

Vertiv™ SmartAisle™

The Comprehensive Solution for Data Centers

Features

- Outstanding fail-safe design.
- Ideal temperature for IT equipment; no hot spots.
- Minimal energy consumption.
- Easy to plan a new data center.

Comprehensive Solution

- Racks.
- Rack PDUs.
- Power distribution.
- UPS.
- Vertiv™ ICOM™-controlled cooling.
- Containment.
- Cable management.
- Rack and aisle monitoring.
- Data center infrastructure.
- DCIM Management.
- Commissioning and maintenance.
- Other services.

All have interfaces at a top-level infrastructure management system (Vertiv *Trellis*™), which facilitates holistic monitoring, management and automation of the physical infrastructure.

The most important trend in IT is the increasing independence of applications from the IT infrastructure. Virtualization and cloud computing are the current buzzwords. Hardware is based on energy-efficient IT components and the dynamic control of these components to meet the applications' current requirements.

Vertiv's SmartAisle™ is the SmartAisle solution encompasses the space, power supply and cooling for servers, storage and the network in the data center. Data centers are highly individual and are constantly subject to change. The physical infrastructure can be adapted to meet any conceivable need by selecting comprehensive portfolio components that harmonize with one another.

The Vertiv SmartAisle™ solution is future-proof and delivers outstanding availability and efficiency.

COLD AISLE CONTAINMENT

COOLING

Liebert® HPM,
HPC, CRV

RACK PLATFORM

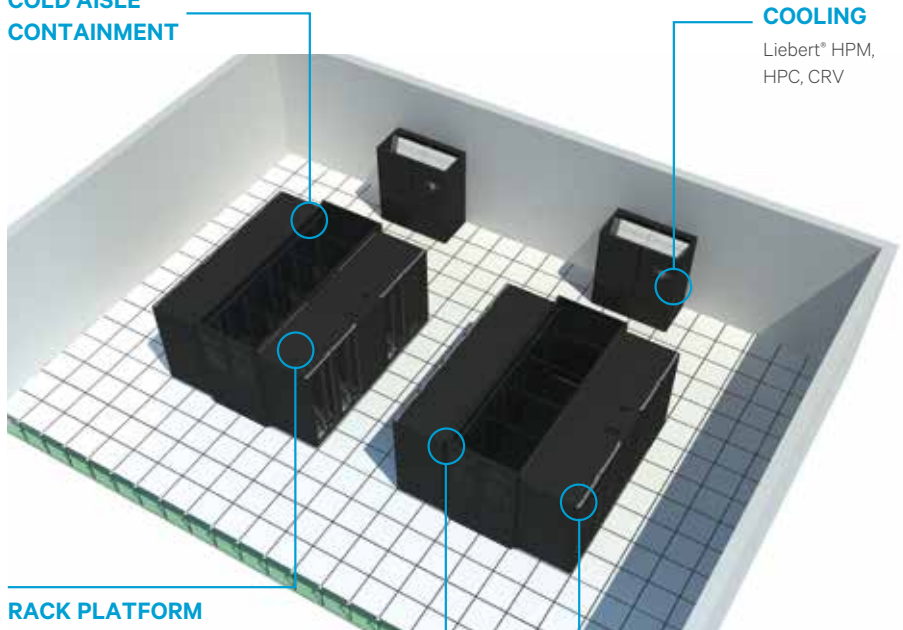
Vertiv Knürr DCM Schwerlastschrank,
Vertiv Knürr MIR

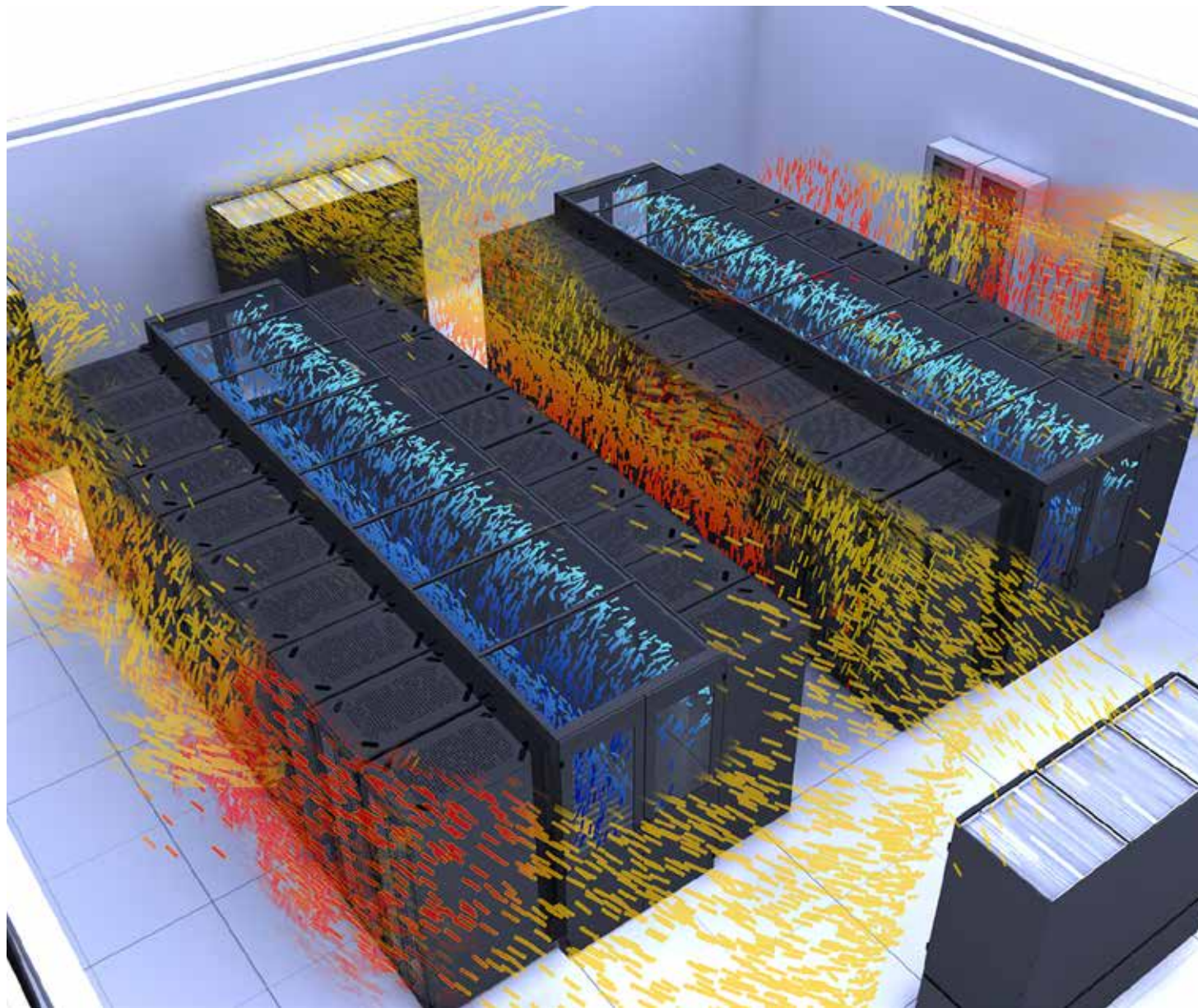
MONITORING

DCIM, Vertiv ICOM,
Avocent DS View3

POWER SUPPLY

Liebert APM,
Rack PDUs,
Vertiv Knürr PowerTrans®





Vertiv™ SmartAisle™ containment – consistent separation of warm and cold air is the cornerstone of an energy-efficient data center.

Vertiv™ SmartAisle™

The Comprehensive Solution Concept for Data Centers

Vertiv Control System



Due to rising power costs and increased environmental awareness, the main objective for most operators is to maximize the energy efficiency of their data centers.

Many have already implemented basic separation of cold air from warm air with blanking panels, bushings for cable entry, cold aisle containment, etc. Air-cooling units are key to energy-efficient data centers and further optimization is achieved by adjusting the fans' speed.

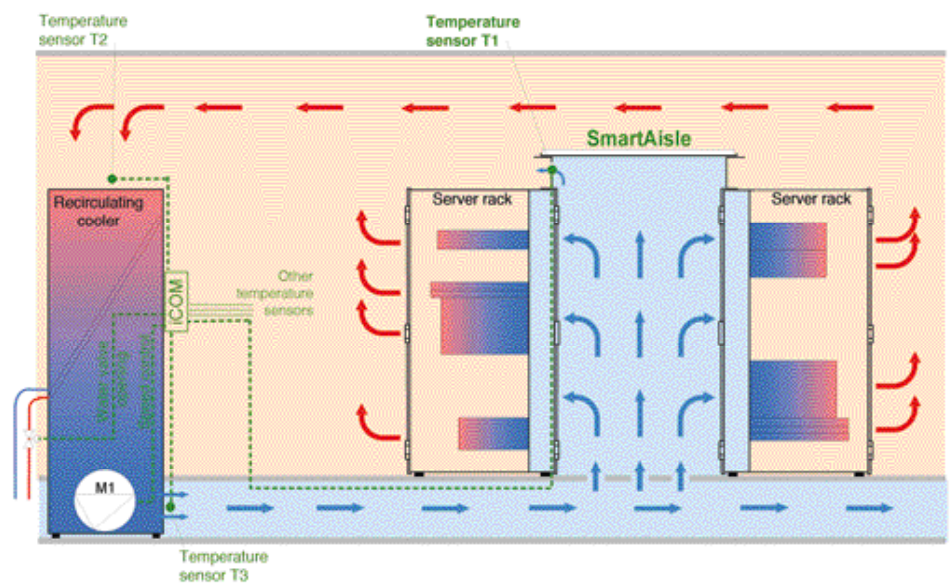
The operator reduces electricity costs significantly by choosing the right type of control system, which in turn increases availability. In the event of one recirculated air cooling device malfunctioning, temperature control is maintained by increasing the speed of the remaining devices.

