



CONNECT AND PROTECT

Varistar LHX +  
Air/Water Heat Exchangers

  
nvent

SCHROFF

# Cabinets – Varistar cabinet-based and row-based cooling

## OVERVIEW

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01017025



01013005

Electronic monitoring unit with display and interfaces



01017015

Front bottom or bottom/top water connection, easy access and greatest possible safety



01013005

Six powerful, temperature-controlled fans. Easy access for maintenance purposes during operation

### Applications

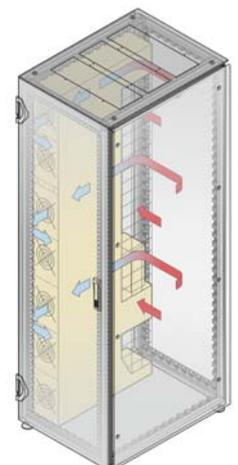
The SHX 30 heat exchanger is especially suitable for use in the following areas:

- Data centers
- 19" and blade-server applications
- Systems with extremely high heat dissipation

### The future for data centers

VARISTAR LHX+, the space-independent complete cabinet system for dissipating up to 34 kW of heat.

The air/water heat exchanger is installed in the cabinet as complete unit on the left or right side. The horizontal air flow provides for uniform air dissipation over the entire cabinet height.



01017060

# Cabinets– Varistar cabinet-based and row-based cooling

## OVERVIEW

### **VARISTAR LHX+ WITH AIR/WATER HEAT EXCHANGER FOR DATA CENTERS**

- Cooling capacity up to 34 kW
- Complete cabinet solution, static load capacity up to 1600 kg
- Space-independent cooling, high energy efficiency
- Water and air circuits are temperature controlled
- Low noise level
- Fans may be changed individually while the unit is operating

#### WITH SINGLE DOOR



01017003

- Cooling capacity up to 34 kW (heat exchanger on left or right)

#### WITH DOUBLE DOOR



01017007

- Cooling capacity up to 34 kW (heat exchanger on left or right)

#### ACCESSORIES

- Management system for monitoring LHX+ and other cabinet parameters



00711020

#### SERVICEPLUS

- e.g. other cabinet dimensions
- e.g. side-by-side mounting solutions
- e.g. containment (cold aisle)
- e.g. custom solutions (special sizes)

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# Cabinets – Varistar cabinet-based and row-based cooling

## OPTIMUM TEMPERATURE FOR AIR/WATER HEAT EXCHANGER

Since the thermal load continues to increase, conventional cooling methods eventually reach their physical limits. It can happen that thermal load limits within a cabinet are such that some height units must go unused.

### The solution:

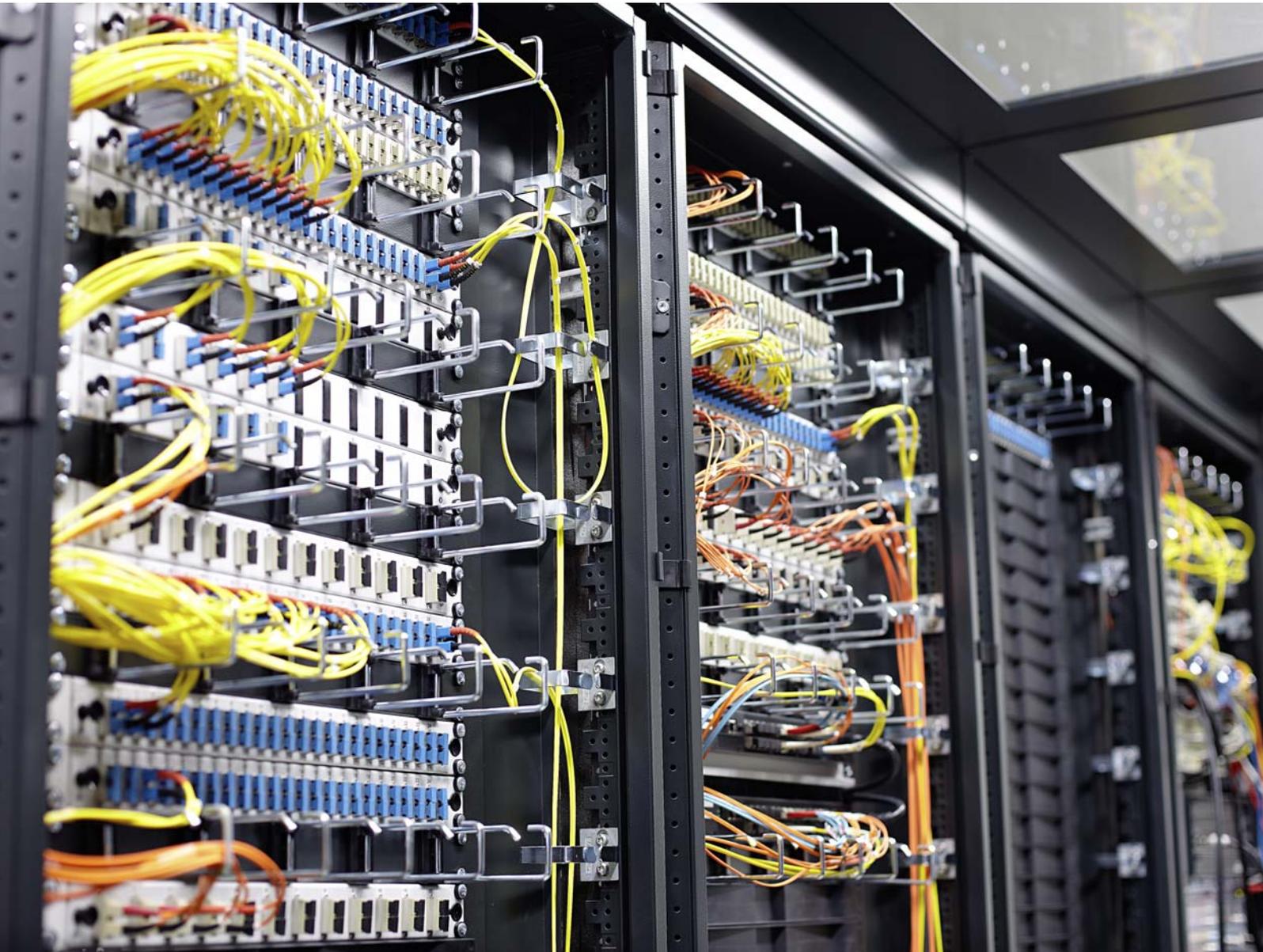
Air/water heat exchangers installed close to the heat source not only increase the cooling capacity per cabinet, but also improve the redundancy of the data center. With intelligent control systems, air conditioners can quickly respond to the working load of the equipment, thereby enabling additional savings.

Air/water heat exchangers installed close to the heat source not only increase the cooling capacity per cabinet, but also improve the redundancy of the data center. With intelligent control systems, air conditioners can quickly respond to the working load of the equipment, thereby enabling additional savings.

Thanks to the Ethernet and Modbus connection, Schroff air/water heat exchangers can be monitored and configured. Operating parameters are easy to specify, and temperature, fan speed and error protocols can be managed remotely.

### ADVANTAGES

- Integrated solutions with space-independent thermal transfer
- Highest cooling capacity in the smallest of spaces
- A wide variety of dimensions are supported, short implementation time and low planning effort



# Cabinets – Varistar cabinet-based and row-based cooling

## INTEGRATED HEAT EXCHANGER

In this combination, an active heat exchanger integrated into an 800 mm wide cabinet has the lowest space requirement on the market. The closed system reduces the noise level and controls itself by means of the thermal load. With a cooling capacity of up to 34 kW<sup>1)</sup>, the heat exchanger is suitable for HPC applications. Multiple cabinets can be mounted side-by-side to create a closed system. Thanks to the low space requirement, reduced noise level and ease of creating redundancy, this heat exchanger is well suited also for medium-sized data centers.



