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## SK 3314.560

# Liquid Cooling Package

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SOFTWARE & SERVICES

FRIEDHELM LOH GROUP



# SK 3314.560 - 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 3314.560
Design	Suite cooling 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. With this product, a raised floor is not necessary.
Material	Enclosure: Sheet steel Front door: Aluminium, anodised/spray-finished
Colour	Enclosure: RAL 7035 Front door: Vertical sections, silver coloured and horizontal sections, RAL 9005
Options	Automatic server enclosure door opening Direct connection of an additional 16 CMC III sensors possible Racks in height 2200 mm, special colour Condensate management kit including baffle separator plus temperature and humidity sensor 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 Direct connection of the unit via SNMP over Ethernet (2 Ethernet ports for simpler cascading of up to 16 LCPs) Integration into RiZone OTM Suite (extended measuring and management functions, values can be transferred and visualised)
Note on Model No.	Optimised condensate management also at low water inlet temperatures, available upon request.
Total cooling output/Number of fan modules	48 kW/4 51 kW/5 53 kW/6
Air throughput (unimpeded air flow)	At 50 Hz: 8,000 m³/h
Number of fan modules in supplied state	4
Dimensions	Width: 300 mm Height: 2,000 mm Depth: 1,200 mm
To fit enclosure type	VX IT TS IT

# Features

Installation in bayed enclosure suite	Set forward
Rated operating voltage	200 V - 240 V, 1~, 50 Hz/60 Hz 346 V – 415 V, 3~, 50 Hz/60 Hz
Max. cooling output	53 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 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 10B
Options	Automatic server enclosure door opening Direct connection of an additional 16 CMC III sensors possible Racks in height 2200 mm, special colour Condensate management kit including baffle separator plus temperature and humidity sensor Display
Packs of	1 pc(s).
Net weight	219
Gross weight	229
Customs tariff number	84186900
EAN	4028177977747

# Approvals

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Explanations

Declaration of conformity

Declaration of conformity UK

# Tender text

LCP Inline CW, Protruding, 3314.560:  
Regulatory model no.: LCP G 8A3P43SC70000

The design of the unit is optimised for use in data centres. The integrated air/water heat exchanger guarantees a sensitive cooling output of 53 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 four integrated EC fan modules (cooling output up to 48 kW) achieves maximum efficiency and minimises the electrical energy consumption.

The cooling output can be raised to a maximum of 53 kW by installing two further fan modules (accessories).

This safeguards the value of an investment where the maximum cooling output is not yet required at the time of initial installation.

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 16 CMC III sensors (temperature/humidity etc.) can be connected to the CAN bus.

#### Technical data:

Sensitive cooling output with 4/5/6 fans: 48/51/53 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: 8,000 m³/h (6 fans)

Cooling output (six fans): 53 kW

Air intake temperature: 24 °C

Water inlet temperature: 15 °C

Medium: Water (or water/glycol mixture)

Cooling medium throughput (0-140 l/min): approx. 125 l/min (pure water)

Pressure loss: approx. 1 bar

Water connection: G 1½" external thread

Voltage: 200-240 V AC, 1~ N, PE, 50/60 Hz; 346-415 V AC, 3N~, PE, 50/60 Hz

Max. connected load (4 fan modules): 2150 W

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)

Colour:

Enclosure frame, roof plate, side panels and rear door: RAL 7035

Aluminium front door, vertical, aluminium, silver-grey anodised

Aluminium front door, horizontal, aluminium, painted in RAL 9005

Aluminium front door, sheet steel panel, painted in RAL 9005

Handle and hinges: RAL 9005

Dimensions: WxHxD: 300 x 2000 x 1200 mm

Weight as delivered: approx. 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, ? fan operating hours, ? valve  
cycles and ? flow rate [l].



Integration in RiZone OT Suite: Extended measurement and management functions, values can be transferred and visualized

**Special features:**

Simple maintenance of the unit from the front and back, enabling cable channels and aisle containment to be positioned above the unit. 2

Ethernet interfaces, thus simplified cascading of up to 16 LCPs (saving of ports and switches)

Tool-free fan replacement without interrupting operation. Optional differential pressure control.

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 3314.570 (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 for power extension: 3313.016

Touch screen display, colored: 3311.030

Connection hose, bottom/top: 3311.040

Condensate pump: 3312.012 or 3314.012

Side panel mounting: 3313.089

CMC III temperature sensor: 7030.110

CMC III differential pressure sensor: 7030.150

Connection cable for PSM rail 7856.025

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