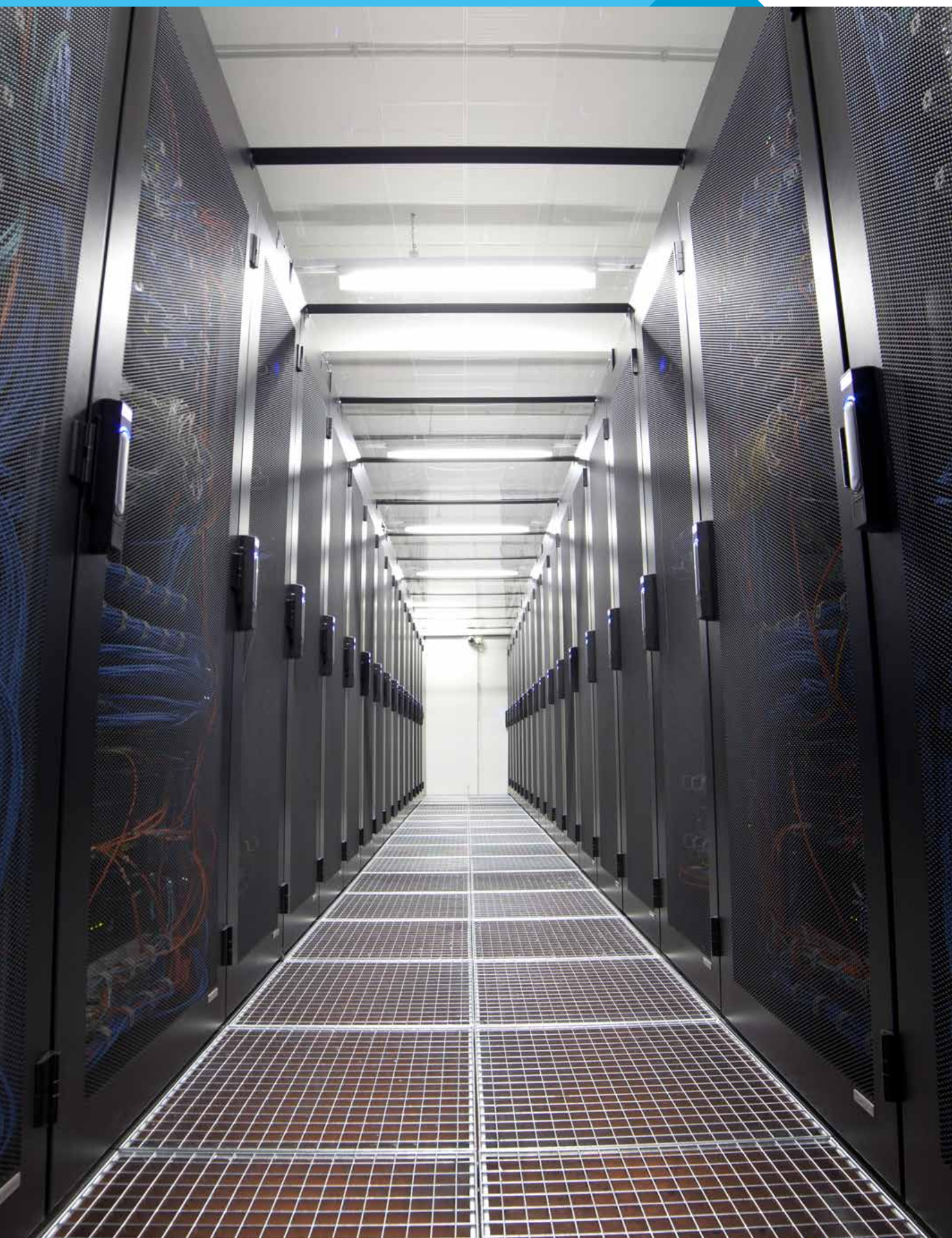
The two most common control principles are pressure control and control via the cold aisle temperature.

With the Vertiv SmartAisle control principle, the cold aisle temperature, i.e. the temperature of the air supply to the servers is used to control the fans in the room's climate control equipment (see diagram).

This control principle is patented.

The Vertiv SmartAisle Control-System Principle





Vertiv™ SmartAisle™

The Comprehensive Solution Concept for Data Centers

Overview of Vertiv™ SmartAisle™ Containment



STANDARD	<p>Standard program:</p> <ul style="list-style-type: none">■ Aisle width 1200 / 1500 and 1800 mm.■ Rack height 2000 and 2200 mm. <p>Features:</p> <ul style="list-style-type: none">■ Ideal for new data centers and for retrofitting homogeneous rack aisles.■ Industrial prefabrication makes for a highly economic solution.■ Quick and easy on-site installation.
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CUSTOMIZED	<p>Features:</p> <ul style="list-style-type: none">■ Precision fit to racks and rows.■ Suitable for retrofitting heterogeneous data centers.■ Compatible with standard Vertiv SmartAisle.
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FREE-STANDING	<p>Features:</p> <ul style="list-style-type: none">■ Flexible adjustment to racks with non-standard dimensions.■ For racks and applications that are exchanged at intervals.■ Compatible with standard Vertiv SmartAisle.
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SWITCH TUBES	<p>Features:</p> <ul style="list-style-type: none">■ No hot spots.■ Suitable airflow routing.■ Utilized in energy-efficient data centers.
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Standard Vertiv™ SmartAisle™ Containment

Vertiv™ Power Containment Solution

Standard program

- Aisle width: 1200 / 1500 and 1800 mm.
- Rack height: 2000 and 2200 mm.

Features

- Ideal for new data centers and for retro-fitting homogeneous rack aisles.
- Industrial prefabrication makes for a highly economic solution.
- Quick and easy on-site installation.
- The containment can be used for Vertiv racks as well as for the most common racks in the market.
- The racks do not need to be installed in pairs.
- The top panels are transparent so that the available room lighting can be used.

The standard Vertiv SmartAisle product range consists of flexible, adaptable and user-friendly components.

The individual components equalize the tolerances of the racks, which are not usually installed with millimeter precision. The system is compatible with most commercially available racks.

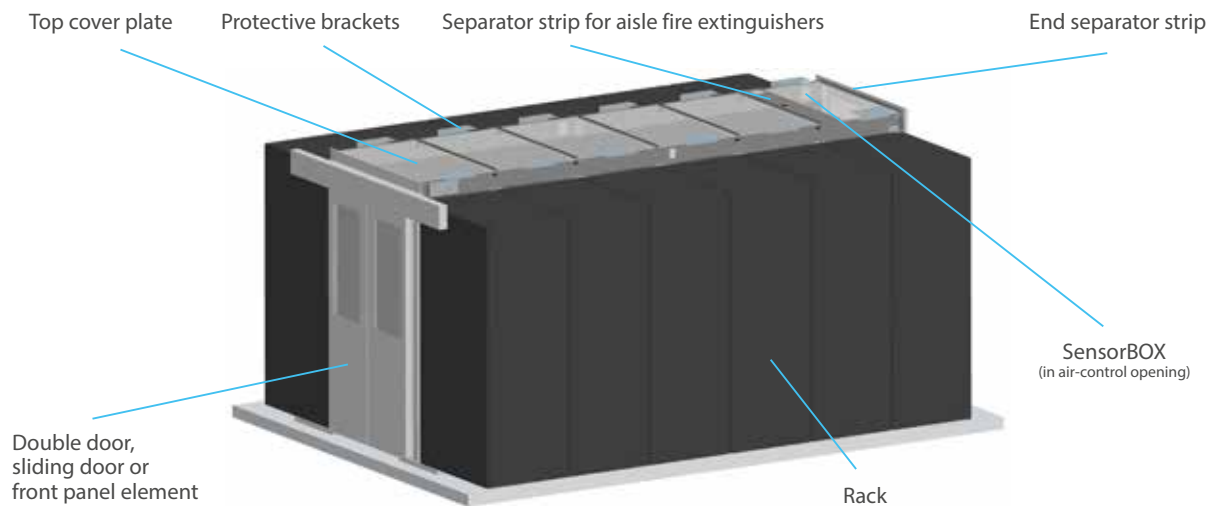
The standard top covers have been prepared for the patented Vertiv SmartAisle control system.