01017009

LHX+ cabinets mounted side-by-side with integrated heat exchangers

## HEAT EXCHANGER MOUNTED SIDE-BY-SIDE

Active heat exchanger for containment systems with a cooling capacity of up to 34 kW<sup>1)</sup>. This in-row heat exchanger is mounted side-by-side to cabinets within the aisle containment. This enables optimal scalability with regard to planning for the cooling capacity and the redundancy of the system.



01013005

SHX 30 in-row heat exchanger

### Integrated heat exchanger:

Cooling capacity  
Dimensions

Up to 34 kW<sup>1)</sup>  
Width 800 mm  
Height 2100 mm

Functions

Depth 1000 to 1200 mm  
IP 55 protection on request EMC design on request 1600 kg static load capacity Bottom/top water connections Control system options with an external temperature sensor (Display in four languages)

### In-row heat exchanger:

Cooling capacity  
Dimensions

Up to 34 kW  
Width 300 mm  
Height 2000 to 2200 mm

Functions

Depth 1000 to 1200 mm  
Water connections from bottom/top Control system options with an external temperature sensor Display in four languages

1) Cooling capacity 34 kW at +12 °C water flow temperature, +24 °C cold air temperature, 4.5 m<sup>3</sup>/h water flow rate; for other conditions refer to the diagram for the cooling capacity

# Cabinets – Varistar cabinet-based and row-based cooling

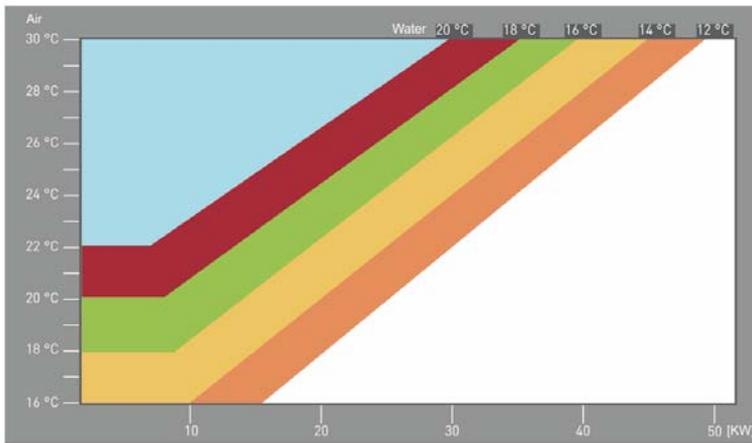
## SPACE-SAVING, LOW-NOISE AND ENERGY-EFFICIENT

### Highly efficient and noise-optimized

The Varistar heat exchanger range impresses customers with its high energy efficiency and cooling capacity. Failure safety and ease of servicing play a special role. The unit itself is designed for long life. Sensitive components with a low MTBF have been consistently dispensed with and necessary wear parts are treated carefully during operation. Fans are positioned in the cold area to significantly increase the service life of the bearings compared to operation in a warm-air area. Additionally, the heat exchanger is equipped as standard with a droplet separator and a condensate management system to prevent the formation of water droplets in the air entry area to the server.

### Compelling use of space

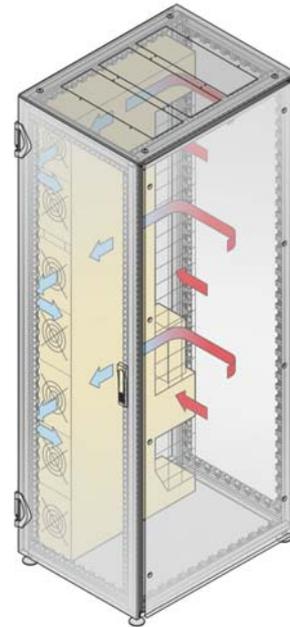
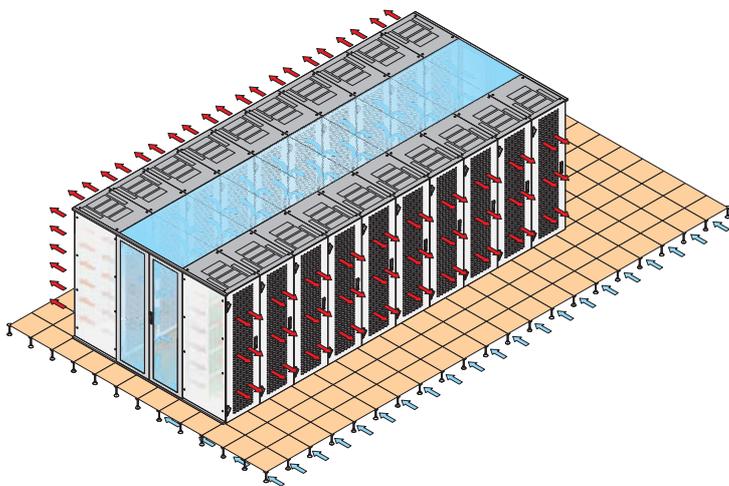
Since the heat exchanger is inserted on one side as a complete module, in a cabinet only 800 mm wide, the 19" plane can be used over its full height, with 42 U (max. 52 U). This saves valuable space in the data center!



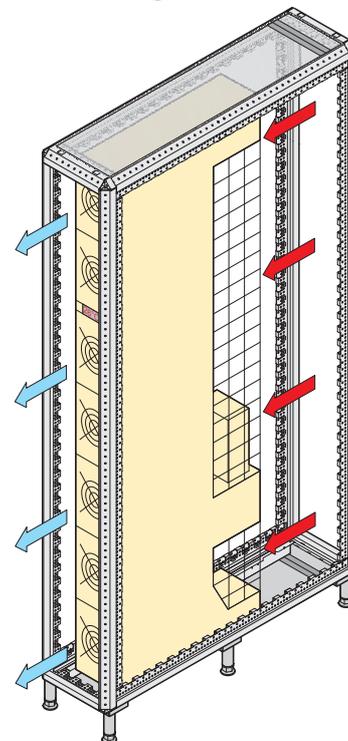
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### IN-ROW heat exchanger to cool your indoor aisle containment

This in-row heat exchanger is specially designed to cool cabinets with high thermal loads within an aisle containment structure and is included in the row as a modular unit. Depending on the packaging density, you can scale the units optimally and implement redundancy.



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# Cabinets – Varistar cabinet-based and row-based cooling

## ONE HEAT EXCHANGER FOR MULTIPLE CABINETS

The option of mounting the cooling unit to the left or right of the 19" plane means it is easy to build very variable cooling systems from multiple cabinets. If the full cooling capacity is not needed initially, one unit can supply cold air to multiple cabinets mounted side-by-side. In cabinets mounted side-by-side, the space for the cooling unit is closed with an air baffle. If the necessary cooling capacity increases, the air baffle is removed and an additional cooling unit is inserted.

## REDUNDANCY FROM SIDE-BY-SIDE MOUNTING

Redundant systems are also very easy to implement. If two cabinets are mounted side-by-side with one heat exchanger each, one unit can take over the cooling of both cabinets up to half of the max. cooling capacity per cabinet.



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01017015

### One heat exchanger for multiple cabinets

For installation and maintenance, the air conditioners of the Varistar series have a very service-friendly design. The water connections are easy to access. Fans can be changed individually and very quickly while the unit is operating. However, if a defined threshold value does arise, either in the cabinet or in the unit itself, each heat exchanger will provide valuable information for maintenance and service work. Fan speeds and temperatures at various positions in the cooling circuit are measured via integrated communication interfaces and can be shown on a display. However, all information (measured values, threshold values, etc) can also be transferred directly into the network management system.



