

# CATALOGUE

HOUSING



POWER & CONNECTIVITY



MONITORING



MICRO DATA CENTRE



COOLING

STANDARD PRODUCT CATALOGUE



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# MINKELS: the **worldwide specialist**

in scalable and integrated data centre  
infrastructure solutions

## ABOUT MINKELS

Minkels is a knowledge-driven producer and worldwide supplier of high-quality solutions for data centre infrastructure. The Minkels brand is part of the product portfolio of Legrand, a publicly traded company (NYSE Euronext Paris: LR) with worldwide sales in the low voltage installation, data network and data centre markets. Legrand operates in more than 180 countries and achieved worldwide revenues of 5 billion euros in 2016.

Minkels products stand out for their innovativeness and flexibility. Customers can always be assured that they will get the very latest data centre technology: modular solutions that respond to evolving, customer specific business requirements.

### **OUR PROMISE**

Powered by experts!



## OUR CORE VALUES

All our products are future-proof by nature. We see that as a 'must', because the role of data centres is changing rapidly, driven by factors such as the cloud, the Internet of Things (IoT), Big Data and IT cost reduction. Minkels believes that modularity and complete integration are the key to a future-proof data centre. Only this makes offering the right degree of flexibility and efficiency possible. These are not just buzzwords for Minkels - it's something we really stand for. These are our core values:

- **Innovation and flexibility**

Minkels handles its development, production and sales in-house. Combined with the requisite knowledge and expertise which Minkels possesses, this ensures customers are always receiving the latest data centre technology.

- **From standard to customer specific**

With Minkels, you are always provided with a data centre solution that will suit you, whether it's a standard solution or a customer specific product.

- **Energy efficiency**

Legrand and Minkels value Corporate Social Responsibility (CSR) very highly. Minkels therefore aims to retain its leading position in energy-efficient solutions, allowing both the customer and the environment to benefit.

- **Modularity and integration**

Modularity and complete integration are the foundations for a flexible, efficient and future-proof data centre.

- **Global presence, local excellence**

Minkels aims for consistent quality and availability of its products worldwide, complemented by local service.



Solutions for your data  
centre or server room

# Powered by experts!

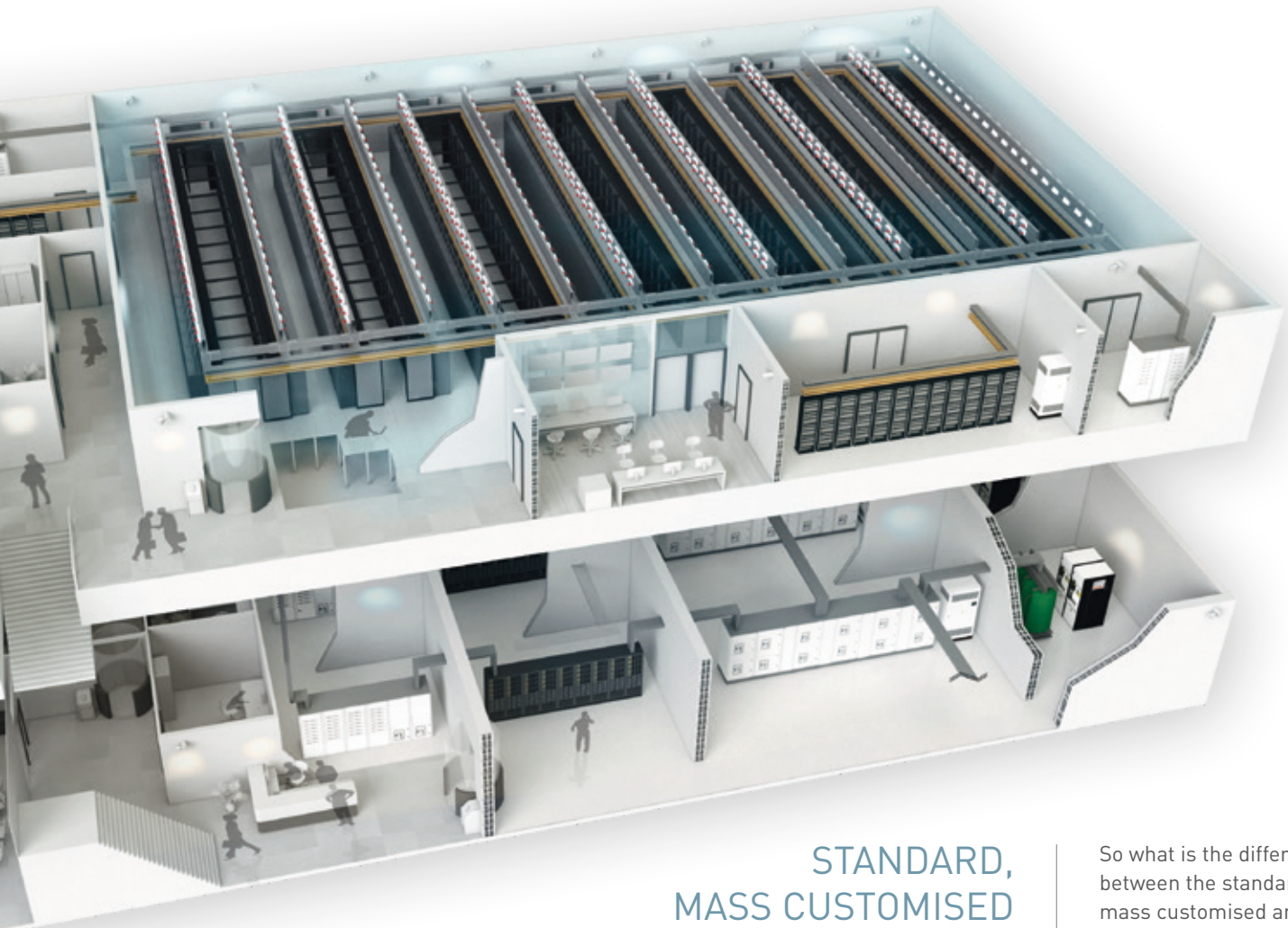
The emphasis of this catalogue is on our standard products. If you cannot find the products you are looking for and would like to know more about mass customisation or the customised products we can supply, we will be happy to help you. You can find the contact details on the back side of this catalogue.

Minkels is part of the publicly traded company Legrand (NYSE Euronext Paris: LR). Whereas Legrand focuses on building-related infrastructure, Minkels makes a distinction between:

- data centre and cloud infrastructure
- building-related IT infrastructure




With Minkels, you are always provided with a solution that will suit you, whether it's a standard solution or a customer specific product. The focus of this catalogue is on our standard solutions. These products are held in stock and can be delivered quickly. If you need more flexibility combined with short delivery times, taking a look at our Mass Customisation brochure could be the right option for you: ([minkels.com/downloads](http://minkels.com/downloads)). Or if you would like an entirely customised solution, our sales department will be glad to help.





## STANDARD, MASS CUSTOMISED OR CUSTOMER- SPECIFIC PRODUCTS?

So what is the difference between the standard, mass customised and customer specific products? Here is a brief overview:

	Standard	Mass customised	Customer specific
			
<b>Product-type</b>	Predefined products	Standard 'building blocks' can be put together in a extremely large number of combinations	Entirely customised: co-development between you and our engineers
<b>Logistics</b>	Most products can be delivered straight from stock	Optimum logistical process	Depending on your requirements (Based on business case)

You can download our documentation via:  
[www.minkels.com/downloads](http://www.minkels.com/downloads)



# MINKELS SERVICES

When it's about more  
than just the products



## Installation service

Minkels has extensive capabilities for pre-assembly. Accessories can for instance be fitted in our racks in advance, enabling you to save on the installation costs. Minkels can also install its integrated solutions for you on site. We are a manufacturer with an extensive network of service partners who can provide you with support during the purchasing process and the installation.



## Technical support

Minkels engineers are highly qualified data centre professionals. They will be happy to brainstorm with you to find the best conceivable solution.



## Initial use and training

Support from Minkels doesn't end with the delivery. Together with our partners, we facilitate commissioning and training of e.g. row-based cooling.





## Logistical services

Minkels can also offer you a range of logistical services such as worldwide transport and various stock control options.




## Customer service


Any questions?  
You can call us or send us an e-mail. We will be happy to help you! You can find the contact details on the back side of this catalogue.



## Online

Information available  
24 hours a day.