Different door systems are available, including hinged and sliding doors. Hinged or swing doors offer advantages in terms of safety and emergency exits, while sliding doors take up less space.



Vertiv™ SmartAisle™ Containment

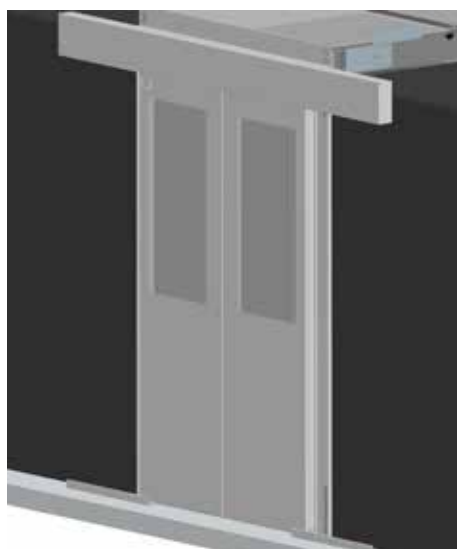
■ Configuration assistant



CAC20000

Required data per cold aisle	Example
– Aisle width (standard dimensions 1200, 1500 and 1800 mm ± 50 mm)	Aisle width (AW) = 1200 mm
– Rack height (standard dimensions 2000 and 2200 mm)	Rack height (H) = 2000 mm
– Aisle length	Aisle length (L) = 4800 mm
– Rack type	Vertiv Knürr DCM® B800
– Color (light-grey RAL 7035 or dark-grey RAL 7021)	Dark-grey RAL 7021

Options	Example	Item	
– Front door component (sliding door, double door, front panel)	Sliding door	03.029.026.8	1 unit
– Front door c closer (mechanical, electric)	Electric door closer	03.029.046.8	1 unit
– Rear door component (sliding door, double door, front panel)	Double door	03.029.021.8	1 unit
– Rear door closer (mechanical, electric)	Mechanical door closer	(integrated in double door)	
– Top cover plate	Top cover plate L2400	03.029.129.8	2 sets
– End separator strip	End separator strip GB 1200	03.029.010.8	1 pair
– SensorBOX	Yes	03.029.132.8	2 units
– Protective brackets	Yes	03.029.041.8	6 sets
– DCM® adjustment shim	Yes	03.029.137.8	3 sets
– Filler panel	No		
– Height trims	No		
– Sealing set	Yes	03.029.040.9	2 sets
– Raised-floor air barrier for cable entry	Yes (per rack)	03.029.211.9	22 units
– Open mesh flooring plate	Yes	03.029.090.8	28 units



CAC20001

Vertiv™ SmartAisle™ Sliding-door Prepared for Automatic Door Closers

Description

- Used in cold aisle containment for aisle widths: 1200 / 1500 / 1800 mm (± 50 mm).
- Quick and easy mounting.
- Suitable for MIR® and DCM® racks and most other brands.

Clear door opening

- Width: at least 950 mm.
- Height: 2080 mm.

Material

- Door components: sheet steel.
- Observation window: single safety-glass panel.
- Brush strips: polyamide (UL94 HF-1).

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey (e. g. X=1; 03.029.026. X=03.29026.1=light-grey).

- Final digit of order number .8: powder-coated, RAL 7021 dark-grey (e. g. X=8; 03.029.026. X=03.29026.8=dark-grey).

Scope of delivery

- 1 x frame.
- 2 x doors.
- 2 x floor guides.
- 1 x Covers.
- 1 x Sealing material.
- 1 x Mounting kit.

How supplied

- In sets.

Note

Please order the requisite closers (electric or mechanical).

H	AW	Order No.	UP
2000	1200	03.029.026.X	1 set
2200	1200	03.029.027.X	1 set
2000	1500	03.029.061.X	1 set
2200	1500	03.029.062.X	1 set
2000	1800	03.029.066.X	1 set
2200	1800	03.029.067.X	1 set



CAC20004



CAC20005

Electric Sliding-door Closer

Description

- Compatible with SmartAisle™ sliding door.
- Increases energy efficiency as doors closes automatically.
- Opens with "push & go".
- Closes with "push & go" or automatically (0 to 30 seconds).
- Opener/closer contact for control (e.g. fire alarm system).

Material

- Sheet steel.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x electric drive.
- 1 x cover.
- 1 x Mounting brackets.
- 1 x Mounting kit.

Technical data

- Power supply: 230 V / 50 - 60 Hz.
- Opening speed: 0.4 m/s.
- Closing speed: 0.2 m/s.
- Automatic closing time, adjustable: 0 to 30 s.
- Force: 30 N.

How supplied

- Single items.

Order No.	UP
03.029.046.X	1 set

Dimensions in mm:				Conversion:	
W = Width	h = Installation height	U = Standard rack unit	kg = Weight	1 mm	= 0.03937 inch
H = Height	d = Insertion depth	(1 U = 44.45 mm)		1 kg	= 2.2046 pounds
D = Depth	L = Length	UP = Packaging unit			



CAC20006



CAC20007

Mechanical Sliding-door Closer

Description

- Suitable for Vertiv™ SmartAisle™ sliding door.
- Increases energy efficiency as doors open and close automatically.
- Stop function when open.

Material

- Sheet steel.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey (e. g. X=1; 03.029.026. X=03.29026.1=light-grey).

- Final digit of order number .8: powder-coated, RAL 7021 dark-grey (e. g. X=8; 03.029.026. X=03.29026.8=dark-grey).

Scope of delivery

- 2 x sets of gas pressure springs.
- 1 x cover.
- 1 x Mounting brackets.
- 1 x Mounting kit.

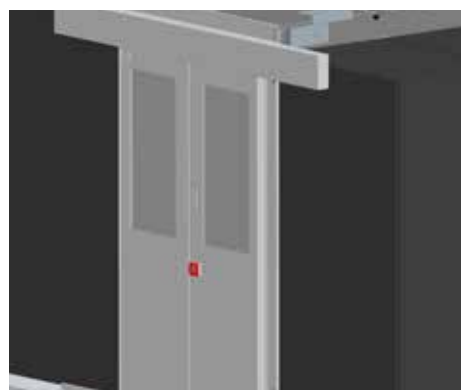
Technical data

- Force: 20 N.

How supplied

- Single items.

Order No.	UP
03.029.047.X	1 set



CAC20002



CAC20003

Vertiv™ SmartAisle™ Sliding-door with Access Check

Description

- Used in cold aisle containment for aisle widths: 1200 / 1500 / 1800 mm (\pm 50 mm).
- Quick and easy mounting.
- Suitable for MIR® and DCM® racks and most other brands.
- Magnets ensure safe closing; in the event of a power failure, the door can easily be opened manually.
- Standard access check with keypad (other systems also available).
- Inside switch for routine exit.
- VdS-compliant emergency switch inside; height of switch < 1 meter.
- VdS-compliant emergency switch outside for rescue purposes.
- Door contact switch for monitoring "door open" – "door closed".

Clear door opening

- Width: at least 950 mm.
- Height: 2080 mm.

Material

- Door components: sheet steel.
- Observation window: single safety-glass panel.
- Brush strips: polyamide (UL94 HF-1).

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x frame.
- 2 x doors.
- 2 x floor guides.
- 1 x rack monitoring system.
- 1 x Electrical closing system.
- 1 x Covers.
- 1 x Sealing material.
- 1 x Mounting kit.

How supplied

- In sets.

H	AW	Order No.	UP
2000	1200	03.029.029.X	1 set
2200	1200	03.029.029.X	1 set

Dimensions in mm:				Conversion:	
W = Width	h = Installation height	U = Standard rack unit	kg = Weight	1 mm	= 0.03937 inch
H = Height	d = Insertion depth	(1 U = 44.45 mm)		1 kg	= 2.2046 pounds
D = Depth	L = Length	UP = Packaging unit			



CAC20008

Vertiv™ SmartAisle™ Double Door with Automatic Door Closer

Description

- Used in cold aisle containment for aisle widths: 1200 / 1500 / 1800 mm (\pm 50 mm).
- Quick and easy mounting.
- Suitable for MIR® and DCM® racks and most other brands.
- Integrated automatic/mechanical door closer (opening angle 180°, stop angle approx. 120°; door closes automatically from approx. 100°).

Clear door opening

- Width: 1200 mm.
- Height: 2100 mm (for rack height 2000 mm); 2300 (for rack height 2200).

Material

- Door frame: aluminum.
- Door components: sheet steel.
- Observation window: single safety-glass panel.
- Brush strips: polyamide (UL94 HF-1).

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x door frame.
- 2 x doors.
- 3 x design covers.
- 2 x door closers.
- 1 x Mounting kit.

How supplied

- In sets.