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- Bottom or top and bottom water connections
- Power supplies
- Communication interface
- External temperature sensor
- Interlog interface



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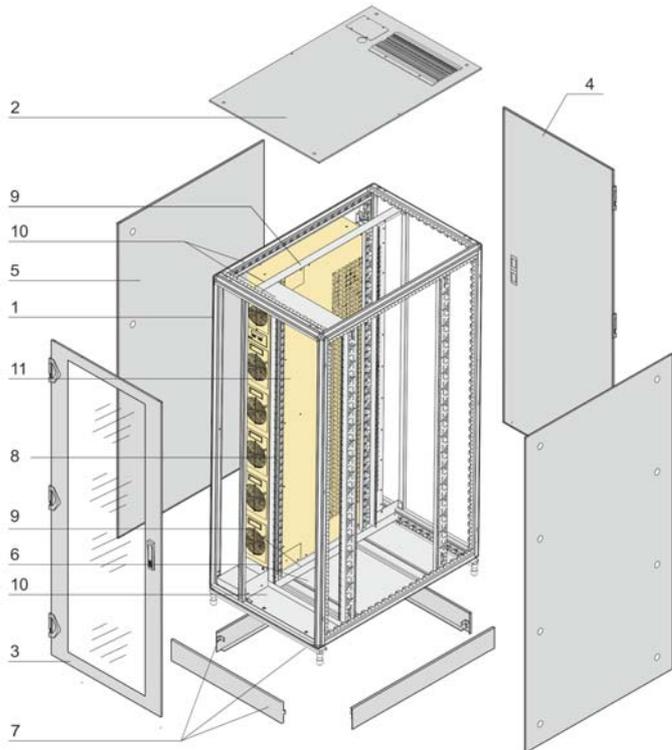
- Display
- Hot-swap-capable fans

# Cabinets – Varistar cabinet-based and row-based cooling

## VARISTAR LHX+, CABINET WITH SINGLE DOOR, INTEGRATED AIR CONDITIONER



01017003



01017059

- Cabinet with air/water heat exchanger with cooling capacity of 34 kW
- Max. static load capacity 1600 kg
- Gasket all around reduces noise and suction of room air

### DELIVERY INCLUDES (Fully assembled and grounded)

Item	Qty.	Description
1	1	Welded basic frame, Slim-Line, St profile, zinc-plated, RAL 7021, with gasket all around
2	1	Flat roof, St, RAL 7021 with cable entry point in rear with brush, entry point for water connection in rear, entry points can be sealed with a gasket/cover plate
3	1	Front door glazed, St frame, RAL 7021, single-pane safety glass 6 mm, 3 x 180° hinge, three-point closure, pivoting lever handle for optional DIN profile half cylinder
4	1	Rear door, St, RAL 7021, 3 x 180° hinge, three-point closure, pivoting lever handle for optional DIN profile half cylinder
5	2	Side panel, screwed, St, RAL 7021
6	1	Baseplate, St, RAL 7021 with cable entry point in rear with brush, entry point for water connection in rear, entry points can be sealed with a gasket/cover plate
7	1	Base/plinth 100 mm, with additional center crossmember, St, RAL 7021, removable covers, integrated adjustable feet
8	4	19" panel/slide mount with EIA cut-outs, St, RAL 7021, 225 mm recessed in front, c dimension 740 mm distance between front and rear 19" plane
9	2	Support rail for connecting the air/water heat exchanger and 19" panel/slide mounts, St, RAL 7021
10	4	Air baffle, St, RAL 7021
11	1	SHX 30 air/water heat exchanger, RAL 7021, 100 to 240 V <sub>AC</sub> , may be mounted on the left or right, see Order Information
12	1	Power cable, length 1.5 m
13	1	Connecting cable for management unit
14	1	User manual (for online download)

### ORDER INFORMATION

Height U	Width mm	Depth mm	Heat exchanger	Water connection	Power supply	Part no.
42	2100	800	1200	Left	Bottom	1 10130-300
42	2100	800	1200	Right	Bottom	1 10130-301
42	2100	800	1200	Left	Top and bottom	2 redundant 10130-302
42	2100	800	1200	Right	Top and bottom	2 redundant 10130-303

### Accessories

Lifting eye for top cover PU 4 pieces	<b>23130-072</b>
Electronic closing (MLR3000), 13.56 MHz-MIFARE With reader, 1 set	23130-513
Electronic locking (MRL3000), Mifare With reader, 1 set	23130-565

### NOTE

- 34 kW cooling capacity at +12 °C water flow temperature, +24 °C cold air temperature
- Other dimensions on request

# Cabinets – Varistar cabinet-based and row-based cooling

## VARISTAR LHX+, CABINET WITH DOUBLE DOOR, INTEGRATED AIR CONDITIONER

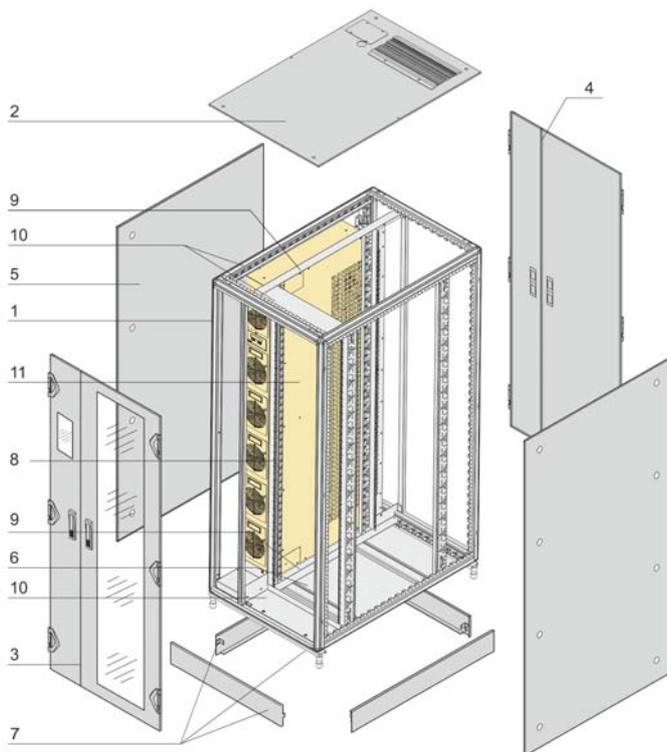


- Cabinet with air/water heat exchanger with cooling capacity of 34 kW
- Max. static load capacity 1600 kg
- Separate front and rear access doors for air/water heat exchanger
- Gasket all around reduces noise and suction of room air