 [Minkels.com](http://www.minkels.com)

 [Youtube.com/c/minkelshq](https://www.youtube.com/c/minkelshq)

 [Twitter.com/Minkels\\_HQ](https://twitter.com/Minkels_HQ)

 [Facebook.com/Minkels](https://www.facebook.com/Minkels)

 [Linkedin.com/company/minkels](https://www.linkedin.com/company/minkels)

# Standard PRODUCT CATALOGUE

## WHAT WILL YOU FIND IN THIS STANDARD PRODUCT CATALOGUE?

The core values of modularity, flexibility and energy efficiency are reflected throughout our extensive standard product portfolio. This means you always benefit from the latest technology and you will see it integrated into our standard solutions almost instantly.



### 1. Housing

Minkels offers a wide range of preassembled server and network racks, with flexibility, sustainability and service as the keywords. The server and network racks are widely applicable and modular in structure.



### 2. Cooling

Cooling your data centre correctly can reduce your energy costs considerably. Aisle containment is the solution to the challenge that data centres have faced from the very start: how to optimise the cooling and energy efficiency through optimum separation of the warm and cold airflows.



### 3. Power & Connectivity

Power is an operationally critical component of any server room and any data centre. Even the slightest interruption to the power supply can have a huge impact. Our Power & Connectivity solutions make it possible to manage the risks of power outages. Minkels is not deviating from its policy; supplying energy-efficient data centre solutions. Together with Legrand and sister company Raritan, Minkels offers a product range fully adapted to the market demands, which will satisfy not only today, but also tomorrow's needs and demands.

## WANT TO KNOW MORE?

The emphasis of this catalogue is on our standard products. If you cannot find the products you are looking for and would like to know more about mass customisation or the customised products we can supply, we will be happy to help you. You can find the contact details on the back side of this catalogue.



### 4. Monitoring

Minkels monitoring systems are capable of monitoring the direct surroundings of your racks. The modular and efficient construction of the system makes it easy to check up on a single rack or an entire room.

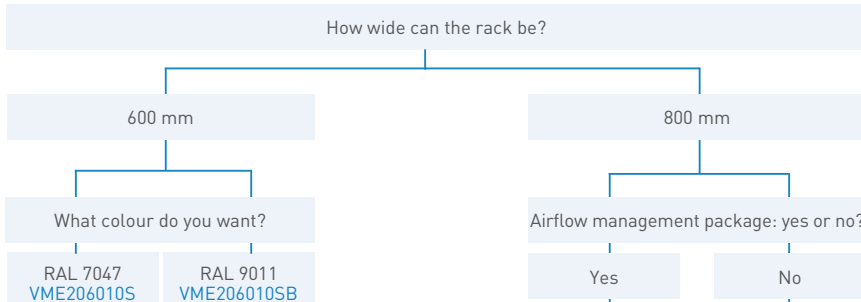


### 5. Micro data centre

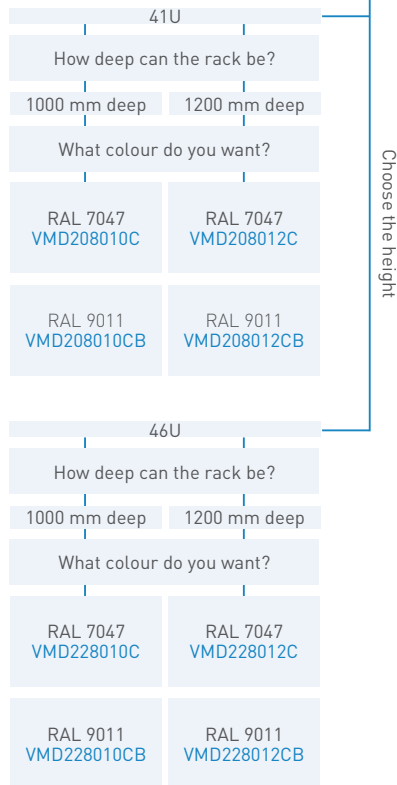
Minkels micro data centre solutions are all about making ordering easy. Simplicity combined with reliability, efficiency and cost-effectiveness. Complete, assembled solutions can be ordered using just a single item number! And all the solutions can of course be extended with a number of options and accessories.

# Preassembled SERVER AND NETWORK racks

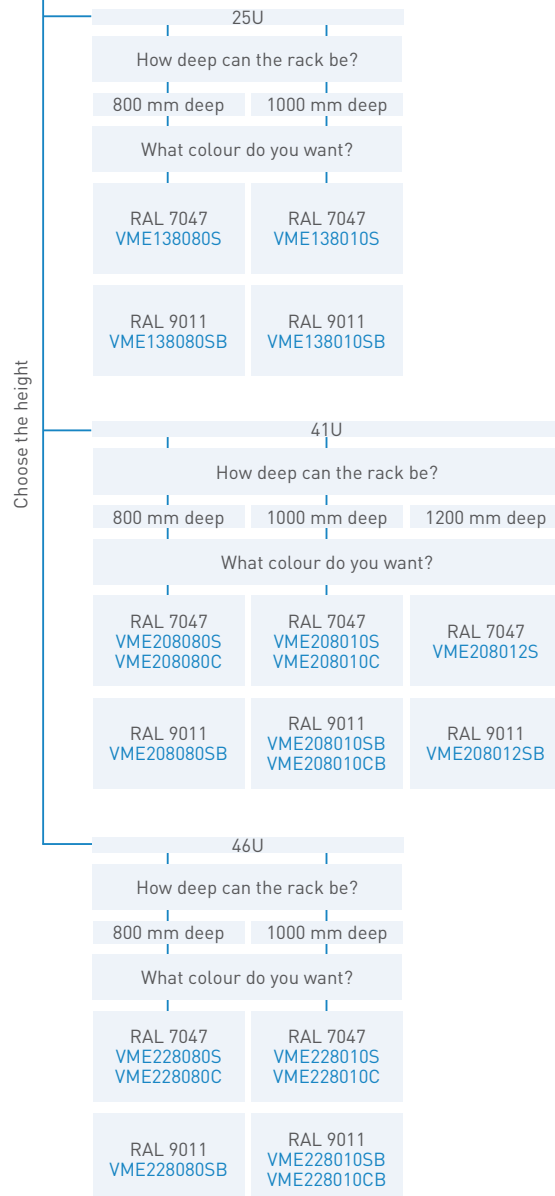
Use the flow diagram below to find the right rack!



You can find further specifications in the table on page 14. [Server and network racks, 600 mm wide](#)



You can find further specifications in the table on page 13. [Server and network racks, 800 mm wide with airflow management](#)



Minkels offers a wide range of server and network racks, with flexibility, sustainability and service as the keywords. The server and network racks are widely applicable and modular in structure. The Minkels range includes server and network racks that are 600 and 800 mm wide. The 600 mm-wide rack is a compact server rack that can take large loads but has a small footprint. The 800 mm-wide rack is exceptionally well suited for patching, network and server equipment with sufficient space for power and network cabling.

A distinction is made between stand-alone (S) and connecting racks (C). Stand-alone racks are delivered with (detachable) side panels. Connecting racks do not have side panels but have baying kits supplied instead.

You can find further specifications in the table on pages 14 and 15. [Server and network racks, 800 mm wide](#)



## 1. Housing 1.1 Server and network racks with airflow management pack



### AIRFLOW MANAGEMENT PACK

The airflow management pack consists of a vertical side skirt left and right sides attached to the front 19-inch profiles, this is to seal between the 19-inch and the cabinet frame post; and vertical side plates sealing the space between the side skirt and frame. Coupled with air seal plates top and bottom of the profiles, the airflow management pack seals the area surrounding the 19-inch space, ensuring the cold air flows only through the 19-inch equipment.



VMD208010C

VMD208010CB

### Server and network racks, 800 mm wide with airflow management pack

Minkels can provide server and network racks that are 800 mm wide with an airflow management package. These packages keep the loss of air to a minimum, which improves energy efficiency.



Connecting rack RAL 7047	VMD208010C	VMD208012C	VMD228010C	VMD228012C
Connecting rack RAL 9011	VMD208010CB	VMD208012CB	VMD228010CB	VMD228012CB
Height in U	41	41	46	46
Height in mm	2000	2000	2200	2200
Width in mm	800	800	800	800
Depth in mm	1000	1200	1000	1200
Front door	80% perforated	80% perforated	80% perforated	80% perforated
Rear door	80% perforated	80% perforated	80% perforated	80% perforated
Max. load (static)	1500 kg	1500 kg	1500 kg	1500 kg
Security	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock
Roof layout	3 cover plates and 1 cable entry brush set	3 cover plates and 1 cable entry brush set	3 cover plates and 1 cable entry brush set	3 cover plates and 1 cable entry brush set
19-inch profiles	4 pcs	4 pcs	4 pcs	4 pcs
Delivered separately	M5 20 cage nuts / M5 20 screws with finishing washer	M5 20 cage nuts / M5 20 screws with finishing washer	M5 20 cage nuts / M5 20 screws with finishing washer	M5 20 cage nuts / M5 20 screws with finishing washer

## 1. Housing 1.2 Server and network racks without airflow management pack

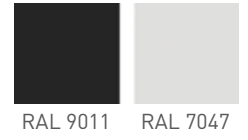


VME206010SB

VME206010S

### Server and network racks, 600 mm wide without airflow management pack

Two racks 600 mm-wide are available in the standard product range.