H	AW	Order No.	UP
2000	1200	03.028.021.X	1 set
2200	1200	03.028.022.X	1 set
2000	1500	03.028.041.X	1 set
2200	1500	03.028.042.X	1 set
2000	1800	03.028.046.X	1 set
2200	1800	03.028.047.X	1 set



CAC20009

Vertiv SmartAisle Front Panel

Description

- Used in cold aisle containment for aisle widths: 1200 / 1500 / 1800 mm (\pm 50 mm).
- Alternative to cold aisle door.
- Quick and easy mounting.
- Suitable for MIR® and DCM® racks and most other makes.

Material

- Sheet steel.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.

- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

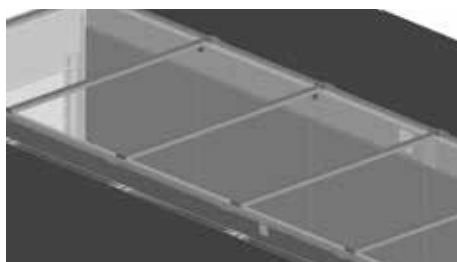
Scope of delivery

- 1 x bracing bracket.
- 2 to 4 panels.
- 1 x Mounting kit.

How supplied

- In sets.

H	AW	Order No.	UP
2000	1200	03.029.031.X	1 set
2200	1200	03.029.032.X	1 set
2000	1500	03.029.034.X	1 set
2200	1500	03.029.035.X	1 set
2000	1800	03.029.037.X	1 set
2200	1800	03.029.038.X	1 set



CAC20010

Vertiv™ SmartAisle™ Top Cover Plate

Description

- Used in cold aisle containment for aisle widths: 1200 / 1500 / 1800 mm (\pm 50 mm).
- Quick and easy mounting.
- Suitable for MIR® and DCM® racks and most other brands.
- With rubber sleeves for cable routing.
- Top cover plate with low fire load and smoke generation (optionally with compound safety glass).
- Top cover plate(s) can be removed quickly and easily.
- Equipped with SensorBOX for energy-efficient operation of the recirculated air cooling devices and for preventing hot spots.

Clear aisle height

- Rack height 2000 mm: 2150 mm.
- Rack height 2200 mm: 2350 mm.

Material

- Angular extrusion, cross brace: sheet steel.
- Top cover plate: polycarbonate, UL94 V-0/DIN 4102 B1.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 2 x angular extrusions with air regulation opening.
- 1 x separator strip for L 300/600/800, 3 x separator strips for L 2400.
- 1 x top cover plate for L 300/600/800, 3 x top cover plates for L 2400.
- 2 x angular extrusion plates.
- 1 x Mounting kit.

How supplied

- In sets.

Important Note

When using Vertiv Knürr DCM® racks, please also order corresponding adjustment plates.

Note

Please also order correct number of SensorBOXes for the recirculated air cooling devices' control system.

L	AW	Order No.	UP
300	1200	03.029.120.X	1 set
600	1200	03.029.123.X	1 set
800	1200	03.029.126.X	1 set
2400	1200	03.029.129.X	1 set
300	1500	03.029.121.X	1 set
600	1500	03.029.124.X	1 set
800	1500	03.029.127.X	1 set
2400	1500	03.029.130.X	1 set
300	1800	03.029.122.X	1 set
600	1800	03.029.125.X	1 set
800	1800	03.029.128.X	1 set
2400	1800	03.029.131.X	1 set



CAC20011

Vertiv™ SmartAisle™ End Separator Strip

Description

- Used in cold aisle containment for aisle widths: 1200 / 1500 / 1800 mm (\pm 50 mm).
- Quick and easy mounting.
- For connecting the door component or front panel.

Material

- Sheet steel.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

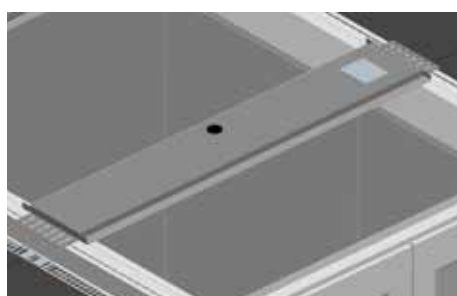
Scope of delivery

- 2 x end separator strips.
- 1 x Mounting kit.

How supplied

- Single items.

AW	Order No.	UP
1200	03.029.010.X	1 pair
1500	03.029.011.X	1 pair
1800	03.029.012.X	1 pair



CAC20012

Vertiv SmartAisle Separator Strip for Aisle Fire Extinguisher for Vertiv SmartAisle Top Cover Plate

Description

- For gas extinguisher in cold aisle.
- Rubber sleeve for covering piping, and/or the nozzles in the cold aisle.
- Screw fitting for securing the piping to the cold-aisle containment.
- Equipped with SensorBOX for energy-efficient operation of the recirculated air cooling devices as well as to prevent hot spots.

Material

- Sheet steel.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x separator strip for aisle fire extinguisher.
- 1 x Mounting kit.

How supplied

- In sets.

L	AW	Order No.	UP
200	1200	03.029.115.X	1 set
200	1500	03.029.116.X	1 set
200	1800	03.029.117.X	1 set

Dimensions in mm:				Conversion:	
W = Width	h = Installation height	U = Standard rack unit	kg = Weight	1 mm	= 0.03937 inch
H = Height	d = Insertion depth	(1 U = 44.45 mm)		1 kg	= 2.2046 pounds
D = Depth	L = Length	UP = Packaging unit			



CAC00NEU

Vertiv™ SmartAisle™ Sliding-door Wall-mount Prepared for Automatic Door Closers

Description

- For a cold aisle containment between rack row and wall.
- For an aisle width of 900 to 1200 mm (\pm 50 mm).
- Quick and easy mounting.
- Suitable for MIR® and DCM® racks and most other brands.

Clear door opening

- Width: 860 mm (mechanical door closer); 820 mm (electrical door closer).
- Height: 2080 mm.

Material

- Door components: sheet steel.
- Observation window: single safety-glass panel.
- Brush strips: polyamide (UL94 HF-1).

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x frame.
- 2 x doors.
- 2 x floor guides.
- 1 x Covers.
- 1 x Sealing material.
- 1 x Mounting kit.

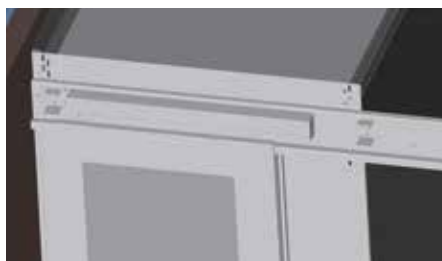
How supplied

- In sets.

Note

Please order the requisite closers (electric or mechanical).

H	AW	Order No.	UP
2000-2200	900-1200	03.029.190.X	1 set



CAC00NEU

Electric Sliding-door Closer Wall-mount

Description

- Compatible with Vertiv SmartAisle™ sliding door wall-mount.
- Increases energy efficiency as doors closes automatically.
- Opens with "push & go".
- Closes with "push & go" or automatically (0 to 30 seconds).
- Opener/closer contact for control (e.g. fire alarm system).

Material

- Sheet steel.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x electric drive.
- 1 x cover.
- 1 x Mounting brackets.
- 1 x Mounting kit.

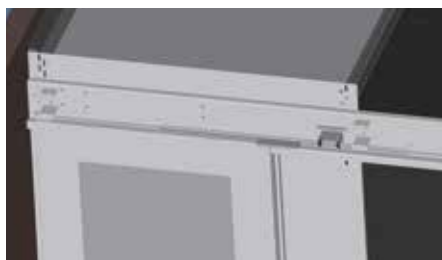
Technical data

- Power supply: 230 V / 50 - 60 Hz.
- Opening speed: 0.4 m/s.
- Closing speed: 0.2 m/s.
- Automatic closing time, adjustable: 0 to 30 s.
- Force: 30 N.

How supplied

- Single items.

Order No.	UP
03.029.192.X	1 set



CAC00NEU

Mechanical Sliding-door Closer Wall-mount

Description

- Suitable for Vertiv SmartAisle™ sliding door wall-mount.
- Increases energy efficiency as doors open and close automatically.
- Stop function when open.

Material

- Sheet steel.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 2 x sets of gas pressure springs.
- 1 x cover.
- 1 x Mounting brackets.
- 1 x Mounting kit.

Technical data

- Force: 20 N.

How supplied

- Single items.

Order No.	UP
03.029.193.X	1 set



CAC00NEU

Vertiv™ SmartAisle™ Top Cover Plate Wall-mount

Description

- Used in cold aisle containment for aisle width 1200 mm (± 50 mm).
- Quick and easy mounting.
- Suitable for MIR® and DCM® racks and most other brands.
- With rubber sleeves for cable routing.
- Top cover plate with low fire load and smoke generation (optionally with compound safety glass).
- Top cover plate(s) can be removed quickly and easily.
- Equipped with SensorBOX for energy-efficient operation of the recirculated air cooling devices and for preventing hot spots.

Clear aisle height

- Rack height 2000 mm: 2150 mm.
- Rack height 2200 mm: 2350 mm.

