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**SK 3313.538**

**Liquid Cooling Package**

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FRIEDHELM LOH GROUP



# SK 3313.538 - 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 3313.538                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Design    | CW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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>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> |

# Features

|                                            |                                                                                                                                                                                                                                                                                     |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function principle                         | 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.<br>With this product, a raised floor is not necessary.                                                                                    |
| Material                                   | Sheet steel, spray-finished                                                                                                                                                                                                                                                         |
| Surface finish                             | RAL 9005, finely textured matt                                                                                                                                                                                                                                                      |
| Colour                                     | RAL 9005                                                                                                                                                                                                                                                                            |
| 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 | 10 kW/1<br>20 kW/2<br>30 kW/3                                                                                                                                                                                                                                                       |
| Total cooling output                       | 10 kW<br>20 kW<br>30 kW                                                                                                                                                                                                                                                             |
| Air throughput (unimpeded air flow)        | At 60 Hz: 6,500 m <sup>3</sup> /h                                                                                                                                                                                                                                                   |
| Number of fan modules in supplied state    | 4                                                                                                                                                                                                                                                                                   |
| Dimensions                                 | Width: 300 mm<br>Height: 2,000 mm<br>Depth: 1,200 mm                                                                                                                                                                                                                                |
| To fit enclosure type                      | VX IT<br>TS IT PRO                                                                                                                                                                                                                                                                  |
| Installation in bayed enclosure suite      | Set forward                                                                                                                                                                                                                                                                         |
| Rated operating voltage                    | 200 V - 240 V, 1~, 50 Hz/60 Hz<br>200 – 240 V AC                                                                                                                                                                                                                                    |

# Features

|                                                   |                                                                                                                                                          |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Max. cooling output                               | 30 kW                                                                                                                                                    |
| Type of electrical connection                     | Connector                                                                                                                                                |
| Duty cycle                                        | 100 %                                                                                                                                                    |
| Cooling medium                                    | Water                                                                                                                                                    |
| Cooling medium note                               | Water quality according to unit specifications.                                                                                                          |
| 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)                                                                                                                            |
| Permissible operating pressure (p. max.)          | 10 bar                                                                                                                                                   |
| Water inlet temperature                           | 15 °C                                                                                                                                                    |
| Protection category to IEC 60 529                 | IP 20                                                                                                                                                    |
| Options                                           | Direct connection of additional CMC III sensors is supported<br>Racks 2200 mm high                                                                       |
| Packs of                                          | 1 pc(s).                                                                                                                                                 |
| Net weight                                        | 203 kg                                                                                                                                                   |
| Gross weight                                      | 213 kg                                                                                                                                                   |
| Customs tariff number                             | 84186900                                                                                                                                                 |
| ETIM 9                                            | EC002515                                                                                                                                                 |
| ETIM 8                                            | EC002515                                                                                                                                                 |
| ECLASS 8.0                                        | 27180712                                                                                                                                                 |
| Product description                               | SK LCP Inline CW UL, set forward, based on VX IT, air/water heat exchanger for suite cooling, side mounting on the rack, set forward by 200 mm, RAL 9005 |

# Approvals

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Approvals

UR + C-UR (recognized)

# Tender text

LCP Inline CW UL, Protruding, 3313.538:

Regulatory model no.: LCP N 7A1P43SC9D000

The design of the unit is optimised for use in data centres. The integrated air/water heat exchanger guarantees a sensitive cooling output of 30 kW with standard server enclosure dimensions, the lowest possible weight and comprehensive possibilities for monitoring.

The air/water heat exchanger is mounted on the side of the rack. The LCP Inline extracts the hot air from the servers via a vented rear door.

The unit is set forward from the front of the server rack by approx. 200 mm and returns cooled air to the 19" equipment by blowing it in front of the vented doors of the server rack from the left and right.

The use of 4 integrated EC fan modules (cooling output up to 30 kW, 102364 BTU/h) achieves maximum efficiency.

The unit is prepared for the incorporation of up to six EC fan modules. Configuration with the maximum number of fans can thus also serve to achieve redundancy or to minimise electrical power consumption.

The air/water heat exchanger and server rack are incorporated into a single bayed suite, but nevertheless remain separate from each other. This eliminates the risk of water penetrating into the server rack and simplifies installation and service.

There is no access to the adjacent IT rack via the LCP.