RAL 9011

RAL 7047

Stand-alone rack RAL 7047	VME206010S
Stand-alone rack RAL 9011	VME206010SB
Height in U	41
Height in mm	2000
Width in mm	600
Depth in mm	1000
Front door	80% perforated
Rear door	80% perforated
Max. load (static)	1500 kg
Security	Fix Easy 2-point swivel handle with EK-333 cylinder lock
Roof layout	2 cover plates and 1 cable entry brush set
19-inch profiles	4 pcs
Delivered separately	M5 20 cage nuts / M5 20 screws with finishing washer

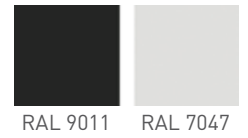


VME208080S

VME208010SB

### Server and network racks, 800 mm wide without airflow management pack

Server and network racks 800 mm wide without an airflow management pack are available in a number of standard variations.



RAL 9011

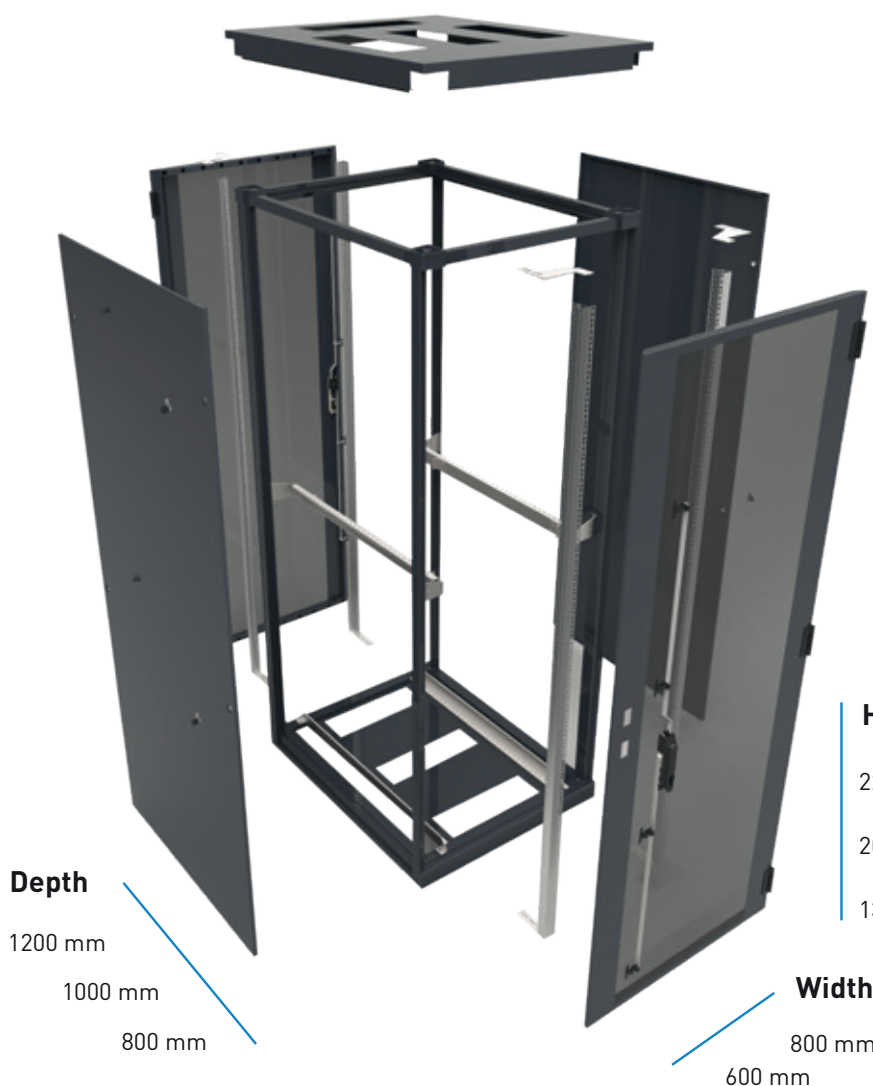
RAL 7047

Stand-alone rack RAL 7047	VME138080S	VME138010S	VME208080S
Stand-alone rack RAL 9011	VME138080SB	VME138010SB	VME208080SB
Connecting rack RAL 7047			VME208080C
Connecting rack RAL 9011			
Height in U	<b>25</b>	<b>25</b>	<b>41</b>
Height in mm	<b>1300</b>	<b>1300</b>	<b>2000</b>
Width in mm	800	800	800
Depth in mm	<b>800</b>	<b>1000</b>	<b>800</b>
Front door	Clear glass	80% perforated	Clear glass
Rear door	Metal	80% perforated	Metal
Max. load (static)	1500 kg	1500 kg	1500 kg
Security	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock
Roof layout	2 cover plates and 1 cable entry brush set	3 cover plates and 1 cable entry brush set	2 cover plates and 1 cable entry brush set
19-inch profiles	4 pcs	4 pcs	4 pcs
Delivered separately	M5 20 cage nuts / M5 20 screws with finishing washer	M5 20 cage nuts / M5 20 screws with finishing washer	M5 20 cage nuts / M5 20 screws with finishing washer

The 19-inch profiles are fitted as standard at 125 mm from the front and 740 mm apart.

For 800 mm deep racks, the rear 19" profiles are at 87.5 mm (the separation between them is in that case 587.5 mm rather than 740 mm).

**1. Housing** 1.2 Server and network racks without airflow management pack



The standard dimensions in which the server and network racks are available are shown on the left. If you require a rack with different dimensions, please take a look at our mass customisation brochure: [www.minkels.com/downloads](http://www.minkels.com/downloads).

If you would like to know what Minkels can do for you, please don't hesitate to contact us!

You can find the contact details on the back side of this catalogue.

**Height**

- 2200 mm / 46 HE
- 2000 mm / 41 HE
- 1300 mm / 25 HE

**Width**

- 800 mm
- 600 mm

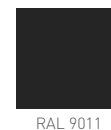
VME208010S	VME208012S	VME228080S	VME228010S
VME208010SB	VME208012SB	VME228080SB	VME228010SB
VME208010C		VME228080C	VME228010C
VME208010CB			VME228010CB
<b>41</b>	<b>41</b>	<b>46</b>	<b>46</b>
<b>2000</b>	<b>2000</b>	<b>2200</b>	<b>2200</b>
800	800	800	800
<b>1000</b>	<b>1200</b>	<b>800</b>	<b>1000</b>
80% perforated	80% perforated	Clear glass	80% perforated
80% perforated	80% perforated	Metal	80% perforated
1500 kg	1500 kg	1500 kg	1500 kg
Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock
3 cover plates and 1 cable entry brush set	3 cover plates and 1 cable entry brush set	2 cover plates and 1 cable entry brush set	3 cover plates and 1 cable entry brush set
4 pcs	4 pcs	4 pcs	4 pcs
M5 20 cage nuts / M5 20 screws with finishing washer	M5 20 cage nuts / M5 20 screws with finishing washer	M5 20 cage nuts / M5 20 screws with finishing washer	M5 20 cage nuts / M5 20 screws with finishing washer

## 1. Housing 1.3 Server and network racks 42U



### Server and network baying racks 42U RAL 9011 without airflow management pack

The 42U server and network baying racks are widely applicable and modular in structure. They are delivered in the color RAL 9011 (black), excluding side panels. The frame is aluminum and can be disassembled. The rack is equipped with 2 cable trays which are mounted left and right at the back of the rack. Vertical toolless mount PDUs can be placed on top of this. The cable trays are equipped with elongated holes for Velcro mounting (FDH1610, page 40) and mounting positions for plastic shunting eyes (MCM0014, page 40). Cage nuts can be used for mounting other accessories.