Material

- Angular extrusion, cross brace: sheet steel.
- Top cover plate: polycarbonate, UL94 V-0/DIN 4102 B1.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 2 x angular extrusions with air regulation opening.
- 1 x separator strip for W 300/600/800, 3 x separator strips for L 2400.
- 1 x top cover plate for W 300/600/800, 3 x top cover plates for L 2400.
- 2 x angular extrusion plates.
- 1 x Mounting kit.

How supplied

- In sets.

Important Note

When using Knürr DCM® or MIR® 2 racks, please also order corresponding adjustment plates.

Note

Please also order correct number of Sensor-BOXes for the recirculated air cooling devices control system.

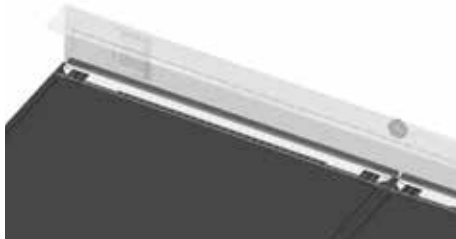
L	AW	Order No.	UP
300	1200	03.029.195.X	1 set
600	1200	03.029.196.X	1 set
800	1200	03.029.197.X	1 set
2400	1200	03.029.198.X	1 set



CAC20013



CAC20014



CAC20015

Vertiv™ SmartAisle™ DCM® Adjustment Shim used with Vertiv Knürr DCM® Racks

Description

- Spacer between DCM® rack and cold aisle containment.

Material

- Sheet steel.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

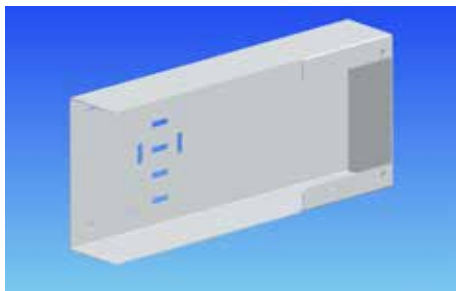
Scope of delivery

- 1 x adjustment shim.

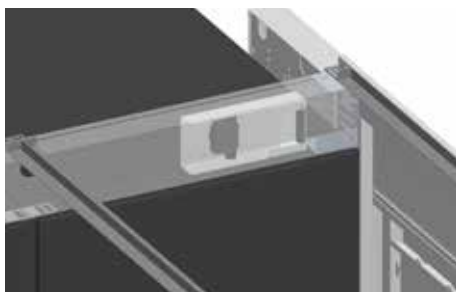
How supplied

- In sets.

W / L	For rack type	Order No.	UP
300	DCM®	03.029.134.X	1 set
600	DCM®	03.029.135.X	1 set
800	DCM®	03.029.137.X	1 set
1000	DCM®	03.029.139.X	1 set



CAC20016



CAC20017

Vertiv SmartAisle SensorBOX for SmartAisle™ Top Cover Plates

Description

- Suitable for air regulation opening of the top cover plates.
- As per patented control-system principle designed for energy-efficient operation of the cooling system.
- Prepared for Liebert® temperature sensor.
- Compatible with a variety of sensors.

Material

- Sheet steel.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x SensorBOX.
- 1 x Mounting kit.

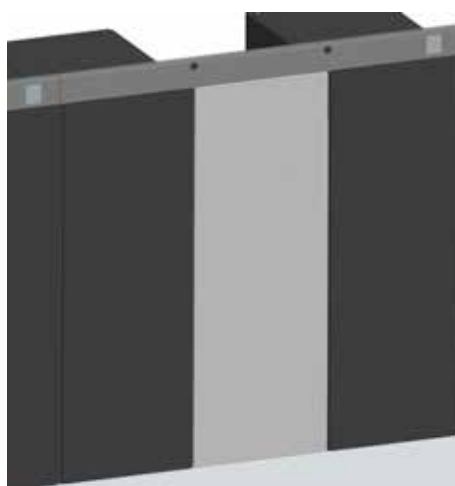
How supplied

- In sets.

Order No.	UP
03.029.132.X	1 set



CAC20018



CAC20019

Vertiv™ SmartAisle™ Filler Panel

Description

- For sealing off the compartments without racks in the suite.
- Quick and easy mounting.
- Variable height; can be used for total rack heights of 1990 to 2220 mm.
- Several filler panels can be set up in a row.

Material

- Sheet steel.

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x filler panel (two parts).
- 1 x Mounting kit.

How supplied

- In sets.

W / L	H	Order No.	UP
300	2000 / 2200	03.029.055.X	1 set
600	2000 / 2200	03.029.056.X	1 set
800	2000 / 2200	03.029.058.X	1 set

Dimensions in mm:				Conversion:
W = Width	h = Installation height	U = Standard rack unit	kg = Weight	1 mm = 0.03937 inch
H = Height	d = Insertion depth	(1 U = 44.45 mm)		1 kg = 2.2046 pounds
D = Depth	L = Length	UP = Packaging unit		



DCM20057

Vertiv™ SmartAisle™ Height Trim

- For adjusting the separation of the cold and hot areas in smaller racks.

Material

- Sheet steel.

Finish

- Final digit of order number .1:
powder-coated, RAL 7035 light-grey.
- Final digit of order number .8:
powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x height trim.
- 1 x Mounting kit.

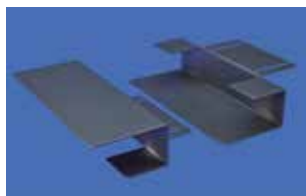
How supplied

- In sets.

Note

Where there are several adjacent height panels, please request the corresponding angular extrusion plates.

W	H	For rack type	Order No.	UP
300	221	DCM®	03.029.140.X	1 set
600	221	DCM®	03.029.141.X	1 set
600	200	MIR®	03.029.051.X	1 set
800	221	DCM®	03.029.143.X	1 set
800	200	MIR®	03.029.052.X	1 set
1000	221	DCM®	03.029.145.X	1 set



DCM20131

Vertiv SmartAisle Protective Brackets for Top Cover Plate

- Prevents Plexiglas panels from lifting up when there is excess pressure.
- Enables safe pressure equalization in the event of a malfunction or while a fire is being extinguished.

Material

- Sheet steel.

Finish

- Final digit of order number .1:
powder-coated, RAL 7035 light-grey.
- Final digit of order number .8:
powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x pair of protective brackets.
- 1 x Mounting kit.

How supplied

- In sets.

Order No.	UP
03.029.041.X	1 set



LUF20336

Vertiv SmartAisle Sealing Set for 4.8 meter Aisle Length

- Suitable for installation in MIR® rack.
- For sealing the leveling area between the floor and the rack.
- For sealing MIR® rack suites without side panels.

Material / Color

- Foam element: PUR ether UL94 HF-1, black.
- Cover extrusion: PVC extruder extrusion, black.

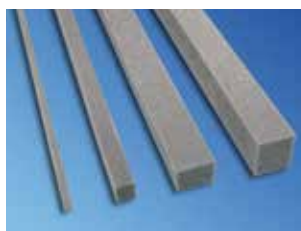
Scope of delivery

- 10 meters of foam 40 x 25 mm.
- 31 meters cover extrusion.

How supplied

- In sets.

W	For rack type	Order No.	UP
4800	MIR®	03.029.040.9	1 set



DCM20047

Vertiv SmartAisle Sealing Set for 4.8 meter Aisle Length

- Suitable for sealing gaps (e. g. in the leveling area between floor and rack, between racks, etc.).

Material / Color

- PUR ether (UL94 HF-1), black.

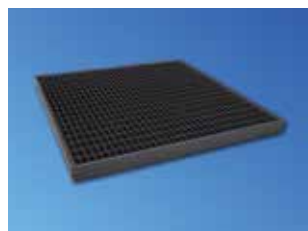
Scope of delivery

- 5 x 2 meters of foam.

How supplied

- In sets.

Size	Order No.	UP
40 x 40 (adhesive surface) mm	03.029.042.9	1 set
20 x 20 (adhesive surface) mm	03.029.043.9	1 set
5 x 10 (adhesive surface) mm	03.029.044.9	1 set
25 x 40 (adhesive surface) mm	03.029.045.9	1 set



DSC00318

Vertiv™ SmartAisle™ Open Mesh Flooring Plate for Raised Floors

- Used in raised floors.
- Can be used with high heat loads and high cooling-air requirements per rack.
- For energy-efficient operation of the recirculated air cooling devices.
- Stiffener distance 33 x 16 mm.

Material

- Steel, zinc-passivated.

Finish

- Final digit of order number .1:
powder-coated, RAL 7035 light-grey.
- Final digit of order number .8:
powder-coated, RAL 7021 dark-grey.

Standards

- Produced as per RAL-GZ 638.
- Load capacity as per DIN EN 12825
- On supports: class 1A, deflection under instantaneous working load (2 kN) and 2C (3kN); measured at the center of plate.
- On supports and control-room profiles: deflection under instantaneous working load 2A (3kN).

