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SK 3232.711

Chillers for IT cooling

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FRIEDHELM LOH GROUP

SK 3232.711 - Chillers for IT cooling

Especially for cooling IT applications, such as LCP or air/water heat exchangers. Safety-relevant features such as redundant speed-controlled pumps, two compressors or buffer stores.

Features

Model No.	SK 3232.711
Benefits	Indirect free cooling – internal and external High-efficiency pumps in the cold water circuit Inverter-controlled pumps Two high-performance compressors Up to 8 chillers may be linked together to form a cascade
Technical specifications	Compact design with control components in the front and air intake via both side panels, air outlet upwards Pressure-sealed system Integral bypass
Applications	Especially for cooling IT applications, such as LCP or CRAC
Colour	RAL 7035
Supply includes	Chiller wired ready for connection Multilingual documentation Functional diagram and wiring plans
Options	Free cooling may be integrated from 15 kW. Please follow the instructions Buffer store for separate siting Emergency cooling with mains water infeed
Rated operating voltage	400 V, 3~, 50 Hz
Rated current max.	At 50 Hz: 25 A
Tank	Material: Steel tank, with 10 mm condensate insulation Volume: 48 l
Cooling output (footnote)	Cooling output makes allowance for 35% glycol
Cooling output TW15 TU35/50 Hz	24 kW
Pump pressure	2.5 bar

Features

Pump capacity (at 2.5 bar/50 Hz)	60 l/min
Water connections	G 1½" internal thread
Operating weight	463 kg
Number of cooling circuits	1
Monitoring	Monitoring of all system-relevant parameters such as: water inlet, refrigerant and pump parameters and alarms, as well as optional cooling outputs and energy efficiency Direct connection of the unit via SNMP/Modbus over Ethernet. Integration into RiZone
Note	Technical deviations in terms of cooling output, dimensions or weight are possible for unit types with free cooling The performance data for the chosen option package varies and should be taken from the IT chiller configurator. We reserve the right to make technical modifications Pump and tank may be selected as options with IT chillers, the relevant technical specifications apply to these configuration variants
Air throughput (unimpeded air flow)	At 50 Hz: 10,880 m³/h
Dimensions	Width: 810 mm Height: 1,542 mm Depth: 1,800 mm
Operating temperature range of cooling medium	5 °C...15 °C
Operating temperature range	-20 °C...43 °C
Permissible operating pressure (p. max.)	28 bar
Power consumption Pel	At 50 Hz: 9.7 kW
Packs of	1 pc(s).
Customs tariff number	84186900
ECLASS 8.0	27180713
Product description	SK Chillers for IT cooling, 24 kW, 400 V, 3~, 50 Hz, WHD: 810x1542x1800 mm

Approvals

Explanations

Declaration of conformity

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Tender text

Cold water generation
Chiller in compact design
for recooling of circulation water, factory assembled, internally wired, provided with oil and refrigerant, pressure-tested.
Highly robust design thanks to redundant components.
Cooling unit especially designed for requirements in the IT field in conjunction with Rittal Liquid Cooling Package (LCP)
Consisting of:
Solid enclosure made of section plates with louvre plates on both sides as air inlet and transportation holes in the base/plinth.
Two compressors with suction cooled gas, fully hermetically sealed compressors mounted on vibration dampers with crank case heaters as "tandem (50 % - 50 %).
Evaporator as plate heat exchanger with stainless steel plates, copper soldered, diffusion tight insulation and electrical heating element.
High-performance condensor, air-cooled (copper pipe with aluminium fins), with two speed-controlled axial fans, air suction at the side, blowing out towards the top.
One refrigerant circuit of soft copper pipe, silver soldered, equipped with refrigerant collector, dryer, inspection glass, security valve, liquid magnetic valve and thermostatic expansion valve with MOP, service valves and blocking valves on the suction and pressure side of the compressors.
High-pressure pressostats, Low-pressure pressostats in TÜV tested design.
Control integrated in a compact enclosure made of spray-finished sheet steel IP54 in RAL 7035 (Rittal or comparable design).
Enclosure and control unit accessible from the front and wired to VDE/IEC standard.
Micro-processor controller Carel PC05 electronic board with digital display and SNMP interface