### DELIVERY INCLUDES (Fully assembled and grounded)

Item	Qty.	Description
1	1	Welded basic frame, Slim-Line, St profile, zinc-plated, RAL 7021, with gasket all around
2	1	Flat roof, St, RAL 7021 with cable entry point in rear with brush, entry point for water connection in rear, entry points can be sealed with a gasket/cover plate
3	1	Front door, divided asymmetrically, RAL 7021, 3 x 180° hinges, three-point closure, pivoting lever for optional DIN profile half cylinder; in front of the 19" plane, 600 mm, St frame, glazed, single-pane safety glass 6 mm, in front of the heat exchanger, 200 mm, St, with viewing window, single-pane safety glass 6 mm
4	1	Back door, divided asymmetrically, St, RAL7021, 3 x 180° hinges, three-point closure, pivoting lever for optional DIN-profile half cylinder; in front of the 19" plane, 600 mm, in front of the heat exchanger, 200 mm
5	2	Side panel, screwed, St, RAL 7021
6	1	Baseplate, St, RAL 7021, cable entry point in rear, entry point for water connection, entry points can be sealed with gasket/cover plate
7	1	Base/plinth 100 mm, with additional center crossmember, St, RAL 7021, removable covers, integrated adjustable feet
8	4	19" panel/slide mount with EIA cut-outs, St, RAL 7021, 225 mm recessed in front, c dimension 740 mm distance between front and rear 19" plane
9	2	Support rail for connecting the air/water heat exchanger and 19" panel/slide mounts, St, RAL 7021
10	4	Air baffle, St, RAL 7021
11	1	SHX 30 air/water heat exchanger, RAL 7021, 100 to 240 V <sub>AC</sub> , may be mounted on the left or right, see Order Information
12	1	Power cable, length 1.5 m
13	1	Connecting cable for management unit
14	1	User manual (for online download)

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### ORDER INFORMATION

Height U	Width mm	Depth mm	Heat exchanger	Water connection	Power supply	Part no.	
42	2100	800	1200	Left	Bottom	1	10130-304
42	2100	800	1200	Right	Bottom	1	10130-305
42	2100	800	1200	Left	Top and bottom	2 redundant	10130-306
42	2100	800	1200	Right	Top and bottom	2 redundant	10130-307

### Accessories

Lifting eye for top cover PU 4 pieces	<b>23130-072</b>
Electronic closing (MLR3000), 13.56 MHz-MIFARE With reader, 1 set	23130-513
Electronic locking (MRL3000), Mifare With reader, 1 set	23130-565

### NOTE

- 34 kW cooling capacity at +12 °C water flow temperature, +24 °C cold air temperature
- Other dimensions on request

# Cabinets – Varistar cabinet-based and row-based cooling

## SHX 30 AIR/WATER HEAT EXCHANGER



- Air/water heat exchanger with cooling capacity of 34 kW<sup>1)</sup>
- Water connection at bottom or bottom/top (with condensate pump)
- 1 PSU or 2 PSUs (redundant)
- Fans may be changed individually while the unit is operating
- Drop collector and condensate management

### DELIVERY INCLUDES

Item	Qty	Description
1	1	SHX 30 air/water heat exchanger, RAL 7021, 100 ... 240 V <sub>AC</sub>
2	1	Mains cable, 1.5 m
3	1	Connecting cable for management unit
4		User manual (for online download)

### ORDER INFORMATION

SHX 30 air/water heat exchanger, 34 kW <sup>1)</sup>	Part No.
Water connection at bottom	1 PSU 60714-067
	2 PSUs, redundant power supply 60714-068
Water connection at top and bottom (with condensate pump)	1 PSU 60714-077
	2 PSUs, redundant power supply 60714-078

### Accessories

Cabinet management basic units Height 44 mm, width 251 mm, depth 53 mm, for monitoring one air/water heat exchanger, max. 16 sensor values, 1 piece	EMX111
Cabinet management basic units Height 44 mm, width 440 mm, depth 134 mm, for monitoring up to max. 8 air/water heat exchangers, max 128 sensor values, 1 piece	EMX888
Capteur de température à raccorder directement au SHX 30, longueur du câble 2 m, 1 pièce	60130-724

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01013021

Rear connections at bottom

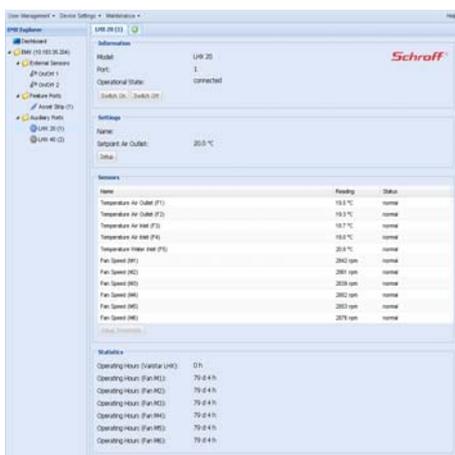
Rear connections at top

### NOTE

#### Please order optional management unit separately

- Cabinet management base unit connects via RJ 45 interface
- Web interface
  - Automatic detection of connected Varistar SHX 30 air/water heat exchanger
  - Inlet temperature of servers (parameter can be set via web interface)
  - Switch on/off of cooler
  - Adjustment of set temperature and fan speed
  - Air temperature monitoring at front/rear, fan speed and water inlet temperature
- Temperature monitoring/control using an external temperature sensor (please order separately)

- 1) Cooling capacity 34 kW at +12 °C water flow temperature, +24 °C cold air temperature, 4.5 m<sup>3</sup>/h water flow rate; for other conditions refer to the diagram for the cooling capacity



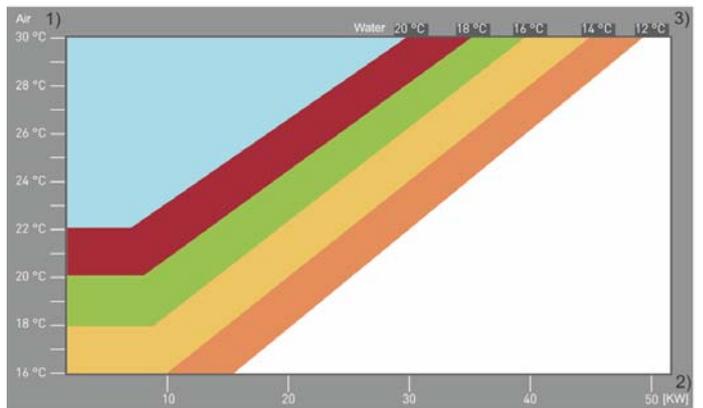
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Management browser representation

# Cabinets – Varistar cabinet-based and row-based cooling

## SHX 30 AIR/WATER HEAT EXCHANGER

**Graph:** cold air temperature against cooling capacity



- 1) Cold air temperature  
 2) Cooling capacity at different cold water temperatures  
 Fan speed 100%  
 Maximum water flow rate 4.5 m<sup>3</sup>/h  
 3) Water inlet temperature

### Technical data

#### Cooling capacity

Useful cooling capacity	34 kW <sup>1)</sup>
Normal temperature	18 to 50 °C (adjustable in 0.1 °C increments)
Max. control deviation of emergency cooling can be set to 0–8 K relative to the set value	4 (factory-preset)

#### Water circuit

Cooling medium <sup>2)</sup>	Water, water-glycol mix (max. 33%)
Water inlet temperature <sup>3)</sup>	6 to 18 °C
Water flow volume	up to 4.5 m <sup>3</sup> /h
Pressure loss in device at	3.0 m <sup>3</sup> /h, max. 1.3 bar; 4.5 m <sup>3</sup> /h, max. 3.1 bar
Water conduit	Copper
Water connection inlet/outlet	Rp 1"
Condensate drain connection	Rp 1/2"

#### Air circuit

Max. airflow volume, temperature-dependent control	5000 m <sup>3</sup> /h
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#### Electrical data AC

Supply voltage (single phase)	100 to 240 V <sub>AC</sub> (50 / 60 Hz)
Max. current consumption	6 A / 12 A (230 V / 115 V)
Max. power consumption fan speed 100% / Normal operation (fan speed 80%)	1100 W / 750 W
Pre-fuse (on building side)	D 10 A / D 16 A (230 V / 115 V)

#### Interface

RS 485 Modbus interface	Connection option for external monitoring system
RS 232 (SUB-D 9-pin)	Serial access
Input, terminal block with 10 potential-free contacts	External temperature sensor connection