Scope of delivery

- 1 x open mesh flooring plate for raised floor.

Technical data

- Size 598 x 598 x 40 mm (W x L x H).
- Free cross-section: 77%.
- Max. surface load 50,000 N/m² with even distribution;
- Max. point load (on surface 200 x 200 mm) 4,500 N.

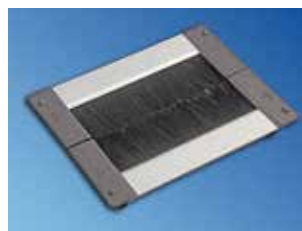
How supplied

- Single items.

Note

- Suitable for raised floors with 40 mm panel heights.

Order No.	UP
03.029.090.X	1 unit



LUF20334

Vertiv SmartAisle Raised Floor Air Barrier for Cable Entry

- For cable entry from the raised floor.
- Lowered into raised floor, or can be mounted on top.
- Two-row tight brushes for pressure-resistant cold-hot separation.
- For new cutouts and as add-on to existing cutouts.
- Two-piece – easy extend and retrofit option.
- The length can easily be shortened on-site (metal saw).
- Also suitable for cabling on the rack wall (U-shape, two pieces).
- Slot-in – and additional threaded connection.

Dimensions

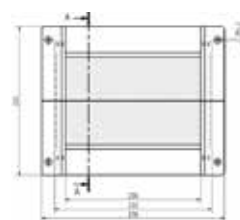
- 03.028.211.9:
 - External dimension (270 mm x 220 mm).
 - Usable cable entry (200 mm x 126 mm).
 - Raised floor cutout (240 mm x 180 mm).
- 03.028.212.9:
 - External dimension (600 mm x 220 mm).
 - Usable cable entry (530 mm x 126 mm).
 - Raised floor cutout (570 mm x 180 mm).

Scope of delivery

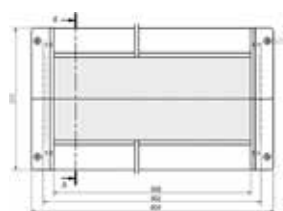
- 1 x pair of raised floor air barriers.
- 1 x Mounting kit.

How supplied

- In sets.



LUF20301



LUF20302

W	H	for type	Order No.	UP
270	220	Length, 270 mm	03.028.211.9	1 set
600	220	Length, 600 mm	03.028.212.9	1 set

Dimensions in mm:				Conversion:
W = Width	h = Installation height	U = Standard rack unit	kg = Weight	1 mm = 0.03937 inch
H = Height	d = Insertion depth	(1 U = 44.45 mm)		1 kg = 2.2046 pounds
D = Depth	L = Length	UP = Packaging unit		

Customized Vertiv™ SmartAisle™ Containment

Customized – Retrofitting Solution from Vertiv™

Features

- Precision fit on racks and rack rows.
- Suitable for retrofitting heterogeneous data centers.
- Combined with standard Vertiv SmartAisle™.

Data center structures are often the result of ongoing changes and modifications spanning a number of years.

The racks have different dimensions and they are not always positioned in a line. Knürr offers this solution based on a profile construction that can be made on site to correspond to the precise dimensions of a given data center.

With the customized solution, the dimensions are measured on site and the profiles and panels for the containment are cut and assembled to meet precise requirements. The panels are normally cut outside the data center in a designated area.

If possible, the customized elements are combined with standard components. As a rule, standard sliding or hinged doors are used. The standard top cover plate is generally used, thus, customized elements are only used to fill the gaps between the racks.



Free-Standing Vertiv™ SmartAisle™ Containment

Free-Standing – Vertiv's Special Solution

Features

- Can be flexibly adjusted to racks with non-standard dimensions.
- For racks and applications that are exchanged at intervals.
- Combined with standard Vertiv SmartAisle™.

Free-Standing System

In many data centers, so-called "free-standing systems" are installed in addition to the server racks. These often non-standard racks are regularly exchanged at defined intervals (usually one to three years).

Free-standing systems may include storage cabinets, cluster applications (e.g. IBM, SUN) or server racks (e.g. IBM, HP, SUN, etc.). There are a number of reasons for delivering a complete package including the racks. For storage applications, one of the main reasons is product liability. Cluster applications are usually leased and with server applications, the reasons are often marketing-related.

The challenge facing the SmartAisle™ for free-standing systems is to construct a flexible cold aisle containment, allowing a modular and fast exchange of these free-standing systems.

The free-standing cold aisle containment solution is based on standard Vertiv SmartAisle™ products and used in combination with these. The panels for the free-standing solution can be customized in both dimensions (height and width) according to the rack dimensions.



Vertiv™ SmartAisle™ Containment SwitchTubes

Switch Tubes – Switch Cooling from Vertiv™

Switches have special requirements.

Cooling/ventilation

- Mostly lateral air flow (from right to left, from left to right, from left and right toward the rear, including many other directions)
 - switches draw in warm air.
- Power requirements for cooling are often high (up to over 10 kW per switch).

Max. permitted input air temperature

- Max. permitted input air temperature is approx. 37° to 40°C
 - Probably higher inlet temperatures in efficient cold/warm separation environment.
 - High energy consumption for cooling.

Cabling

- Large cable volumes.
- Fan units free from cabling; repair work can be performed during operation.
- Air flow should have be free of cables.

Mechanics

- Various heights (1 U to approx. 24 U).
- Various depths, where air can be drawn in from different areas.

Vertiv offers a large range of switch tubes for the most common switch types.

Features

- No hot spots.
- Suitable airflow routing.
- Utilized in energy-efficient data center.

Cooling switches

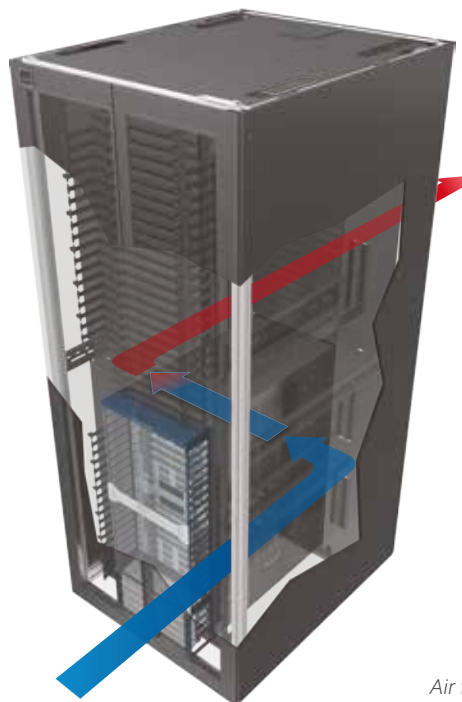
For cooling purposes, servers draw in cold air from the front and blow heated air out at the rear. By contrast, switches mainly draw the cold air in from the side and blow air out either laterally or at the rear. Since cooling problems arise in racks equipped with consistent hot/cold separation, Special airflow systems are required for switch applications to ensure reliability and energy efficiency.

The Vertiv SmartAisle switch tube is a flexible and safe add-on to the complete SmartAisle program. Various standard products are available for the respective switch types.

SwitchTubes – controlled switch cooling

Servers are usually cooled from the front to the rear, in line with modern and energy-efficient data center requirements. However, cooling direction for switches most often occurs from the side. In this application, the switches draw the cooling air out of the warm area.

The SwitchTube provides air for the switch from the cold aisle, where heated air is directed into the warm aisle..



Air flow in switch rack for switches equipped with lateral cooling.

Vertiv™ SmartAisle™ 19" SwitchTube

Description

- For cooling a core switch from the cold aisle.
- Can be used with or without a raised floor.
- Provides energy-efficient cooling for laterally cooled switches.
- Cooling air drawn in from cold aisle (ideally with containment).
- Suitable for both Knürr MIR® and DCM® racks; width of rack 800 mm.
- Space requirement: 3 or 6 U of the 19" installation space.
- Suitable for a number of switch heights.
- Installation height of switches in rack can be adjusted.
- Perforated front panel to the air intake units prevents the exhaust of paper, etc. in the tube.
- Note: cold/warm separation in rack is required.

Material

- Tube: sheet steel.
- High-density foam: PUR ether foam (UL94 HF-1).

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 2 x air intake units incl. perforated front panel (for 12 – 21 U models)
- 1 x air intake unit incl. perforated front panel (for 7 – 12 U / 4 – 6 U models).
- 1 x adjustable depth lateral air duct.
- 1 x High-density foam.
- 1 x Mounting kit.

How supplied

- In sets.

Important Note

Suitable for cooling max. 2-7 kW thermal load (at $\Delta T = 13\text{ K}$) per switch tube (see table on the next page).

Important Note

With many switches, part of the front air-intake perforation is covered (as these are generally located near the front, directly behind the front 19" extrusion).

Important Note

May not be suitable for switches with different cooling directions.

Note

Retrofitting may not be applied due to cables and other accessories.