RAL 9011

Baying rack RAL 9011	VLE206010CB	VLE206012CB	VLE208010CB	VLE208012CB
Height in U	42	42	42	42
Height in mm	2000	2000	2000	2000
Width in mm	600	600	800	800
Depth in mm	1000	1200	1000	1200
Door front	80% perforated	80% perforated	80% perforated	80% perforated
Door back	80% perforated double back door	80% perforated double back door	80% perforated double back door	80% perforated double back door
Load capacity (static)	1500 kg	1500 kg	1500 kg	1500 kg
Security	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock
Roof layout	3 cut-aways with 2 cover plates left/right and 1 cable entry brush at the back	3 cut-aways with 2 cover plates left/right and 1 cable entry brush at the back	4 cut-aways with 3 cover plates left/middle/right and 1 cable entry brush at the back	4 cut-aways with 3 cover plates left/middle/right and 1 cable entry brush at the back
19-inch profiles	4 pcs	4 pcs	4 pcs	4 pcs
Accessories	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts
Delivered separately	M6 20 cage nuts / M6 20 screws with finishing washer	M6 20 cage nuts / M6 20 screws with finishing washer	M6 20 cage nuts / M6 20 screws with finishing washer	M6 20 cage nuts / M6 20 screws with finishing washer



### Server and network baying racks 42U RAL 9011 delivered as flatpack

Flatpack racks have the same configuration as the racks above. However, these racks, including side panels, are supplied as flatpack.



RAL 9011

Stand-alone rack RAL 9011	VLF206010CB	VLF206012CB	VLF208010CB	VLF208012CB
Height in U	42	42	42	42
Height in mm	2000	2000	2000	2000
Width in mm	600	600	800	800
Depth in mm	1000	1200	1000	1200
Door front	80% perforated	80% perforated	80% perforated	80% perforated
Door back	80% perforated double back door	80% perforated double back door	80% perforated double back door	80% perforated double back door
Load capacity (static)	1500 kg	1500 kg	1500 kg	1500 kg
Security	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock
Roof layout	3 cut-aways with 2 cover plates left/right and 1 cable entry brush at the back	3 cut-aways with 2 cover plates left/right and 1 cable entry brush at the back	4 cut-aways with 3 cover plates left/middle/right and 1 cable entry brush at the back	4 cut-aways with 3 cover plates left/middle/right and 1 cable entry brush at the back
19-inch profiles	4 pcs	4 pcs	4 pcs	4 pcs
Accessories	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts
Delivered separately	M6 20 cage nuts / M6 20 screws with finishing washer	M6 20 cage nuts / M6 20 screws with finishing washer	M6 20 cage nuts / M6 20 screws with finishing washer	M6 20 cage nuts / M6 20 screws with finishing washer



## 1. Housing 1.3 Server and network racks 42U



### Server and network baying racks 42U RAL 9011 with airflow management pack

These racks have the same specifications as the racks of the VLE-serie on page 16. The difference is that these racks are delivered with an airflow management pack. This pack reduces air loss to a minimum, resulting in better energy efficiency.



RAL 9011

Baying rack RAL 9011	VLD206010CB	VLD206012CB	VLD208010CB	VLD208012CB
Height in U	42	42	42	42
Height in mm	2000	2000	2000	2000
Width in mm	600	600	800	800
Depth in mm	1000	1200	1000	1200
Door front	80% perforated	80% perforated	80% perforated	80% perforated
Door back	80% perforated double back door	80% perforated double back door	80% perforated double back door	80% perforated double back door
Load capacity (static)	1500 kg	1500 kg	1500 kg	1500 kg
Security	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock
Roof layout	3 cut-aways with 2 cover plates left/right and 1 cable entry brush at the back	3 cut-aways with 2 cover plates left/right and 1 cable entry brush at the back	4 cut-aways with 3 cover plates left/middle/right and 1 cable entry brush at the back	4 cut-aways with 3 cover plates left/middle/right and 1 cable entry brush at the back
19-inch profiles	4 pcs	4 pcs	4 pcs	4 pcs
Accessories	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts	PDU cable tray (2x), possibility to mount FDH1610, MCM0014 and cage nuts
Delivered separately	M6 20 cage nuts / M6 20 screws with finishing washer	M6 20 cage nuts / M6 20 screws with finishing washer	M6 20 cage nuts / M6 20 screws with finishing washer	M6 20 cage nuts / M6 20 screws with finishing washer

### Set of side panels for 42U server and network baying racks

There are side panels available for the 42U server and network baying racks. The side panels can be detached quickly and easily using locking clips. The plinths, which must always be used in combination with the side panels, are also supplied.



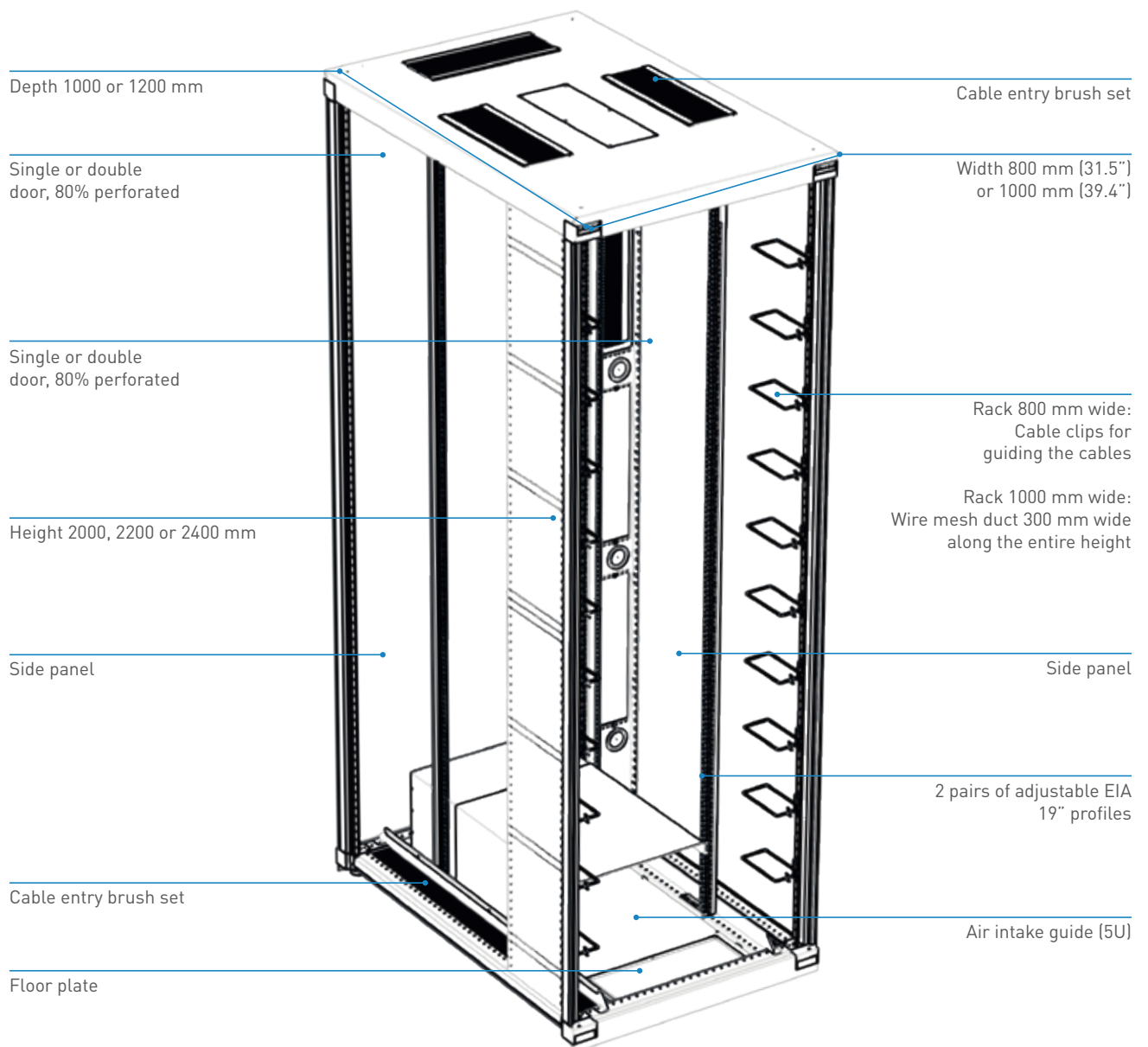
RAL 9011

Side panel	LSP1306B	LSP1406B
Colour	RAL 9011	RAL 9011
Height in U	42U	42U
Depth in mm	1000	1200

Delivery consists of: 2 panels, incl. plinths

# SWITCHING & ROUTING racks

Many pieces of switching and routing equipment require a different airflow that the customary 'front-to-back' cooling. If 'such a switch' is included in a corridor configuration, situations in which the equipment receives insufficient cold air, internal recirculation of the air occurs, and as a result one switch blows hot air into the next, must be avoided. In addition to the airflow/cooling, it is important to take account of the amount of cabling and the possibility of hot-swapping fans and power modules. To create enough space for the network cables and the airflow from right to left, Minkels has developed a specialised switching & routing rack.