#### General data

Ambient temperature: Transport, storage when fully emptied / when containing 35% glycol / in operation outside of the cabinet	-25 to 70 °C / 5 to 70 °C
Relative humidity for transport and storage (non-condensing)	5 to 95%
Heat exchanger dimensions	Height 1849 mm, width 189.5 mm, depth 850 mm
Heat exchanger weight	110 kg
Weight of cabinet with cooling module approx.	370 kg

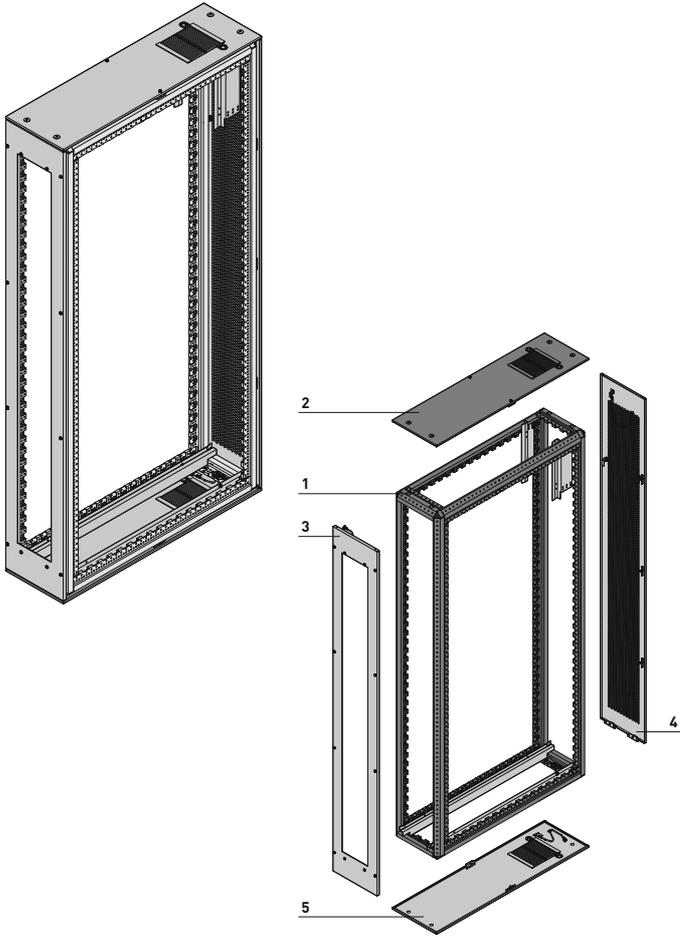
1) Cooling capacity 34 kW at +12 °C water flow temperature, +24 °C cold air temperature, 4.5 m<sup>3</sup>/h water flow rate; for other conditions refer to the diagram for the cooling capacity

2) To ensure problem-free operation of the air/water heat exchanger the quality requirements of the water must be maintained; the appropriate anti-corrosion and frost protection agents are dependent on the environment in which the unit is used and on the external chiller (VDI 3803, see also user manual).

3) At water inlet temperatures of < 6 °C and > 15 °C, the control accuracy can no longer be guaranteed. There is also a risk of condensation if the water temperature falls short of the given limits.

# Cabinets – Varistar cabinet-based and row-based cooling

## RACK FOR SHX 30 AIR/WATER HEAT EXCHANGER



- Rack (VARISTAR Slim-Line) to accommodate a SHX 30 air/water heat exchanger
- Height 2000 or 2200 mm
- Depth 1000 or 1200 mm
- Width 300 mm
- Covers top, bottom, front and rear

### DELIVERY INCLUDES

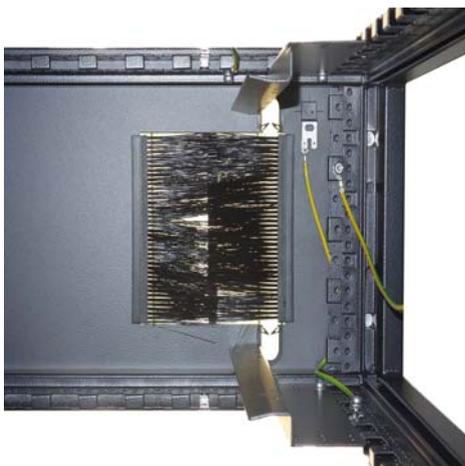
Item	Qty	Description
1	1	Welded basic rack (Slim-Line) from steel profiles, RAL 7021; earthing stud
2	1	Flat top cover, St, RAL 7021; with brush strip cut-out (for water) and on the side for cable ducting
3	1	Front frame, St, RAL 7021
4	1	Rear cover, perforated, lockable
5	1	Base plate, St, RAL 7021; with brush strip cut-out (for water) and on the side for cable ducting

### ORDER INFORMATION

Height mm	Width mm	Depth mm	Part no.
2000	300	1000	10130-226
2000	300	1200	10130-227
2200	300	1000	10130-228
2200	300	1200	10130-229

### Accessories

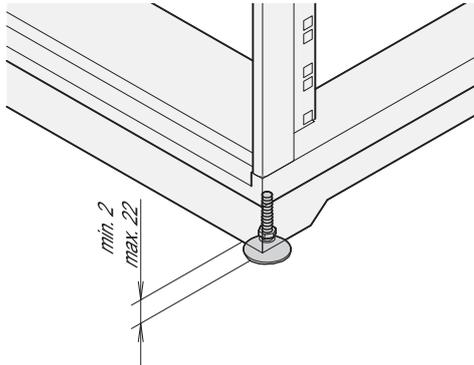
Adjustable feet for the frame, RAL 7021, static load-carrying capacity 1000 kg, PU 4 pieces	23130-511
Gasketing for adjustable feet Polyurethane foam gasketing, color similar to RAL 7021, length 300 mm, for sealing front and rear, PU 2 pieces	23130-538
Base/plinth Base plinth, St, width 300 mm, height 100 mm; bolts on to rack, PU 2 pieces	23130-507
Side trim St, 1.5 mm, height 100 mm, depth 1000 mm, PU 2 pieces	<b>23130-172</b>
Side trim St, 1.5 mm, height 100 mm, depth 1200 mm, PU 2 pieces	23130-363
Side panel, screw-fixed for IP 55 St, 1 mm, height 2000 mm, depth 1000 mm, 2 pieces	21130-013
Side panel, screw-fixed for IP 55 St, 1 mm, height 2000 mm, depth 1200 mm, 2 pieces	21130-535
Side panel, screw-fixed for IP 55 St, 1 mm, height 2200 mm, depth 1200 mm, 2 pieces	21130-018
Side panel, screw-fixed for IP 55 St, 1 mm, height 2200 mm, depth 1200 mm, 2 pieces	21130-537
Separating wall St, 1 mm, AlZn, height 2000 mm, for depth 1000 mm, 1 piece	23130-480
Separating wall St, 1 mm, AlZn, height 2000 mm, for depth 1200 mm, 1 piece	23130-481
Separating wall St, 1 mm, AlZn, height 2200 mm, for depth 1000 mm, 1 piece	23130-484
Separating wall St, 1 mm, AlZn, height 2200 mm, for depth 1200 mm, 1 piece	23130-485



Water enters via brush strips; lateral cable ducting for power/data cables

# Cabinets – Varistar cabinet-based and row-based cooling

## ADJUSTABLE FEET



- Adjustable feet for direct mounting onto frame
- Static load-carrying capacity 1000 kg

### DELIVERY INCLUDES

Item	Qty	Description
1	4	Adjustable feet, St, polyamide, black
2	1	Fixing materials kit

