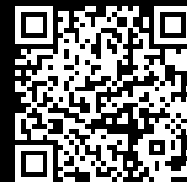


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## SK 3314.568 Liquid Cooling Package

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FRIEDHELM LOH GROUP



# SK 3314.568 - Liquid Cooling Package LCP Inline CW/ 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 3314.568                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Design    | Suite cooling<br>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>Control of the server air inlet temperature or (optionally) according to differential pressure</p> <p>With redundant temperature sensor integrated at the air end as standard</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>Modular fan units for a demand-based cooling output (fan replacement without tools, also possible during operation)</p> <p>Fan modules configurable as n+1 redundancy</p> <p>Standard 3-phase connection for electrical redundancy</p> <p>The UL variant includes a 1- or 2-phase fixed connection with additional cover 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> |

# 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                                   | Enclosure: Sheet steel<br>Front door: Aluminium, anodised/spray-finished<br>Sheet steel, spray-finished                                                                                                                                                                                                                                                                                                                                         |
| Surface finish                             | RAL 9005, finely textured matt                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Colour                                     | Enclosure: RAL 7035<br>Front door: Vertical sections, silver coloured and horizontal sections, RAL 9005<br>RAL 9005                                                                                                                                                                                                                                                                                                                             |
| Options                                    | Automatic server enclosure door opening<br>Direct connection of an additional 16 CMC III sensors possible<br>Racks in height 2200 mm, special colour<br>Condensate management kit including baffle separator plus temperature and humidity sensor<br>Display                                                                                                                                                                                    |
| 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 (2 Ethernet ports for simpler cascading of up to 16 LCPs)<br>Integration into RiZone OTM Suite (extended measuring and management functions, values can be transferred and visualised) |
| Total cooling output/Number of fan modules | 53 kW/6                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Air throughput (unimpeded air flow)        | At 60 Hz: 8,000 m³/h                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Number of fan modules in supplied state    | 6                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Dimensions                                 | Width: 300 mm<br>Height: 2,000 mm<br>Depth: 1,200 mm                                                                                                                                                                                                                                                                                                                                                                                            |
| To fit enclosure type                      | VX IT<br>TS IT                                                                                                                                                                                                                                                                                                                                                                                                                                  |

# Features

|                                                   |                                                                                                                                                                                                                                                              |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Installation in bayed enclosure suite             | Set forward                                                                                                                                                                                                                                                  |
| Rated operating voltage                           | 200 V - 240 V, 1~, 50 Hz/60 Hz                                                                                                                                                                                                                               |
| Max. cooling output                               | 53 kW                                                                                                                                                                                                                                                        |
| Type of electrical connection                     | Fixed connection with cover                                                                                                                                                                                                                                  |
| 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                                           | Automatic server enclosure door opening<br>Direct connection of an additional 16 CMC III sensors possible<br>Racks in height 2200 mm, special colour<br>Condensate management kit including baffle separator plus temperature and humidity sensor<br>Display |
| Packs of                                          | 1 pc(s).                                                                                                                                                                                                                                                     |
| Net weight                                        | 228                                                                                                                                                                                                                                                          |
| Gross weight                                      | 240                                                                                                                                                                                                                                                          |
| Customs tariff number                             | 84186900                                                                                                                                                                                                                                                     |
| EAN                                               | 4028177977662                                                                                                                                                                                                                                                |

# Approvals

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Approvals

UL + C-UL (listed)

# Tender text

LCP InLine Protruding CW, 3314.568: WHD - 300mm/12"x 2000mm/79"x 1200mm/48"

Regulatory Model No.: LCP N 8A3P63SC9D000

The design of the row based cooling unit is optimized for use in data centers. The integrated air/water heat exchanger guarantees a sensible cooling output of 53 kW (Maximum) compatible with standard IT Equipment (ITE) server enclosure dimensions, the lowest possible weight and comprehensive system performance monitoring.

The air/water heat exchanger is mounted to the side of the IT equipment (ITE) enclosure (Sidecar). The LCP Inline extracts the hot air from rear of installed rackmount servers via vented rear doors on the ITE Enclosure and LCP.

The unit is set forward from the front of the server rack by approx. 8"/200 mm and returns cooled air to the 19" equipment through vented front doors of the ITE Enclosure and LCP from the left and right. Maximum efficiency is achieved by using 6 built-in EC fan modules (cooling capacity up to 53 kW, 180844 BTU/h).

The unit is prepared for the incorporation of up to six EC fan modules. Configuration with the maximum number of fans can serve to provide improved redundancy (>N+1) or 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 100% sensible cooling output.

An accessory kit enables top or bottom feed water connections (G 1½"

external thread). A separate Coupling Kit (9977379) is provided to connect from BSPP threaded connections at the LCP (Supply and return) to NPT fittings from facility water piping.

An air bleed valve at the top rear of the heat exchanger provides rapid and simple air bleeding.

Hot swappable fans can be quickly replaced, 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 16 CMC III sensors (temperature/humidity etc.) can be connected to the CAN bus.

#### Technical Data:

Sensitive cooling output with 6 fans: 53 kW (180844 BTU/h)

Operating temperature range, ambient: 50-122 °F/10 - 50 °C

Operating temperature range, cooling medium: 50-86 °F/10 – 30 °C (non-condensing)

Lower inlet temperatures possible after consultation with the manufacturer.

