/2" external thread).

Short device commissioning time, thanks to simple and fast venting. The fans can be replaced at any time, very quickly and without using tools.

A highly developed network-integration software concept for monitoring/setting all the technical parameters is integrated as default.

Should the controller fail, an integrated fail-safe operation mode ensures reliable cooling.

Up to eight additional sensors (temperature, humidity, etc.) can be connected.

#### Technical details:

Sensitive cooling output with two/three/four fans: 16/25/28 kW

Installed fans: 2 (max. 4 possible)

Volumetric air flow: 5,000 m<sup>3</sup>/h (4 fans)

Cooling output (four fans): 28 kW

Max. air inlet temperature 24°C

Inlet temperature: 15°C

Medium: Water/Glycol (67/33)

Cooling medium throughput: approx. 50 l/min

Pressure loss: approx. 0,8 bar

Water connection: 1 1/2" external thread

Voltage: 230 V, 1~, 50/60 Hz, 400 V, 3~, N, 50/60 Hz

Connected electrical load (four fan modules) at 28 kW cooling output:

2.100 W

Server air inlet temperature control via flow rate control and EC fan fitted with linear speed controller

Colour: RAL 7035

Dimensions: W x H x D: 300 x 2000 x 1200 mm

Weight as delivered: approx. 260 kg

#### Controllers/interfaces:

Network interface (RJ 45) Ethernet as per IEEE 802.3 via 10/100BaseT with PoE

Front USB interface: Mini USB for system setting

Rear USB interface: for USB stick, for data recording up to 32 GB

Front SD-HC slot: 1x up to 32 GB, data recording

Alarm relay output: change-over contact for safety extra-low voltage (24 V DC, 1 A)

Digital inputs: 2x (terminal)

Protocols, Ethernet:

TCP/IPv4, TCP/IPv6, SNMPv1, SNMPv2c, SNMPv3, Telnet, SSH, (S)FTP, HTTP (S), NTP, DHCP, DNS, SMTP (S), Syslog

Eight additional sensors (temperature, humidity, etc.) can be connected.

## Software

Control based on server inlet temperature

Automatic or manual control can be selected

Remote control via SNMP is possible

Water-side delta-T control for efficient chiller operation can be selected

The programming of logical links (tasks) to automate specific processes is possible

## Special features:

Simple maintenance of the device from the front and rear, so that cable routes and aisle containments can be laid above the unit.

The fans can be replaced without using any tools

When operating with a water inlet temperature below the dew point, we recommend device 3312.550 (300 x 2000 x 1200 mm) with a novel and patented condensate management system.

Available expansion height of the adjacent server rack: free (Standard: 42 U)

Dimensions: W x H x D: 300 x 2000 x 1200 mm

Weight: approx. 200 kg

## Optional:

Fan module for cooling power expansion: 3312.016

Touchscreen display, colour: 3311.030

Connection hose, bottom/top: 3311.040

Condensate pump 3312.012

LCP Inline CW filter mat holder 3311.042

Filter mat 3311.043