W _{Rack}	Application	For rack type	Order No.	UP
800	Core switch 12 - 21 U	MIR®, DCM®	03.029.217.X	1 set
800	Core switch 12 - 21 U	MIR®, DCM®	03.029.218.X	1 set
800	Core switch 7 - 12 U	MIR®, DCM®	03.029.213.X	1 set
800	Core switch 7 - 12 U	MIR®, DCM®	03.029.215.X	1 set
800	Core switch 4 - 6 U	MIR®, DCM®	03.029.214.X	1 set
800	Core switch 7-12U	MIR®, DCM®	03.029.219.X	1 set



LUF20360

03.029.217.X



LUF20379

03.029.217.X



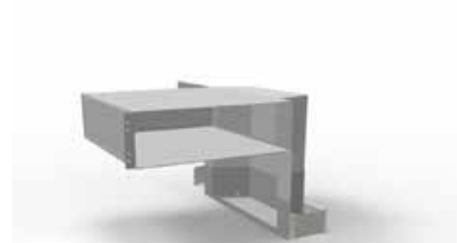
LUF20358

03.029.213.X



LUF20377

03.029.215.X



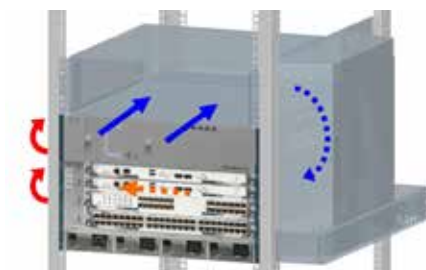
LUF20359

03.029.214.X



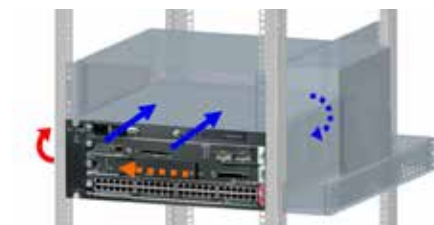
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03.029.213.X



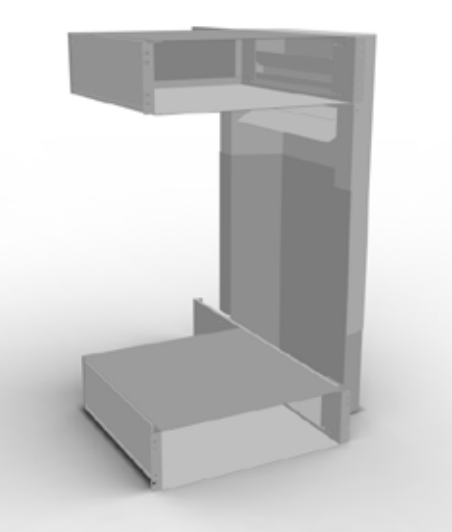
LUF20378

03.029.215.X



LUF20376

03.029.214.X



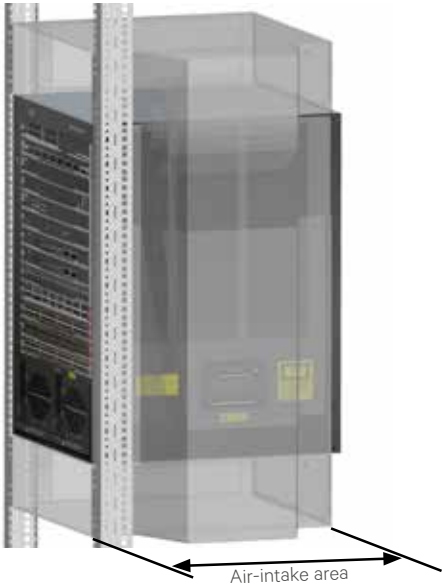
LUF20354

03.029.218.X



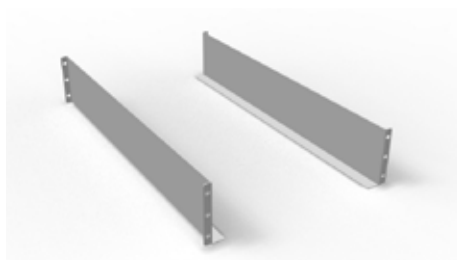
LUF20380

03.029.218.X



Item number	Switch height [U]	Max. cooling	Max. air-intake area depth in mm (Distance to 19" level)	Compatible with
03.029.217.X	12-21	approx. 7 kW ($\Delta T = 13\text{ K}$) per switch tube	460	CISCO Catalyst 6506(-E), 6509(-E), 6513, MDS 9509 Director
03.029.218.X	12-21	approx. 7 kW ($\Delta T = 13\text{ K}$) per switch tube	600	CISCO NEXUS 7009
03.029.213.X	7-12	approx. 2 kW ($\Delta T = 13\text{ K}$) per switch tube	320	CISCO Catalyst 4503(-E), 4506(-E), 4507R(-E), 4510R(-E)
03.029.215.X	7-12	approx. 4 kW ($\Delta T = 13\text{ K}$) per switch tube	600	Cisco Nexus 7004
03.029.214.X	4-6	approx. 4 kW ($\Delta T = 13\text{ K}$) per switch tube	550	CISCO Catalyst 6503(-E), 6504(-E)
03.029.219.X	7-12	approx. 4 kW ($\Delta T = 13\text{ K}$) per switch tube	460	Cisco CATALYST 6807-XL, Enterasys S4

Dimensions in mm:				Conversion:
W = Width	h = Installation height	U = Standard rack unit	kg = Weight	1 mm = 0.03937 inch
H = Height	d = Insertion depth	(1 U = 44.45 mm)		1 kg = 2.2046 pounds
D = Depth	L = Length	UP = Packaging unit		



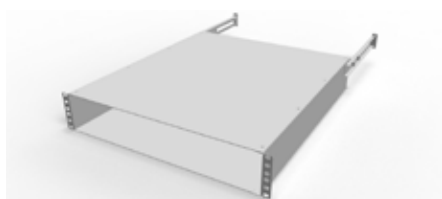
LUF20364



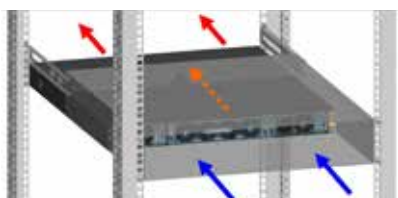
LUF20365



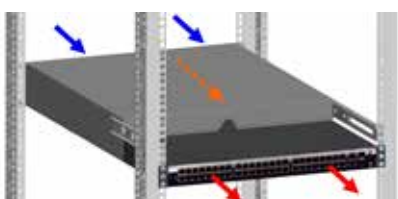
LUF20366



LUF20372



LUF20373



LUF20374

Chassis Runner Tube T740

Description

- For supporting switches during installation in rack.
- Supports weight of switches during installation and fitting in rack.
- Can be used with SmartAisle™ 19" switch tubes 12 - 21 U.
- Suitable for insertion depth of 740 mm.
- Suitable for all 19" extrusions.
- Suitable for CISCO Catalyst 6506(-E), MDS 9509 Director.

Material / Finish

- Sheet steel, 2.0 mm, zinc passivated.

Scope of delivery

- 2 x chassis runners.
- 1 x Mounting kit.

How supplied

- In pairs.

w	U	D _{Rack}	For insertion depth	Order No.	UP
130	3	from 900	740	03.029.230.7	1 pair

Vertiv™ SmartAisle™ SwitchTube Back-to-front for Switches with back-to-front Cooling

Description

- For 1 U switches with back-to-front cooling.
- Extractable – can be used for different switch depths.
- Suitable for various insertion depths.
- Compatible with both MIR® and DCM® racks.
- Suitable for Enterasys SSA 180.

- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x air intake unit.
- 2 x rear support brackets.
- 1 x High-density foam.
- 1 x Edge protector.
- 1 x Mounting kit.

How supplied

- In sets.

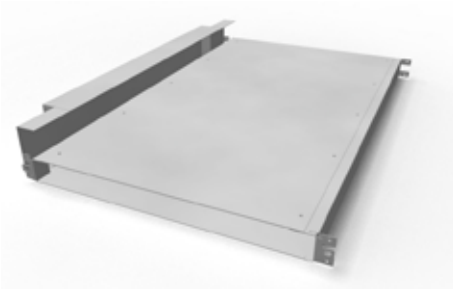
Material

- Tube: sheet steel.
- High-density foam: PUR ether foam (UL94 HF-1).

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.