### ORDER INFORMATION

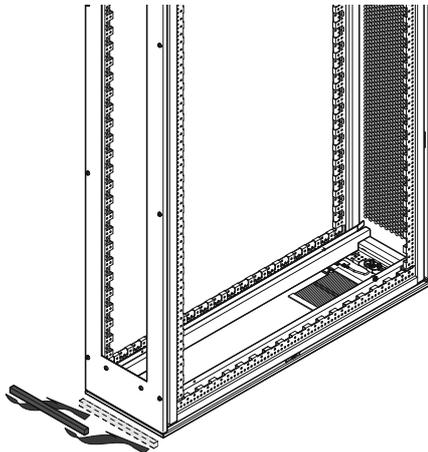
Description	Part no.
Adjustable feet	23130-511

### Accessories

Gasketing for adjustable feet Polyurethane foam gasketing, color similar to RAL 7021, length 300 mm, for sealing front and rear, PU 2	23130-538 pieces
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MRA44483

## GASKETING FOR ADJUSTABLE FEET



- For horizontal sealing at bottom in containments (front and rear) where adjustable feet are used

### DELIVERY INCLUDES

Item	Qty	Description
1	2	Gasketing, flexible polyurethane, length 300 mm, color similar to RAL 7021, conforms to UL 94-HF1

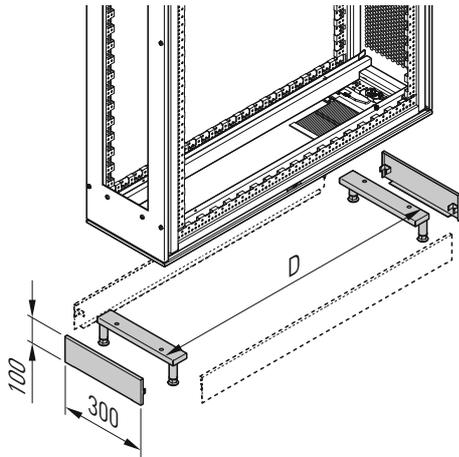
### ORDER INFORMATION

Description	Part no.
Gasketing for adjustable feet	23130-538

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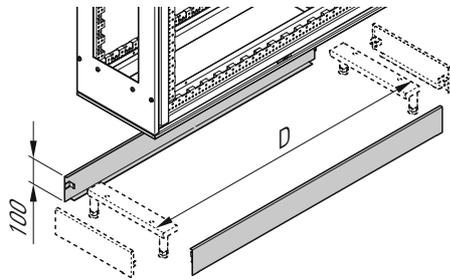
# Cabinets – Varistar cabinet-based and row-based cooling

## BASE/PLINTH



Base/plinth

01013071



Accessories: Side covers

01013072

- Base for 300 mm wide frame (air/water heat exchanger)
- Base is bolted to the frame at front and rear; please order side trims separately

### DELIVERY INCLUDES

Item	Qty	Description
1	2	Base, St, 1.5 mm; with built-in feet, width 300 mm, color RAL 7021
2	1	Fixing materials kit

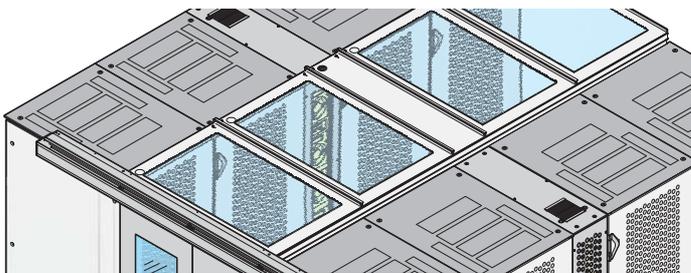
### ORDER INFORMATION

Height mm	Width mm	Part no.
100	300	23130-507

### Accessories

Side trim RAL 7021, St, 1.5 mm, height 100 mm, depth 1000 mm, PU 2 pieces	<b>23130-172</b>
Side trim RAL 7021, St, 1.5 mm, height 100 mm, depth 1200 mm, PU 2 pieces	23130-363

## TOP COVER ELEMENT FOR AISLE CONTAINMENT (SHX 30 AIR/WATER HEAT EXCHANGER)



Width 300 mm

01013079

- Suitable for an aisle width of 1200 mm
- Width 300 mm (when fitting directly beside the "Sliding door, mechanical" a 200 mm width must be used)
- Top cover can be removed from inside (allows access to lighting and facilitates maintenance works)
- The universal top cover profile enables the aisle height to be raised by 84 mm and cabinets with other heights can also be integrated. Please order separately

### DELIVERY INCLUDES

Item	Qty	Description
1	1	Top cover, St, 2 mm, RAL 7021, plate length 1200 mm
2	1	Fixing materials kit

### ORDER INFORMATION

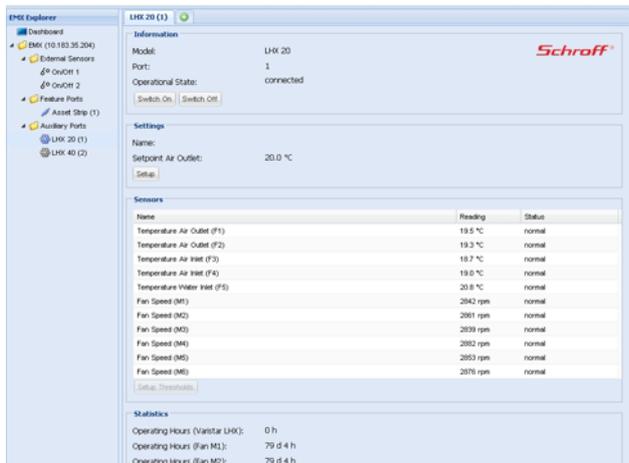
Width mm	Description	Part no.
300	For cabinet width 300 mm (aisle width 1200 mm)	21130-648

### Accessories

Raised top cover Al extrusion, RAL 7021, length 2400 mm, height 84 mm, PU 2 pieces; raises top cover elements by 84 mm and allows integration of cabinets with other heights	21130-594
Assembly kit Mounting of top cover raising profile, PU 6 pieces	23130-433

# Cabinets – Varistar cabinet-based and row-based cooling

## MANAGEMENT FOR SHX 30



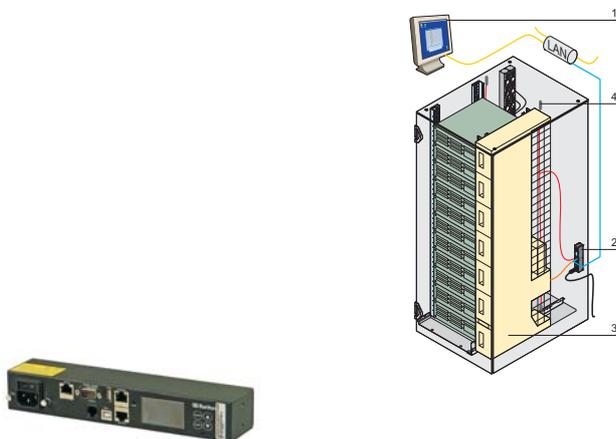
Browser display

00711017

- Connection of cabinet management basic unit with RJ 45 interface
- Automatic detection of the connected LHX 20/40 air/water heat exchangers
- Monitored parameters:
  - Inlet temperature of servers (parameter can be set via web interface)
  - Air temperature front (2 parameters)
  - Air temperature rear (2 parameters)
  - Fan speed (6 parameters for LHX 20, 7 parameters for LHX 40)
  - Water inflow temperature (1 parameter)