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card for monitoring and controlling the complete unit.
5 floating contacts for collective fault signal,
pumps, cooling circuit, excess temperature and filling
pressure fallen below,
24 V AC control voltage,
red lamp "collective fault signal",
remote control on/off,
cable marking with marking systems,
cable entry in the front panel,
all motors with motor circuit breaker,
electromagnetic consumer with RC circuit,
main switch, red/yellow,
flow monitor for pump and evaporator protection,
sensor in water inlet and water outlet,
antifreeze probe to protect evaporator,
redundant connection of several units (max. 8) via
master/slave control possible.
Interface to the building control system via Rittal
CMC or SNMP interface possible.
Water circuit as pressure-sealed system with steel
tank.
Two highly efficient inverter pumps with "Viton" seal
in redundant design with switching to even
utilisation,
blocking valve in front of and behind the pumps,
non-return valve at the pump outlet,
automatic bypass valve,
expansion tank, safety valve and exhaust fan,
draining device and filling connection for water
internal,
water connections in the rear panel,
water pressure manometer 0 - 10 bar,
water pressure monitoring via pressure transmitter in
the water entry, piping and components completely
isolated.
Fluid: Rittal Rifrost standard SK3301.960 for indoor
use or outdoor SK3301.950 for outdoor use; as an
alternative water according to the German standard in
water quality with an additive of 20% to maximum 35% of
Antifrogen N from Clariant. In general it is also
possible to use other additives after prior arrangement
with and approval of Rittal. An inappropriate fluid

can lead to damages at the gaskets etc.
Enclosure: Industrial enclosure painted in RAL7035
with rubber anti-vibrating mounts, fixed below
the unit.
We recommend outdoor siting with an additional rain roof
as weather protection, special fencing and anchoring
to the ground (not in our delivery part).
Transportation: to lift the chiller a forklift can be
used or passing strong enough belts below the unit.
Documentation:
General description
Data sheet
Hydraulic scheme, Legend
Wiring plan
Controller description
Parameter list
Spare parts list
German and English language
CE Declaration of Conformity
Test protocol
Directive taken into account:
Machinery Directive 2006/42/EC
Low Voltage Directive 2006/95/EC
EMC Directive 2014/30/EC
Pressure Devices Directive 2014/68/EC
Technical specifications:
Cooling output at Tw=15°C, Tu=35° 24 kW Cooling output
at Tw=25°C, Tu=35° 26,5 kW Rated operating voltage +/-6%
400V / 50Hz / 3~ Control voltage +/-10% 24 V AC / 50 Hz
Power consumption at Tw=15°C, Tu=35°,9.7 kW Rated current
max. 25 A Start-up current 59 A Refrigerant, R407C Number
of compressors 2 Capacity steps 0-50-100% Number of axial
fans 2 Pump capacity, 60 l/min Pump pressure, external, 2.5
bar Power consumption pump, 0,9 kW Tank capacity, 48 l
Temperature range +5°C - +20°C Ambient temperatures -
Operating conditions -20°C - +43°C Ambient temperatures -
transport, storage -20°C - +60°C Dimensions with
base/plinth (W x H x D), 810 x 1542 x 1560 mm
Base/plinth height, 100 mm Water connections (internal
thread), 1 1/2" Weight, 415 kg, Air throughput of fans 10880
m³/h Sound pressure level in a 10 m distance 53 dB(A)
Protection (Electric) IP 54 for all electrical

components Material piping copper, brass and piping
Design: Rittal SK3232.711 or comparable
Options:
Hydraulic system kit I: 1 inverter pump
Hydraulic system kit II: 2 inverter pumps
Hydraulic system kit III: 1 standard pump
Hydraulic system kit IV: 2 standard pumps
High efficiency Free-Cooling kit: Free cooling external, change-over to free cooling at ambient temperature of 2K below the water inlet temperature;
3-way-valve and controlling are integrated in the chiller, ambient sensor delivered loose (in the electrical cabinet) with 5m cable.
Technical alteration with external free cooling:
Cooling output in compressor operation at Tw=15°C, Tu=35°C 24 kW, Cooling output free cooler at Tw=15°C, Tu=10°C 21,5 kW, max. power consumption in free cooling operation 2,28 kW, max. current in free cooling operation 4,1 A, air flow direction (to be indicated) vertical or horizontal
Buffer store of steel, insulated, for separate siting; volume 500 l, Dimensions D x H = 850 x 1980 mm in accordance with data sheet
Supplied loose: Safety assembly and pressure compensating tank.
Emergency cooling kit via mains water infeed: Plate heat exchanger with magnetic valve (24V AC) NC and pressure switch (on a floating contact) for integration into the return pipe (LCP). Installed in a separate housing
Municipal water conditions:
max. 8°C, min. 2.0 bar - max. 6 bar,
Special voltage 460V / 60Hz
UPS kit: power infeed divided into two parts - for compressor and fan, and for control and pump for UPS connection, switching over by software. (Attention Must only be used in conjunction with speed-controlled pumps!)
RiZone efficiency monitoring kit: consisting of additional sensors to show the energy efficiency of the chiller, the datas are available by SNMP

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