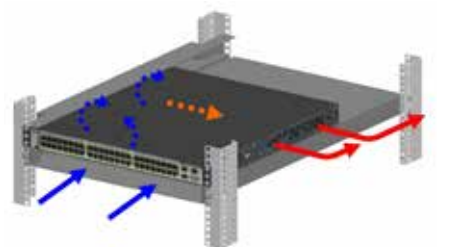
w	H	U	For insertion depth	Model	Order No.	UP
450	875	2	600–750	for Switches with 1U height	03.029.212.X	1 unit
450	132	3	600–750	for Switches with 2U height	03.029.207.X	1 unit



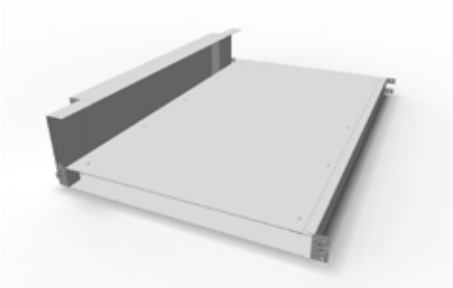
LUF20356 03.029.210.X



LUF20368 03.029.210.X



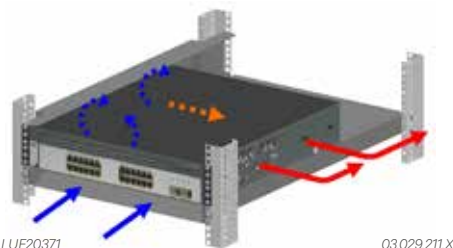
LUF20369 03.029.210.X



LUF20357 03.029.211.X



LUF20370 03.029.211.X



LUF20371 03.029.211.X

Vertiv™ SmartAisle™ 19" SwitchTube for Switch Heights 1 U /2 U /3 U

- Description**

 - For 1 U, 2 U or 3 U switches with lateral cooling.
 - Can be used in racks with front-to-back cooling.
 - Extractable – can be used for different switch depths.
 - Front or rear installation possible.
 - Suitable for different cooling directions (from left to right, from right to left or from right and left toward the rear).
 - Suitable for different insertion depths from 560 to 755 mm.
 - Compatible with both MIR® and DCM® server extrusions.
 - Suitable for rack widths of 600, 700, 800 and 1000.
 - Suitable for CISCO Catalyst 3750, Juniper EX3200, Juniper EX4200.
- Material**

 - Tube: sheet steel.
 - High-density foam: PUR ether foam (UL94 HF-1).
- Finish**

 - Final digit of order number .1: powder-coated, RAL 7035 light-grey.
 - Final digit of order number .8: powder-coated, RAL 7021 dark-grey.
- Scope of delivery**

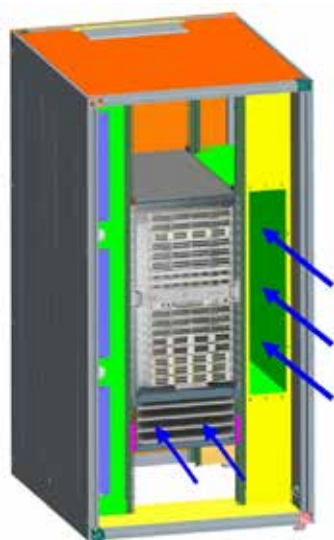
 - 1 x air intake unit.
 - 2 x lateral air ducts.
 - 1 x side cover.
 - 1 x High-density foam.
 - 1 x Mounting kit.
- How supplied**

 - In sets.
- Note**

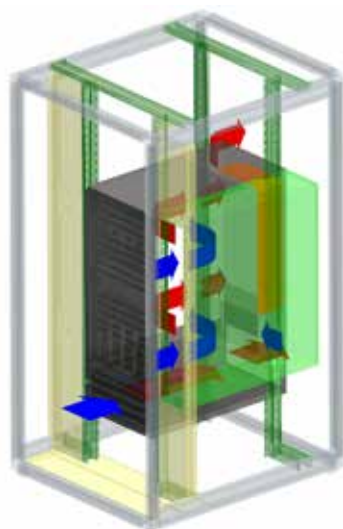
Retrofitting may not be applied due to cables and other accessories.

W	H	U	For insertion depth	Model	Order No.	UP
440	88.1	2	560 - 755	for 1 U switch	03.029.210.X	1 unit
440	132.5	3	560 - 755	for 2 U switch	03.029.211.X	1 unit
440	177	4	560 - 755	for 3 U switch	03.029.208.X	1 unit

Vertiv™ SmartAisle™ SwitchRack for Cisco Nexus 7018



LUF20362



LUF20363

Description

- For installing a CISCO Nexus 7018 at a height of 7 U to 31 U.
- Based on DCM® rack.
- Rack width 1000 mm as per CISCO requirements for adequate cooling air.
- Prevents hot-spots (air recirculation).
- 200 mm clearance space for orderly cabling.
- Includes cold/warm plates for reliable and energy-efficient operation.
- Cold air drawn in from cold aisle.

Material / Finish

- Basic rack, extruded aluminum, polished.
- Corner piece, die-cast aluminum, polished.
- Doors, sheet steel, powder-coated texture.
- Covers, zinc-passivated sheet steel, powder-coated texture.
- PUR ether foam (UL94 HF-1).

Color

- Final digit of order number .1: visible surface of covers RAL 7035 light-grey.
- Final digit of order number .8: visible surfaces of the covers RAL 7021 dark-grey.

Scope of delivery

- 1 x basic frame.
- 4 x 19" server extrusions, sheet steel incl. U marking.
- 2 x side panels with quick connectors.
- 1 x top cover with cable entry (three-piece sliding plates can also be opened completely).
- 1 x front door, double, perforated, with handle and mounting for cylinder lock.
- 1 x rear door, double, perforated, sheet steel, with handle and mounting for cylinder lock.
- 1 x complete air separation unit (left plate with 3 x 2 U 19" cutouts, right plate with air duct).
- 4 x leveling feet.
- 1 x complete grounding set (VDE 0100).

How supplied

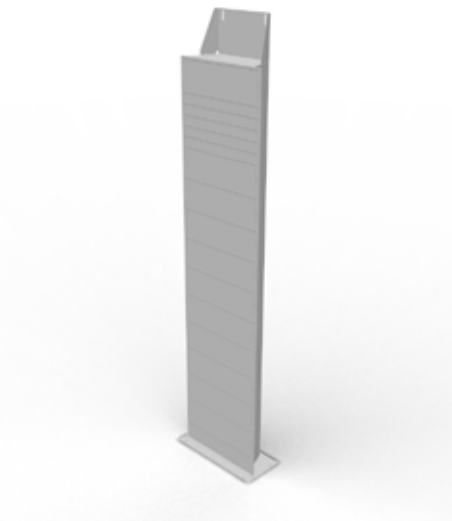
- Mounted.

Note

Also order mounting adapter for 19" server extrusion to mount Knürr accessories (01.147.640.9).

W	H	D	U	Recess depth	Insertion depth	Model	Order No.	UP
1000	2000	1200	42	200	740	DCM®	03.029.222.X	1 unit

Dimensions in mm:				Conversion:	
W = Width	h = Installation height	U = Standard rack unit	kg = Weight	1 mm	= 0.03937 inch
H = Height	d = Insertion depth	(1 U = 44.45 mm)		1 kg	= 2.2046 pounds
D = Depth	L = Length	UP = Packaging unit			



LUF20355



LUF20367

Vertiv™ SmartAisle™ Raised Floor SwitchTube

Description

- For cooling a core switch from the raised floor.
- Provides energy-efficient cooling for laterally cooled switches.
- Cold air drawn in from raised floor.
- Compatible with Vertiv Knürr® MIR® rack: width 800 mm (NOT for DCM® rack).
- Suitable for different switch heights.
- Installation height of switches in rack can be adjusted; tool-less blanking plates for covering areas outside of switches.
- Air-duct area: 420 cm2.
- Size of cutouts in raised floor (min./max.): 355/410 x 127/162 mm.
- Note: Cold/warm separation in rack is required.
- Note: for max. switch air-intake depth from 460 mm (distance to 19" level).
- Suitable for CISCO Catalyst 6509(-E), Catalyst 6513, Catalyst 6506(-E), MDS 9509 Director, HP ProCurve 8212.

Material

- Tube: sheet steel.
- High-density foam: PUR ether foam (UL94 HF-1).

Finish

- Final digit of order number .1: powder-coated, RAL 7035 light-grey.
- Final digit of order number .8: powder-coated, RAL 7021 dark-grey.

Scope of delivery

- 1 x air duct with blanking plates (1 U, 3 U).
- 1 x bottom plate.
- 1 x Sealing material.
- 1 x Mounting kit.

How supplied

- In sets.

Important Note

- Suitable for cooling max. 4 kW thermal load (at ΔT = 13 K) per switch tube.
- The tube covers part of the front air-intake perforation with many switch types (as these are generally located near the front, directly behind the front 19" extrusion).
- May not be suitable for switches with different cooling directions.
- The uppermost 3 U in the rack cannot be used for cooling.

Note

Retrofitting may not be applied due to cables and other accessories.

W	H	Item	For rack type	Order No.	UP
800	2000	Tube	MIR®	03.029.200.X	1 set
800	2200	Tube	MIR®	03.029.202.X	1 set

Dimensions in mm:				Conversion:	
W = Width	h = Installation height	U = Standard rack unit	kg = Weight	1 mm	= 0.03937 inch
H = Height	d = Insertion depth	(1 U = 44.45 mm)		1 kg	= 2.2046 pounds
D = Depth	L = Length	UP = Packaging unit			