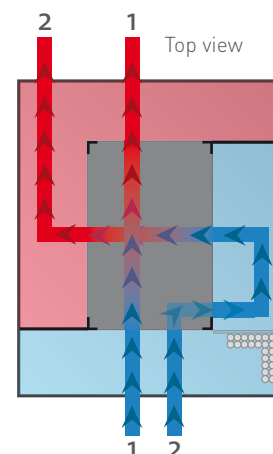
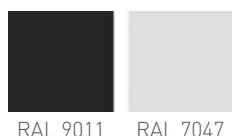
## 1. Housing 1.4 Switching & routing racks



MRS208010

### Switching & routing racks

Minkels switching & routing racks are ideal for housing powerful switching and routing equipment (e.g. the Cisco 6500 7000 series). The racks combine the best possible cooling performance with capacity for a large amount of network cabling.



RAL 7047 (800 mm wide)	MRS208010	MRS208012	MRS228010	MRS228012	MRS248010	MRS248012
RAL 9011 (800 mm wide)	MRS208010B	MRS208012B	MRS228010B	MRS228012B	MRS248010B	MRS248012B
RAL 7047 (1000 mm wide)		MRS201012		MRS221012		MRS241012
RAL 9011 (1000 mm wide)		MRS201012B		MRS221012B		MRS241012B
U	41	41	46	46	50	50
Height	2000	2000	2200	2200	2400	2400
Depth	1000	1200	1000	1200	1000	1200
Single or double door	80% perforated					
Max. load (static)	1500 kg					
Security	Fix Easy 2-point swivel handle with EK-333 cylinder lock					
Roof layout	1 cable entry brush set					
Floor layout	Sealed with a floor plate and cable entry brushes					
19-inch profiles	4 pcs					



Watch the switching & routing rack clip on the Minkels YouTube channel:

**[Youtube.com/c/minkelshq](https://www.youtube.com/c/minkelshq)**



### Switching & routing cover plates

The empty space between the switching and routing devices must be covered with Fix Easy front plates, which you can find on page 47. To block off the gaps in the depthwise direction, cover plates are needed that run from front to back. These cover plates are available in heights 2U and 3U.

Height 2U	MRS0102	MRS0112	MRS0122
Height 3U	MRS0103	MRS0113	MRS0123
Slide-in, in mm	450 - 550 mm	550 - 650 mm	650 - 850 mm

# MINKELS INTEGRATION racks

## Integration rack

The integration rack offers possibilities for installing IT equipment and testing it prior to transport to the location where it will actually be used. This allows for an enormous reduction in costly on-site installation and testing hours of IT equipment can be cut back enormously. This may sound simple, but it requires high dynamic loads, stable rolling capabilities and a flexible but robust 19-inch interior. The integration rack is the result of years of cooperation with a Minkels customer who has worldwide operations. Thus, the above technology has already proved its worth in the market.

- flexible, heavy-duty 19-inch interior
- extremely suited for use as a (high-density) server rack
- easily connected to Minkels VariCondition row-based cooling
- optimised airflows

- **Dynamic load (static): 1000 kg**
- **Dynamic load (dynamic): 1000 kg**



RAL 9011

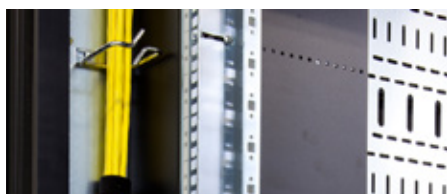


MIR208010-01CB

Open loop	MIR208010-01CB	MIR208010-02CB	MIR208012-01CB		MIR208012-02CB
Closed loop				MIR208012-03CB	
Height in U	41	41	41	41	41
Height in mm	2000	2000	2000	2000	2000
Width in mm	800	800	800	800	800
Depth in mm	1000	1000	1200	1200	1200
Front door	80% perforated	80% perforated	80% perforated	Glass door	80% perforated
Rear door	80% perforated	80% perforated	80% perforated	Glass door	80% perforated
19" - dist. front in mm	62.5	150	62.5	250	150
Security	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock
Roof layout	1 cable entry brush set	1 cable entry brush set	1 cable entry brush set	1 cable entry brush set	1 cable entry brush set
19-inch profiles	4 pcs	4 pcs	4 pcs	4 pcs	4 pcs

Open loop	MIR228010-01CB	MIR228010-02CB	MIR228012-01CB		MIR228012-02CB
Closed loop				MIR228012-03CB	
Height in U	46	46	46	46	46
Height in mm	2200	2200	2200	2200	2200
Width in mm	800	800	800	800	800
Depth in mm	1000	1000	1200	1200	1200
Front door	80% perforated	80% perforated	80% perforated	Glass door	80% perforated
Rear door	80% perforated	80% perforated	80% perforated	Glass door	80% perforated
19" - dist. front in mm	62.5	150	62.5	250	150
Security	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock	Fix Easy 2-point swivel handle with EK-333 cylinder lock
Roof layout	1 cable entry brush set	1 cable entry brush set	1 cable entry brush set	1 cable entry brush set	1 cable entry brush set
19-inch profiles	4 pcs	4 pcs	4 pcs	4 pcs	4 pcs

## 1. Housing 1.5 Integration rack and open rack



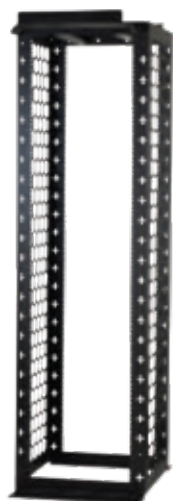
### Cable management for the integration rack

Minkels integration racks can be fitted with cable fitting strips and cable management panels. Cable fitting strips allow compact cable bundling, particularly when combined with closed-loop cooling. Cable management panels allow vertical cable management in open-loop configurations. The panels have six cable guide clips.

Cable fitting strip	MIR0101	MIR0110
Height in U	41	46
Colour	RAL9011	RAL9011

Cable management panel incl. 6x cable clips	MIR0201	MIR0210
Height in U	41	46
Colour	RAL9011	RAL9011

# OPEN racks



446150



446152



RAL 9011

### LCS3 Open Rack and accessories

The Open Rack is designed to provide the greatest in cable management flexibility and efficiency. Honeycomb cutout sidewall allow for infinite cable pathways. The universal 3/8" square hole punch enables mounting of all standard cage nuts and OEM quick mount slides and rails. This creates the industries most versatile equipment rack system.

- Patented channel construction: protects the performance of horizontal cabling, hex pattern on rack channels simplifies cabling
- Honeycomb side rail maximize airflow when combined with baffles
- EIA hole pattern front and rear channels: support equipment shelves and heavy equipment front and rear.
- Universal 3/8" punched square holes enable mixed equipment mounting and use of cage nuts
- High density rack solution: 7' MM20 supports 45RU
- Easy to assembly: kit includes many time and cost saving features

LCS3 open rack and accessories	
Open rack, 45U, 19-inch	446150
Cable duct with door	446152
Hexagonal cable throughs (set of 6)	446154
Bend limiting clips (set of 12)	446155
Cable management spools (set of 4)	446156
Cable management rings	446157
Cable duct mounting brackets (top of rack Cablofil)	446158
Horizontal cable manager	446159
Overhead Cable Pathway, 5 U, 19"	446160



446154



446155



446156



446157



446158



446159



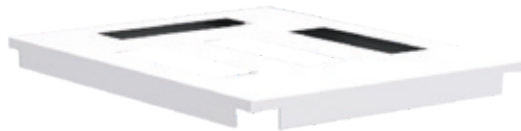
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# MECHANICAL accessories

## Shelves

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- Variable shelves 100 kg page 29
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- Telescopic shelves page 31



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## Other accessories

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## Bottom

- Plinth, 25 mm, front/back page 24
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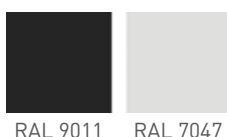
## 1. Housing 1.6 Mechanical accessories

Minkels offers a wide variety of accessories which will make your rack complete, such as various types of shelves, plinths, adjustable feet and more. A list of the accessories which are available in Minkels' standard product range is provided below. If the accessory you are looking for is not among them, don't hesitate to contact us and we will be happy to help you. You can find the contact details on the back side of this catalogue.