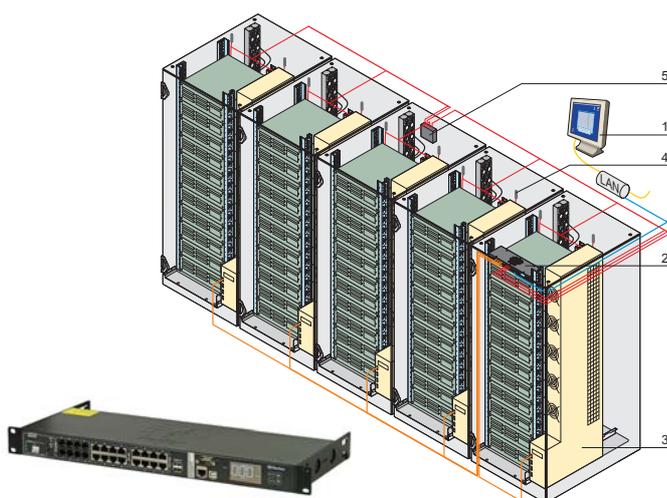
### NOTE

- For cabinet management base unit see page 3.46
- Sensors (temperature, humidity, differential pressure, airflow...) and hub for connecting multiple sensors see from page 3.47



EMX -111

00711020 01011051



EMX -888

01011050 01011050

Item	Description
1	Real-time monitoring of web graphical user interface (GUI)
2	EMX
3	LHX 20/40
4	Telemonitored temperature and humidity sensors
5	Cabinet management base unit

# Cabinets – Cabinet-based and row-based cooling

## DOOR COOLER WITH INTEGRATED AIR-WATER HEAT EXCHANGER, RACKCHILLER REAR DOOR



- Fanless solution, no noise, no additional power consumption, low maintenance
- The optional water control set allows regulation of the water flow according to the actual heat load
- Mounting frame allows the separation of heat exchanger and condensate management of the server rack removal
- The rear room in the cabinet is fully available for wiring and power distribution
- Easy to adapt to nVent cabinets and mounting kits for cabinets from other manufacturers
- Modbus TCP and SNMP v2c interface
- Available in width 600 mm and 800 mm and height 42 U, 47 U and 52 U

### DELIVERY INCLUDES (completely assembled, cabled and tested)

Item	Qty	Description
1	1	Mounting frame, St, 2 mm, RAL 7021; with integrated condensate tray, VA, 2 mm, powder coated RAL 7021; Leveling feet mounted, stainless steel connecting piece VA 1.4571 (stainless steel) for condensate drainage; Mounting bracket for Varistar, Proline frame, St, 2 mm, powder coated RAL 7021, including mounting hardware, installation instructions
2	1	Heat exchanger on door, St, 1.5 mm, powder-coated RAL 7021, perforated on the outside, flow-optimized perforation, 3 x 180 ° hinge, three-point lock, lever handle for optional DIN profile half cylinder; Connections heat exchanger external thread G1 ¼ ", integrated venting valve with hose
3	1	User manual is provided as a download

01018001



01018053

- 1 Mounting frame
- 2 Control unit (optional)
- 3 Heat exchanger
- 4 Water connection cover
- 5 Water inflow
- 6 Water drainage
- 7 Mounting position for display (optional)
- 8 Water hoses
- 9 Control valve with actuator (optional)

### NOTE

- For trouble-free operation it is recommended to use the water connection set and the optional accessories

# Cabinets – Cabinet-based and row-based cooling

## DOOR COOLER WITH INTEGRATED AIR-WATER HEAT EXCHANGER, RACKCHILLER REAR DOOR

### ORDER INFORMATION

Height U	Height mm	Width mm	Depth mm	Qty/PU piece	Part no.
42	2000	600	111	1	<b>21130-800</b>
42	2000	800	111	1	<b>21130-801</b>
47	2200	600	111	1	<b>21130-802</b>
47	2200	800	111	1	<b>21130-803</b>
52	2450	600	111	1	<b>21130-804</b>
52	2450	800	111	1	<b>21130-805</b>

### Accessories

Water connection set,

2 x stainless steel corrugated hose 2.4 m, torsion-free connection G 1 1/4" female thread flat sealing (air water heat exchanger), union nut 1G 1 1/4" internal thread flat sealing (double bottom or adapter control valve), insulation, black, foam FEF (Flexible Elastomeric Foam), Halogen free, assembly Instructions, 1 kit



**23130-593**

Control valve with servomotor,

Actuator 24 V<sub>DC</sub>, maximum water pressure 16 bar, 2-way ball valve, RP 1" female thread with 2 x adapter fitting Rp 1" to G 1 1/4", assembly Instructions, 1 kit



**23130-607**

Display for control unit,

132 x 64-pixel display and 6 buttons, dimensions of the viewing area: 72 x 36 mm; power supply via control unit; operating languages English, German, French; assembly Instructions, 1 kit



**23130-599**

Water control package (sensor water flow, pressure and temperature),

1 x water flow and temperature sensor mounted on measuring section, stainless steel casting;

1 x water pressure and temperature sensor mounted on measuring path for installation in water supply, stainless steel casting;

2 x connecting cable to the control unit, flat gaskets and adapter socket suitable for mounting with water connection set 23130-593 and control valve 23130-607; assembly Instructions;

1 kit



**23130-608**

Control unit RDC,

1 x control unit AlZn 1.5 mm, hood St 1.0 mm RAL7021;

1 x RJ45 socket, SNMP and Modbus interface, for integration in higher-level management systems or direct Web GUI access;

1 x power connection 85 ... 260 V<sub>AC</sub>;

1 x power cable IEC C14 to SCHUKO;

1 x assembly instructions;

1 kit



**23130-594**

# Cabinets – Cabinet-based and row-based cooling

## DOOR COOLER WITH INTEGRATED AIR-WATER HEAT EXCHANGER AND FANS, RACKCHILLER REAR DOOR



01019013



01019015



01019014

- Active solution with fans supporting the air flow and equals the pressure drop at the heat exchanger
- The optional water control set allows regulation of the water flow according to the actual heat load
- Mounting frame allows the separation of heat exchanger and condensate management of the server rack removal
- The rear room in the cabinet is fully available for wiring and power distribution
- Easy to adapt to nVent cabinets and mounting kits for cabinets from other manufacturers
- Modbus TCP and SNMP v2c interface
- Available in width 600 mm and 800 mm and height 42 U, 47 U and 52 U

### DELIVERY INCLUDES (completely assembled, cabled and tested)

Item	Qty	Description
1	1	Mounting frame, St, 2 mm, RAL 7021; with integrated condensate tray, VA, 2 mm, powder coated RAL7021; Leveling feet mounted, stainless steel connecting piece VA 1.4571 (stainless steel) for condensate drainage; Mounting bracket for Varistar, Proline frame, St, 2 mm, powder coated RAL 7021, including mounting hardware, installation instructions
2	1	Heat exchanger on door, St, 1.5 mm, powder-coated RAL 7021, perforated on the outside, flow-optimized perforation; 4 x radial fans, 300 mm cover panel in RAL 7001; 3 x 180 ° hinge, three-point lock, lever handle for optional DIN profile half cylinder; Connections heat exchanger external thread G1 ¼ ", integrated venting valve with hose
3	1	Control unit RDC, 1 x control unit AlZn 1.5 mm, hood St 1.0 mm RAL 7021; 1 x RJ45 socket, SNMP and Modbus interface, for integration in higher-level management systems or direct Web GUI access; 1 x power connection 85 ... 260 VAC; 1 x power cable IEC C14 to SCHUKO
4	1	User manual is provided as a download

### NOTE

- For trouble-free operation it is recommended to use the water connection set and the optional accessories