#### Installed fans: 6

Air throughput: 4700cfm/8000 m<sup>3</sup>/h (4 fans)

Cooling output (6 fans): 53 kW (180844 BTU/h)

Air intake temperature (EAT): 75 °F/24 °C

Water inlet temperature (EWT): 59 °F/15 °C

Medium: Water (or water/glycol mixture) (NOTE: Glycol mix will reduce capacity)

Cooling medium throughput (0-37GPM/0-140 LPM): approx. 33GPM/125 LPM (pure water)

Pressure loss: approx. 14.5psi/1.0 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

Server supply air temperature control via flow rate control and continuously variable speed EC fans

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

Color: Enclosure frame, roof panel, side panels and rear door: RAL 9005

Black, fine structure matte

Dimensions: WxHxD: 12"/300mm x 79"/2000mm x 48"/1200mm

Configuration: Perforated Doors Front & Rear, Solid roof with adjustable panel for hose, power, network connections

Weight as delivered: 573 Lbs/260 kg

#### Controller/Interfaces:

Rear network interfaces at the customer connection panel: 2 pcs.(RJ 45) switched, each 10/100/1000 MBit/s (16 IP addresses)

Front USB interfaces: USB 2.0 type C for serial configuration. Power supply for basic configurations, USB 2.0 type A for storage media, status LED, set and reset button

Rear CAN bus interface RJ 45: For connection of up to 16 CMC III sensors

Rear alarm relay output: changeover contact (NO/NC) (48V DC, 1A, 250 VAC, 2 A)

Digital input: 1 x (male)

Analog inputs: 2 x (4-20 mA connector)

RS232 for display connection

Supported protocols: IPv4 / IPv6(>,<)>

integrated web server, HTTP, HTTPS, SSL, SSH(>,<)>

NTP, Telnet, TCP/IP v4 and v6, DHCP, DNS, NTP(>,<)>

Syslog, SNMP v1, v2c and v3, Traps(>,<)>

OPC-UA, Modbus/TCP(>,<)>

FTP/SFTP (update / file transfer)<(>,<)>

e-mail dispatch (SMTP)

User management incl. rights management: Yes

LDAP(S) / Radius connection: Yes

USB port for firmware update / data logging function: Yes

Initial commissioning / mass configuration: Yes, via predefined CSV file

#### Software:

Control according to server supply air temperature or optionally according to differential pressure

Automatic or manual control selectable

Remote control via SNMP, Modbus/TCP or OPC-UA possible

Setpoint setting by external temperature sensor selectable

Optional water-side delta T control for efficient chiller operation

Programming of logical links (tasks) for automation of specific processes possible

Measurements: Thermal and electrical power are measured continuously.

Determination and display of current EER,  $\Sigma$  fan operating hours,  $\Sigma$  valve cycles and  $\Sigma$  flow rate [l].

Touch Screen Display, Color, (Installed):

The front door mount LCD screen displays all relevant operating parameters directly on the LCP.

Individual icons display operational parameters and LCP status at a glance and, if necessary, the user can react as quickly as possible and change parameters.

The following parameters can be read and changed at various levels:

- Display of the cold air temperature supplied to the 19" equipment
- Display of the hot air temperature discharged from the 19" equipment
- Display of the control mode (automatic, manual, remote)
- Configuration menu: Air Circuit, Coolant circuit, Condensate Management, Fan Registry
- Cooling water flow temperature/return temperature
- Cooling water flow
- Control valve position
- Display of pPUE, EER and Cap (cooling capacity)
- Overview of all parameters and the option to change them (protected with PIN)
- Display of alarm and warning messages
- Overview page with IP address of the device, software version and contact person etc. (can be entered individually)

Touch screen display, packaging unit consisting of:

- Color touch screen display, incl. mounting accessories
- 4.3" display, 480 x 272 pixels
- Resistive touch
- Brightness 200 cd/m<sup>2</sup>
- Storage temperature: : -4 – 158°F/-20 - +70°C
- Ground cable

Special Features:

Easy maintenance of the device from the front and rear. Cable routing, power distribution and aisle containment can be installed above the LCP.

2 Ethernet interfaces, simplifying the cascading of up to 16 LCPs (saving on ports and switches)

Tool-free replacement of the fans during operation. Optional differential pressure control.

Integrated software with water-side delta T control for efficient chiller operation

A droplet separator with patented condensate management is recommended for operation with water supply temperatures (EWT) below the dew point. This option must be requested in advance.  
Available expansion height to match adjacent taller (86"/2200mm – 47RU) ITE enclosures (79"/2000mm LCP standard: 42 U)

Accessories:

North America Coupling Kit (BSPP to NPT): 9977379

Connection hose: Contact Rittal North America

Fan module for power extension: 3313.016

Condensate pump: 3314.012

Side panel mounting: 3313.089

CMC III temperature sensor: 7030.110

CMC III differential pressure sensor: 7030.150

SK baying set LCP CW VX to TS IT: 3311.089

Rear adapter, RAL 7035: 3312.081

Rear adapter, RAL 9005: 3312.083

Integrated droplet separator on request