### Side panels

The side panels can be detached quickly and easily using locking clips. A side panel must always be combined with plinths (see page 25).



Depth in mm	RAL 7047				RAL 9011			
	Height in U				Height in U			
	41	46	50	52	41	46	50	52
800	MSP0106	MSP0107			MSP0106B	MSP0107B		
1000	MSP0306	MSP0307	MSP0308	MSP0309	MSP0306B	MSP0307B	MSP0308B	MSP0309B
1200	MSP0406	MSP0407	MSP0408	MSP0409	MSP0406B	MSP0407B	MSP0408B	MSP0409B

**Delivery consists of:** 1 panel, 4 square locks, 6 mm



### Partition

There are two types of partition panels: ones with and without cable entry rings. The holes for cables to pass through are 60 mm and they have rubber cable entry rings. The partitions can be attached using 6 screws. No side plinth is needed when fitting the partition panel.

Material: Sheet steel  
Finishing: Sendzimir

Depth	1000		1200	
	Without cable entry holes	With cable entry holes	Without cable entry holes	With cable entry holes
41	MTP0306	MTP1306	MTP0406	MTP1406
46	MTP0307	MTP1307	MTP0407	MTP1407
50	MTP0308	MTP1308	MTP0408	MTP1408
52	MTP0309	MTP1309	MTP0409	MTP1409

**Delivery consists of:** 1 partition panel incl. fasteners

**1. Housing** 1.6 Mechanical accessories



**Expansion sets**

This expansion set makes extending the depth of your (existing) rack possible. The set is easy to fit and adds 100 mm in depth. This set can be fitted to either the front or the back. Any existing door can be reused with this expansion set. Connecting multiple expansion sets is possible. It is also possible to place 19-inch profiles in the expansion set. These sets can be used with a 25 mm or 100 mm pedestal. The benefit for you: all the equipment and cabling can remain intact and deeper equipment can be installed in.

Max. load: 425 kg

RAL 7047	VMF208010	VMF226010	VMF228010
Rack height in U	41	46	46
Rack width in mm	800	600	800

**Delivery consists of:** 1 expansion set incl. fasteners and assembly guide



**Plinth for front/back, 25 mm**

These plinths are available as blanks. The plinth is attached to the frame using a handy click-fit system.

Width in mm	RAL 7047		RAL 9011	
	600	800	600	800
	MSM1101	MSM1201	MSM1101B	MSM1201B



**Delivery consists of:** 1 plinth



**Plinth for sides, 25 mm**

These plinths are only available as blanks. They cover the adjustable feet as well as supporting the side panel. The plinths can be attached to the frame using screws.



Depth in mm	RAL 7047			RAL 9011		
	800	1000	1200	800	1000	1200
	MSM1203	MSM1403	MSM1503	MSM1203B	MSM1403B	MSM1503B

**Delivery consists of:** 1 plinth incl. assembly materials

## 1. Housing 1.6 Mechanical accessories



### Plinths front/rear (in combination with castors)

Plinths can be used in combination with castors and are secured to the base by means of a so-called 'click-system'.



RAL 9011 RAL 7047

Width in mm	RAL 7047		RAL 9011	
	600	800	600	800
	MSM3101	MSM3201	MSM3101B	MSM3201B

Delivery consists of: 1 plinth



### Side plinths (in combination with castors)

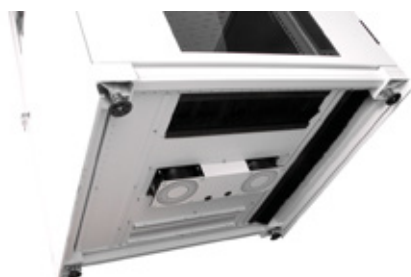
Plinths can be used in combination with castors and are secured to the base by using screws.



RAL 9011 RAL 7047

Depth in mm	RAL 7047			RAL 9011		
	800	1000	1200	800	1000	1200
	MSM3203	MSM3403	MSM3503	MSM3203B	MSM3403B	MSM3503B

Delivery consists of: 1 plinth



### Adjustable feet

The adjustable feet are needed for positioning the rack horizontally. The maximum load with 4 feet is 1000 kg and with 6 feet it is 1500 kg.

	MSM1001	MSM1002
Max. load in kg	1000	+500
Height	25	25
Number of pcs	4	2 (extra)

Delivery consists of: Adjustable feet incl. assembly materials



Castors



Transport castors

### Castors and transport castors

Castors and transport castors provide you the option of moving your rack more often, more quickly and more easily. The transport castors are, if desired, easy to remove from the rack and are reusable. The maximum load is given per set (of 4 wheels). The MSM3002 set consists of 2 castors with brakes and 2 castors without brakes. The MSM3010 set consists of 4 castors without brakes.

Casing material: Steel  
Wheel material: Plastic

Castors	MSM3002	Transport castors	MSM3010
Max. load in kg	400	Max. load in kg	400
Built-on height in mm	100	Built-on height in mm	130
Number of pcs	4	Number of pcs	4

Delivery consists of: 4 wheels incl. assembly materials

## 1. Housing 1.6 Mechanical accessories



### Anchoring set

This set can be attached to the frame. It can be anchored to the floor by a bolt. Choose a suitable bolt, depending on your type of floor. In the case of a computer floor, we recommend direct attachment to the underlying floor using a threaded rod (not supplied).

	<b>MSM4100</b>
Pedestal height in mm	25

**Delivery consists of:** 2 Z-profiles with integrated nuts incl. assembly materials



### Insert modules

The roof and/or floor plate of the rack have cut-aways that can be filled using various inserts. Depending on your situation, you can choose between a blank cover plate or cable entry brushes.

Covering plate RAL 7047	<b>MBM1001</b>
Covering plate RAL 9011	<b>MBM1001B</b>
Format	153 x 427 mm

Cable entry brushes (set)	<b>MBM1003</b>
Max. cross-section	405 x 115 mm

**Delivery consists of:** single pieces incl. assembly materials (if applicable)



RAL 9011 RAL 7047

### Triple fan unit with IEC connectors

The triple fan unit allows you to cool the rack. The flow with no load is 480 m<sup>3</sup>/h. Under normal loads it will be over 300 m<sup>3</sup>/h. The connection is made using IEC-320 C13 connectors. The fan units can be combined together using a cable with IEC-320 C13 / C14 connectors. As an additional option, this fan unit can be switched automatically using the MCSTF01 thermostat (page 54).

RAL 7047	<b>MCS1004</b>	
RAL 9011		<b>MCS1004B</b>
Flow under normal load	310 m <sup>3</sup> /h	310 m <sup>3</sup> /h
Sound level	53,5 dB	53,5 dB
Electrical data	230VAC - 0,42A - 66 Watt	230VAC - 0,42A - 66 Watt

**Delivery consists of:** 1 fan unit, 1 power cable, 1 extender cable incl. assembly materials



### Earth rails

The copper earth rail ensures additional earthing of the rack. The earth rail is 20x5 mm and it has a wristband connector. It can be fitted vertically in the housing onto the frame, onto the 19-inch profile or onto the front-to-back beam elements.

	<b>MER0106</b>	<b>MER0107</b>
Rack height in U	41	46
Material	copper	copper

**Delivery consists of:** 1 rail, 1 wristband connector, 1 earthing cable, incl. assembly materials and assembly guide



## 1. Housing 1.6 Mechanical accessories



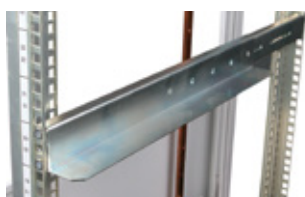
### Universal assembly brackets

The universal assembly bracket can be used e.g. for fitting various accessories and PDUs. These brackets can be used in numerous places on the rack.

	<b>MCE0410</b>
Finishing	Galvanised

**Delivery consists of:** set of 4 brackets incl. fasteners

MPR0311, MPR0312, MPR0313



### Corner guide rails

A set of 2 variable corner guide rails with a load-bearing edge of 40 mm. The corner guide rails support the server and network equipment.

