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## SK 3311.491 Liquid Cooling Unit

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FRIEDHELM LOH GROUP



# SK 3311.491 - Liquid Cooling Unit LCU DX, redundant

Refrigerant-based enclosure cooling in redundant version for VX IT or Micro Data Center without heating up the installation room. With two output categories 3 kW and 6.5 kW, the ideal cooling solution for smaller IT applications.

## Features

Model No.	SK 3311.491
Design	LCU DX 3 kW redundant
Benefits	<p>Space-saving solution by installing the redundantly designed internal unit in the VX IT server enclosure or the Micro Data Center</p> <p>Maximum energy efficiency due to EC fan technology and IT-based control</p> <p>Control of the server inlet temperature</p> <p>The inverter-controlled compressor adapts the cooling output to the current heat loss inside the enclosure</p> <p>Absorbed thermal energy is emitted directly to the ambient air at the (inverter-controlled) external unit's location, without heating up the installation room</p>
Applications	Cooling unit for VX IT server racks and for Micro Data Centers
Function principle	<p>The redundant variants have two cooling circuits and controllers inside the internal unit, plus two inverter-regulated external units. The fault and operating hours changeover allows regular switching between the two external units, and ensures automatic changeover in the event of a malfunction or failure.</p> <p>The device supports front-to-back air routing typical of IT applications, and regulates the server inlet temperature to the set value</p>
Material	Sheet steel, spray-finished
Colour	Internal unit: RAL 7035 External unit: white

# Features

Supply includes	<p>Internal unit (evaporator coil)</p> <p>2 external units (inverter-controlled)</p> <p>482.6 mm (19") mounting trim panel with display and control components</p> <p>Condensate hose</p>
Installation options in VX	<p>482.6 mm (19") mounting angles, standard or dynamic, must be offset in the width by 50 mm off-centre</p> <p>The front distance between the 482.6 mm (19") mounting angles and the front edge of the VX frame must be at least 100 mm</p> <p>Two punched sections with mounting flanges are required for attachment on the inner mounting level</p> <p>Air baffle plates are required to separate the hot/cold zones within an enclosure</p> <p>A base/plinth is required to route the cable downwards</p>
Note	<p>Below the operating limit, fluctuations in the air inlet temperature are possible</p> <p>The electrical connection is made on the external unit. The internal unit is supplied by the external unit.</p> <p>A separate power supply may be needed, depending on the external unit</p>
IP protection category to IEC 60529	<p>Internal unit IP 20</p> <p>External unit IP X4</p>
Modulation range	1 - 3 kW
Max. cooling output	3 kW
Type of electrical connection	Connection clamp
Duty cycle	100 %
Refrigerant/cooling medium	Refrigerant: R410A
To fit	<p>Enclosure type: VX IT</p> <p>Width: = 800 mm</p> <p>Height: ≥ 1,800 mm</p> <p>Depth: ≥ 1,000 mm</p>
Internal unit dimensions	<p>Width: 105 mm</p> <p>Height: 1,550 mm</p> <p>Depth: 820 mm</p>

# Features

External unit dimensions	Width: 810 mm Height: 558 mm Depth: 310 mm
Rated operating voltage	230 V, 1~, 50 Hz
Pre-fuse	16 A
Rated current	7 A
Packs of	1 pc(s).
Net weight	129.2
Gross weight	136
Customs tariff number	84158200
EAN	4028177709331
ETIM 9	EC000855
ETIM 8	EC000855
ECLASS 8.0	27180704

# Approvals

Certificates	EAC
Explanations	Declaration of conformity

# Tender text

3311.491 LCU DX 3 kW, redundant

LCU DX split cooling unit, 3kW, redundant, consisting of an internal unit (evaporator) and two external units (inverter-controlled cooling units).

The internal unit is designed so that it can be installed in a 800 mm wide VX IT server enclosure or in a Micro Data Centre.

It is constructed in IT-optimised design, so that the "front to back" air routing of the 19" components is ideally supported.

The preferred area of application is in small to medium-sized locations, in which the server racks are cooled directly - without cooling the entire room.

The LCU DX internal unit is mounted laterally in the server enclosure or in the Micro Data Centre and it forms a closed system with the latter.

The internal unit of the LCU DX extracts the warm server exhaust air directly from the rear part of the enclosure and blows the cooled air laterally in front of the 19" level.

The enclosure of the internal unit consists of powder coated sheet steel in RAL 7035, in which a direct evaporator with two cooling circuits, four EC radial fans, condensate tray and condensate discharge are integrated.

The condensation discharge has to be provided on-site.

The devices are constructed in such a way that assembly can be carried out in the IT server rack on the left or right.

In addition, two microprocessor controllers and a fault and operating hours switch are located in the internal unit.

The reference variable that controls the device is the server air inlet temperature.

This can be set at between 17 and 30°C on the remote operating units.

The operating units are installed in a 19" trim panel (3 U). This is mounted on the rear 19" level of the VX IT rack or of the Micro Data Centre.

The external sensor devices (2 items) belonging to the units are placed near the front of the server.

The two external units with inverter-controlled compressors permit stepless power adjustment, even in partial-load operation (1-3 kW).

In the normal state, one external unit is in operation. The fault and operating hours switch allows a regular exchange between the two

external units, as well as a change-over in the event of a disruption or a failure.

The connection between the internal unit and the two external units is made by means of copper piping (2 cooling circuits), as well as two data lines and two power supplies.

The internal device is supplied with voltage by the external devices.

R410a is used as a refrigerant.

The on-site installation and commissioning, the laying of refrigerant lines, and the evacuation and filling of the system with refrigerant are not included in the range of goods and services supplied. This work must be performed by qualified personnel.

Technical specifications:

Useful cooling output 3 kW

Redundancy: Yes

Fans installed in the internal unit: 4

Reference variable: Server air inlet temperature pre-set at 22°C

Voltage supply: 230 V, 1~, N, PE, 50 Hz (2x)

Pre-fuse: 16 A (2x)

Refrigerant: R410a

Line length, max.: 30 m

Max. height difference (external unit): 12 m

Dimensions of the internal unit, W x H x D: 105 x 1550 x 820 mm

Dimensions of the external unit W x H x D: 810 x 558 x 310 mm (2x)

Weight of the internal unit: 48 kg

Weight of the external unit: 38 kg (2x)

Ambient temperature range of the outdoor units: -20°C to +45°C