# Cabinets – Cabinet-based and row-based cooling

## DOOR COOLER WITH INTEGRATED AIR-WATER HEAT EXCHANGER AND FANS, RACKCHILLER REAR DOOR

### ORDER INFORMATION

Height U	Height mm	Width mm	Depth mm	Qty/PU piece	Part no.
42	2000	600	336	1	<b>21130-806</b>
42	2000	800	336	1	<b>21130-807</b>
47	2200	600	336	1	<b>21130-808</b>
47	2200	800	336	1	<b>21130-809</b>
52	2450	600	336	1	<b>21130-810</b>
52	2450	800	336	1	<b>21130-811</b>

### Accessories

Water connection set,

2 x stainless steel corrugated hose 2.4 m, torsion-free connection G 1 1/4" female thread flat sealing (air water heat exchanger), union nut 1G 1 1/4" internal thread flat sealing (double bottom or adapter control valve), insulation, black, foam FEF (Flexible Elastomeric Foam), Halogen free, assembly Instructions, 1 kit



**23130-593**

Control valve with servomotor,

Actuator 24 V<sub>DC</sub>, maximum water pressure 16 bar, 2-way ball valve, RP 1" female thread with 2 x adapter fitting Rp 1" to G 1 1/4", assembly Instructions, 1 kit



**23130-607**

Display for control unit,

132 x 64-pixel display and 6 buttons, dimensions of the viewing area: 72 x 36 mm; power supply via control unit; operating languages English, German, French; assembly Instructions, 1 kit



**23130-621**

Water control package (sensor water flow, pressure and temperature),

1 x water flow and temperature sensor mounted on measuring section, stainless steel casting;  
1 x water pressure and temperature sensor mounted on measuring path for installation in water supply, stainless steel casting;  
2 x connecting cable to the control unit, flat gaskets and adapter socket suitable for mounting with water connection set 23130-593 and control valve 23130-607; assembly Instructions, 1 kit



**23130-608**

### NOTE

- For trouble-free operation it is recommended to use the water connection set and the optional accessories

# Cabinets – Cabinet-based and row-based cooling

## RACKCHILLER IN-ROW COOLER



01019006

- Air- / water heat exchanger with housing (RAL 9005) is installed between row-based cabinets
- Cooling capacity up to 55 KW (300 mm) and 75 kW (600 mm)
- Width 300 mm and 600 mm
- 230 V<sub>AC</sub> and 208 V<sub>AC</sub> power connection
- Water connection from the back top or bottom
- Monitoring via Modbus or Ethernet interface
- Control with internal and external sensors

### DELIVERY INCLUDES

Item	Qty	Description
1	1	In-Row Cooler with integrated air-water heat exchanger, RAL 9005, removable front panel with display and LED display, rear door perforated with 1-point locking, opening angle 180°
2	2	Water connection hose 3 m (blue / red), pre-assembled
3	1	Control valve (2 ways) and actuator
4	1	User Manual (Internet download)
5	2	Transport castors

### ORDER INFORMATION

Height U	Height mm	Width mm	Depth mm	Heat exchanger	Qty/PU piece	Part no.
42	2000	300	1200	Cooler 230 V <sub>AC</sub>	1	<b>60714-079</b>
42	2000	600	1200	Cooler 230 V <sub>AC</sub>	1	<b>60714-080</b>
42	2000	300	1200	Cooler 208 V <sub>AC</sub> (US-Version)	1	<b>60714-081</b>
42	2000	600	1200	Cooler 208 V <sub>AC</sub> (US-Version)	1	<b>60714-082</b>

#### Accessories

Luftabschlussatz für Varistar 42 HE, 300 mm 1 Satz	<b>20714-001</b>
Luftabschlussatz für Varistar 42 HE, 600 mm 1 Satz	<b>20714-002</b>
Luftabschlussatz für Varistar 47 HE, 300 mm 1 Satz	<b>20714-003</b>
Luftabschlussatz für Varistar 47 HE, 600 mm 1 Satz	<b>20714-004</b>
Luftabschlussatz für Varistar 52 HE, 300 mm 1 Satz	<b>20714-005</b>
Luftabschlussatz für Varistar 52 HE, 600 mm 1 Satz	<b>20714-006</b>
Luftabschlussatz für Proline 47 HE, 300 mm 1 Satz	<b>20714-007</b>
Luftabschlussatz für Proline 47 HE, 600 mm 1 Satz	<b>20714-008</b>
Luftabschlussatz für Proline 51 HE, 300 mm 1 Satz	<b>20714-009</b>
Luftabschlussatz für Proline 51 HE, 600 mm 1 Satz	<b>20714-010</b>



# Cabinets – Cabinet-based and row-based cooling

## RACKCHILLER IN-ROW COOLER



01019003

01019007



01019004



01019008

### Technical data

<b>Connection</b>	Water connection at top or bottom
Max. airflow volume	7200 m <sup>3</sup> /h
Dimensions heat exchanger	Height 2000 mm, width 300 mm, depth 1200 mm; width 600 mm, depth 1200 mm plus 170 mm radial fan overhang
Supply voltage (1-phase) nominal voltage	100 ... 230 <sub>AC</sub> (50/60 Hz, dual supply with C19 connection)
Input / sensor	Connection for external temperature sensor
Adjustment range air outlet temperature	18 ... 30 °C (in 0,1 °C-steps)
Cooling capacity at 14° C water inlet, flow 4,2 m <sup>3</sup> / h; Room temperature 22-24 ° C	300 mm width 55 KW; 600 mm width 75 KW
Cooling medium *)	Water, water-glycol mixture (max. 33%)
Water inlet temperature **)	> 14 °C
Water flow volume	up to 4,6 m <sup>3</sup> /h
Water conduit	Copper
Water connection inlet / outlet	Female cone / BSP 1"
Control valve	1" Rp, 24 VDC, connected to the central monitoring system
Water volume	11 l
Max. Current consumption	6 A (230 V <sub>AC</sub> )
Pre fuse (on building side)	D10 A
RJ 45 Interface	Monitoring via Modbus or Ethernet interface
Ambient temperature during transport	Transport, storage when fully emptied / when containing 35% glycol / in operation outside cabinet: -25 ... 70 °C / 5 ... 70 °C
Relative humidity	5 ... 95 %
Weight heat exchanger	140 kg (without water)

### General Data

Protection class of the cabinet	IP 55
Ambient temperature outside the cabinet (during operation)	5 ... 70 °C
Sound pressure level (cabinet closed) at 80% fan power	50,7 dB(A)

\*) To problem-free operation of the air/water heat exchanger the quality requirements of the water must be maintained; the appropriate anti-corrosion and frost protection agents are dependent on the environment in which the unit is used and on the external chiller (VDI 3803, see also user manual).

\*\*) At water inlet temperatures of <14 °C there is also a risk of condensation. We recommend to request a unit with integrated condensate management

## North America

Warwick, RI, USA

Tel +1.800.525.4682

San Diego, CA, USA

Tel +1.800.854.7086

## Europe, Middle East & India

Straubenhardt, Germany

Tel +49 7082 794 0

Betschdorf, France

Tel +33 3 88 90 64 90

Warsaw, Poland

Tel +48 22 209 98 35

Hemel Hempstead,

Great Britain

Tel +44 1442 24 04 71

Lainate, Italy

Tel +39 02 932 714 1

Dubai, United Arab Emirates

Tel +971 4 37 81 700

Bangalore, India

Tel +91 80 67152000

Istanbul, Turkey

Tel +90 216 250 7374

## Asia Pacific

Shanghai, China

Tel +86 21 2412 6943

Singapore

Tel +65 6768 5800

Shin-Yokohama, Japan

Tel +81 45 476 0271

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