Item no.	MPR0311	MPR0312	MPR0313	MPR0314
Built-in depth in mm	300 - 450	450 - 750	740 - 1050	600 - 850
Material	Sheet steel	Sheet steel	Sheet steel	Sheet steel
Finishing	Galvanised	Galvanised	Galvanised	Galvanised
Max. load in kg	100	100	100	200

**Delivery consists of:** 1 left and 1 right corner guide incl. assembly materials

MPR0314



### Fluorescent light sets

The fluorescent lighting set provides improved visibility within your data centre or server room. The set is easily attached to the 19-inch profiles or to the underside of the top window.



	<b>MLS0001</b>
With socket	yes
Dimensions	483 x 41 mm
Wattage	14
Voltage	230 VAC
Approval	CE - ENEC - TÜV

**Delivery consists of:** 1 fluorescent lighting set, 1 assembly bracket, incl. assembly materials

### Door switch

The door switch can be combined with the lighting set mentioned above. Switches on/off as the door is opened/closed. The plug can be connected directly to the lighting set.



	<b>MLS0005</b>
Door switch	MLS0005

**Delivery consists of:** 1 switch with cable, 1 assembly bracket, incl. assembly materials

## How do I choose the right shelf for a rack?

The step-by-step plan below will help you choose the right items.

**Should the shelf be supported by four 19-inch profiles?**

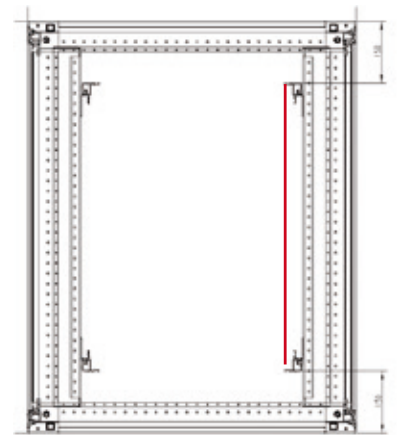
- No → Cantilever shelves can be used. Be aware of the limited depth (max. 350 mm) and maximum load (12 kg). Cantilever shelves can also be used in a number of wall housings. Using cantilever shelves requires 2U rack height.
- Yes → Four-point shelves can be used. You can choose between the following types:
- Variable shelves – load capacity 40, 50 and 100 kg
  - Telescopic shelves – load capacity 50 and 75 kg

### FOUR-POINT SHELVES

After selecting the type of shelf, the correct depth has to be determined. This is because all four-point shelves have a minimum and maximum built-in depth. This does not depend on the external dimensions of the rack.

Example: The drawing on the right shows an example situation. The rack is 1000 mm deep. The front 19-inch profiles are 150 mm from the front and the rear ones are 150 mm from the back of the rack. The distance between the 19-inch profiles is therefore  $1000 - 150 - 150 = 700$  mm. The built-in shelf depth is equal to that separation, i.e. 700 mm.

The image below shows the row from which you can derive the built-in depth of the shelf. In a number of cases, more than one shelf may be used. The table below shows that a built-in depth of 450 mm allows either item MPL0011 or item MPL0012 to be used. The difference between these shelves is their physical dimensions (the depth). The MPL0011 is 350 mm deep and the MPL0012 is 500 mm. The usable area therefore varies depending on the shelf used.



	MPL0011	MPL0012	MPL0013
Depth in mm	350	500	700
<b>Built-in depth in mm</b>	<b>250 - 500</b>	<b>400 - 650</b>	<b>600 - 850</b>
Max. load in kg	50	50	40
Usable surface area	447 x 350	447 x 500	447 x 700

The step-by-step plan above helps you select the correct shelf. If you are in need of assistance despite this plan, feel free to contact our sales department. You can find the contact details on the back side of this catalogue.

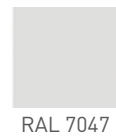
**1. Housing** 1.6 Mechanical accessories



**Variable shelves**

A variable perforated shelf. This means is that the depth of the shelf does not have to be the same as the distance between the front and back 19-inch profiles. The shelf is attached to the front and back 19-inch profiles. The maximum load noted in the table applies when the weight is evenly distributed.

	<b>MPL0011</b>	<b>MPL0012</b>	<b>MPL0013</b>
Depth in mm	350	500	700
Built-in depth in mm	250 - 500	400 - 650	600 - 850
Max. load in kg	50	50	40
Usable surface area	447 x 350	447 x 500	447 x 700



RAL 7047

**Delivery consists of:** 1 shelf, 2 guides, incl. fixing materials



**Variable shelves 100 kg**

A variable perforated shelf with a maximum load of 100 kg. The variable attachment means that the depth of the shelf does not have to be the same as the distance between the front and back 19-inch profiles. The shelf is attached to the front and back 19-inch profiles. The maximum load applies when the weight is evenly distributed.

Material: Steel  
Finishing: Powder coating

<b>RAL 7047</b>	<b>MPL0014</b>	<b>MPL0015</b>
<b>RAL 9011</b>	<b>MPL0014B</b>	<b>MPL0015B</b>
Depth in mm	700	800
Built-in depth in mm	600 - 850	700 - 950
Built-in height	25	25
Max. load in kg	100	100



RAL 9011 RAL 7047

**Delivery consists of:** 1 shelf, 2 guides, incl. fixing materials

If you would like more information or would like to place an order, please contact us and we will be happy to help you. You can find the contact details on the back side of this catalogue.

**1. Housing** 1.6 Mechanical accessories



**Cantilever shelves**

The cantilever shelf is attached to the front and back 19-inch profiles. The shelf is perforated. The maximum load applies when the weight is evenly distributed.

Material: Steel  
Finishing: Powder coating

RAL 7047	MPL0311	MPL0312
RAL 9011		MPL0312B
Description	Cantilever shelf 2U	Cantilever shelf 2U
Depth in mm	250	350
Rack height unit (U)	2	2
Max. load in kg	12	12



**Delivery consists of:** 1 cantilever shelf incl. assembly materials



**Minkels Fix Easy shelves**

The built-in depth of the shelf is variable and depends on the separation between the 19-inch profiles. When this shelf was designed, the emphasis was on the ease of installation. Special plastic clips are used for fixing the shelf onto the 19-inch profiles. You do not need any tools for the installation!

Separate sets of 4 fixing clips can be ordered under item number MFE0020.

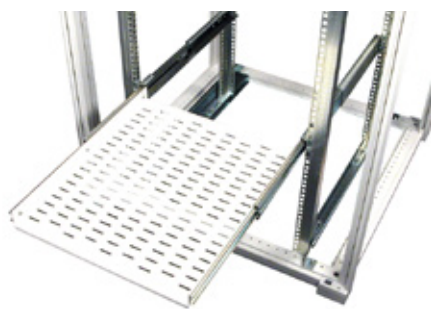
The maximum load naturally only applies for a maximum slide-out length of 150 mm. Shelves with depths of 650 mm and more can also be delivered in colour RAL 9011.

RAL 7047	MFE0001	MFE0003	MFE0004
RAL 9011		MFE0003B	MFE0004B
Depth in mm	250	500	650
Built-in depth in mm	250 - 400	500 - 650	650 - 800
Max. load in kg	50	50	40
Usable area in mm	447 x 250	447 x 500	447 x 650



**Delivery consists of:** 1 shelf, 2 guides, 1 set of 4 fixing clips

**1. Housing** 1.6 Mechanical accessories

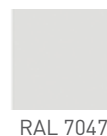


**Telescopic shelves**

The telescopic perforated shelf is fitted between the front and back 19-inch profiles. Because the shelf can be slid in and out as a whole, you can easily pull your equipment out towards you. The maximum load given in the table applies when the weight is evenly distributed.

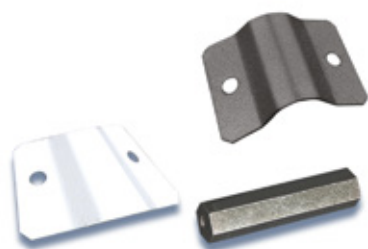
Space to build in: 55 mm  
Material: Steel  
Finishing: Powder coating  
Colour: RAL 7047

	<b>MPL0112</b>	<b>MPL0113</b>
Depth in mm	500	700
Built-in depth in mm	400 - 700	600 - 900
Max. load in kg	75	50
Usable area in mm	415 x 500	415 x 700
Length of sliding part	500	700



**Delivery consists of:** 1 telescopic shelf incl. guides and assembly materials

**Baying kits**



Baying kits are needed to connect racks together. Various combinations are available of both internal connector tubes and external connector plates. The external connector plates can be screwed onto the outsides of the structural uprights and are invisible when the door is closed. Make at least 2 connections in the front and back planes. You need 2 sets for 25U or more.