Leakage monitoring is integrated. If a sensor installed in the condensate tray detects a leakage, the main controller issues an alarm message and/or interrupts the supply of cooling medium to the unit.

All components which may come into contact with condensate are made from stainless steel in order to avoid corrosion.

The unit was developed for the exclusive purpose of providing a sensitive cooling output.

An accessory kit enables the water connection to be realised either at the top or at the bottom (G 1½" external thread).

Fast commissioning of the unit thanks to fast and simple air bleeding.

The fans can be replaced in a matter of seconds and without the need for tools or specially qualified personnel, also during continued operation.

An advanced software concept enabling network integration for the monitoring/setting of all technical parameters is implemented as a standard feature.

An integrated fail-safe operating mode maintains reliable cooling in case of a controller failure.

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

Technical data:

Sensitive cooling output with 1/2/3 fans: 10/20/30 kW

Operating temperature range, ambient: 10 °C - 50 °C

Operating temperature range, cooling medium: 10 °C - 30 °C  
(non-condensing)

Lower inlet temperatures possible after consultation with the manufacturer.

Installed fans: 4 (max. 6 possible)

Air throughput: 6.500 m<sup>3</sup>/h (4 fans)

Cooling output (4 fans): 30 kW (102364 BTU/h)

Air intake temperature: 24 °C

Water inlet temperature: 15 °C

Medium: Water or water/glycol mixture

Cooling medium throughput (0-100 l/min): approx. 60 l/min (pure water)

Pressure loss: approx. 0.6 bar

Water connection: G 1½" external thread

Voltage: 1~ 200-240V, AC50/60Hz, L1, (L2/N), PE

Max. connected load (6 fan modules): 3150 W

Control according to server air intake temperature, realised by way of throughput regulation and EC fans with infinitely variable speed

Noise level at a distance of 1 m: max. 88 dB(A)

Colour:

Housing frame, roof plate, side panels and rear door: RAL 9005

Dimensions: WxHxD: 300 x 2000 x 1200 mm

Weight as delivered: 230 kg

Controller/interfaces:

Network port (RJ 45): Ethernet to IEEE 802.3 via 10/100BaseT with PoE

Front USB port: Mini USB for system setup

Rear USB port: For USB thumb drive for data memory up to 32 GB

Front SD-HC slot: Data memory up to 32 GB

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

Digital inputs: 2x (terminal)

Protocols, Ethernet:

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

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

Software

Control according to server air intake temperature

Automatic or manual control can be selected

Remote control via SNMP, Modbus TCP, OPC ua is possible

Target value specification by way of an external temperature sensor

Water-side  $\Delta T$  control can be selected for efficient chiller operation

Programming of logic operations (tasks) is possible in order to automate specific processes

Touch screen display, color, installed

The display shows the user all relevant operating parameters directly on the LCP.

This has the advantage of being able to see the status of the device briefly and at a glance, and to react as quickly as possible if necessary.

The following parameters can be read in different levels:

Display of the supplied cold air temperature to the 19" equipment.

Display of the discharged warm air temperature from the 19" equipment

Cooling capacity

Cooling water supply/return temperature

Cooling water flow rate

Position of the control valve

Overview of all parameters at a glance

Display of alarm and warning messages

Overview page with IP address of the device, software version and contact person (can be entered individually)

Change of the setpoint of the cold air temperature before the 19" level can be done on the display (locking possible if not desired)

4,3" display, 480 x 272 pixel

Resistive touch

type. 280 cd/m<sup>2</sup>

Operating temperature: -20°C to +70°C

Connecting cable

Special features:

Simple maintenance of the unit from the front and back, enabling cable channels and aisle containment to be positioned above the unit.

Tool-free fan replacement without interrupting operation

Integrated software with water-side  $\Delta T$  control for efficient chiller operation

For operation with a water inlet temperature below the dew point, the unit 3313.570 (300 x 2000 x 1200 mm) with patented condensate management is recommended.

Available installation height of the adjacent server rack: free (standard: 42 U)

Optional:

Fan module to increase cooling output: 3313.016

Connection hose, bottom/top: 3311.040

Condensate pump: 3312.012 (only for supply voltage 230-240 V)

Rear adaptor for LCP CW Inline, Protruding, 3313.530/560/570: 3312.081

Integrated droplet separator on request