	<b>RAL 7047</b>	<b>MFM0055</b>	<b>MFM0056</b>
	<b>RAL 9011</b>	<b>MFM0055B</b>	<b>MFM0056B</b>
Set of internal and external baying kits		set of 6 pcs	
External baying kit			set of 6 pcs



**Delivery consists of:** including assembly materials



## 1. Housing 1.6 Mechanical accessories



### Numbering strips

The numbering strip is used to indicate the height unit numbers. It is self-adhesive. If you have a rack that is lower than 46U, you can cut the numbering strip to size.

	<b>MPR0060</b>	<b>MPR0062</b>	<b>MPR0260</b>	<b>MPR1262</b>	<b>MPR1060</b>	<b>MPR1062</b>
<b>Description</b>	Numbering strip for 19-inch <b>46U profile</b>	Numbering strip for 19-inch <b>52U profile</b>	Numbering strip for 19-inch <b>46U profile</b>	Numbering strip for 19-inch <b>52U profile</b>	Numbering strip for 19-inch <b>46U profile</b>	Numbering strip for 19-inch <b>52U profile</b>
<b>Qty</b>	1	1	20	20	100	100



### Cage nuts

The cage nuts allow for a simple installation of your equipment. Combined with decorative screws and plastic washers, cage nuts are easy to fit into the pattern of holes in the 19-inch profiles.

<b>Diameter M5</b>	<b>MFM0001</b>	<b>MFM0002</b>		
<b>Diameter M6</b>			<b>MFM0003</b>	<b>MFM0004</b>
<b>Qty</b>	20	100	20	100



### Screws with finishing washers

These screws have a cross head and a plastic washer. They are used (screw and washer) together with cage nuts for assembling the 19-inch profiles.

<b>Diameter M5 X 16</b>	<b>MFM0010</b>	<b>MFM0011</b>		
<b>Diameter M6 X 16</b>			<b>MFM0012</b>	<b>MFM0013</b>
<b>Qty</b>	20	100	20	100



### Rackstuds

Rackstuds™ are the revolutionary replacement for cage nuts which are used to mount IT, Pro A/V, Security, and Telecommunications equipment in 19" racks. Rackstuds make it much easier to mount your gear because they go in from the front and provide you with a place to support your equipment while you spin on the lock nut. This makes inserting and removing Rackstuds much quicker and assists with mounting even heavy equipment as it no longer needs to be balanced in one hand! Maximum equipment weight is 20 kg per 4 Rackstuds.

<b>Rackstuds</b>	<b>MFM0005</b>	<b>MFM0006</b>	<b>MFM0007</b>
<b>Colour</b>	red	blue	red
<b>Qty</b>	100	100	20
<b>Application</b>	19" rails with thickness ≤ 2,2mm	19" rails with thickness [2,2 - 2,7mm]	19" rails with thickness ≤ 2,2mm
<b>Suitable for</b>	server & network racks	open racks	server & network racks

**1. Housing** 1.6 Mechanical accessories

**Cable entry panel with brush, 19 inch**

Cable entry brush - 19 inch x 1U (w x h). Supplied with permanent screws and separate cage nuts. Universal fitting for all floor and wall enclosure elements.

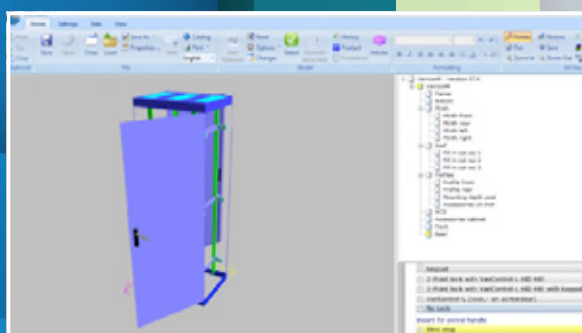


	MCM0031B	MCM0032B
Height unit	1	2
Width	19-inch	19-inch
Colour	RAL 9005	RAL 9005

**Delivery consists of:** 1 cable entry panel with brush, incl. assembly materials

# THE VIRTUALLY INFINITE POSSIBILITIES OF MASS CUSTOMISATION

A standard data centre that appears specially developed for you? That's mass customisation!



## Infinite combinations

Mass customisation gives you the best of both mass production and tailor-made solutions. We are not talking about complete customisation in this case, but rather about an enormous range of components which can be combined in an almost infinite number of ways. Minkels is one of the few data centre suppliers which are able to offer genuine mass customisation. After all, there are quite a lot of nuts and bolts to that type of strategy...

If you would like to know more about mass customisation, have a look at our brochure: [www.minkels.com/downloads](http://www.minkels.com/downloads)

Or contact us – we'll be pleased to help! You can find the contact details on the back side of this catalogue.

# Solutions for **CABLE MANAGEMENT**



Structured cabling is important for the reliability and optimum performance of your data centre or server room. Flexibility and accessibility for trouble-shooting or during expansions are essential as well.

## **RELIABILITY**

Good cable management ensures that the equipment's air intake points are kept as clear as possible. This allows sufficient air to pass through the equipment in order to cool them adequately. Proper cooling avoids equipment failures and results in longer lifespans.

## **OPTIMUM PERFORMANCE**

Good cable management ensures that cables do not become damaged, do not break and have the right radius of curvature. The wrong radius of curvature reduces the performance of the cable. The radius of curvature must never be less than what has been recommended by the supplier.

## **FLEXIBILITY AND ACCESSIBILITY**

When cabling is applied properly, it has a neat and structured appearance. This means that cables can be moved or added easily.



## 1. Housing 1.7 Cable management



RAL 9011 RAL 7047

### Cable trays

Minkels cable trays are available to allow you to optimise the way cables are led to the rack. Cable trays are flexible, modular and simple to install. They can be integrated seamlessly into the rack. Because this cabling system is attached directly to the racks, it is independent of its surroundings in which it is put to use. As the data centre or server room grows, the cable management can easily grow with it, without having to make modifications to the structure of the building, such as anchoring to the ceiling.

Two types of cable trays are available: a narrow cable tray at the back of the rack or a wide cable tray along the middle of the rack.

#### Narrow cable tray

The narrow cable tray is placed by the rack's rear roof cable entry points and it can be used for small amounts of cabling, e.g. connecting up servers.

#### Wide cable tray

The wide cable tray is placed by the central roof entry point and is suitable for guiding large amounts of cabling into the rack on the left and/or right, as is usual for patch racks. The wide cable tray has a partition so that e.g. fibre-optic and copper cables can be kept separate. This partition is movable.

For large racks, both systems can be combined to achieve a triple compartmentalisation – the narrow cable tray plus the wide one with its separating partition. This approach allows the fibre-optic, copper data and power cables to be sufficiently separated. The cable trays have waterfalls to create the correct radius of curvature for the cables. This makes it easier to get the cables in place and supports the cable structure at the side of the rack, so that the equipment can still be accessed easily.

Material: Steel  
Finishing: Powder coating  
Height: 120 mm  
Depth of narrow cable tray: 200 mm  
Depth of wide cable tray: 600 mm

Width of the rack in mm	RAL7047		RAL9011	
	Narrow cable tray	Wide cable tray	Narrow cable tray	Wide cable tray
600	MCM0300	MCM0302	MCM0300B	MCM0302B
800	MCM0301	MCM0303	MCM0301B	MCM0303B
1000	MCM0326	MCM0327	MCM0326B	MCM0327B

Width of the rack in mm	RAL7047	RAL9011
	Partition	Partition
600	MCM0331	MCM0331B
800	MCM0332	MCM0332B
1000	MCM0333	MCM0333B

**Delivery consists of:** 1 narrow cable tray incl. assembly materials or 1 wide cable tray incl. assembly materials and internal partition

**1. Housing** 1.7 Cable management



**Cable trays for H2O/DX cooling and Archimod UPS**

If the H2O, DX and Archimod UPS are integrated into a row of racks, the cable trays can be laid across the top of the cooling or UPS. The cable trays are available in two versions, a narrow version and a wide version.

Material: Steel  
 Finishing: Powder coating  
 Height: 120 mm  
 Depth of narrow cable tray: 200 mm  
 Depth of wide cable tray: 600 mm



Width of H2O - DX - Archimod UPS in mm	RAL7047		RAL9011	
	Narrow cable tray	Wide cable tray	Narrow cable tray	Wide cable tray
300	MCM0316	MCM0317	MCM0316B	MCM0317B
600	MCM0500	MCM0502	MCM0500B	MCM0502B
800	MCM0501	MCM0503	MCM0501B	MCM0503B

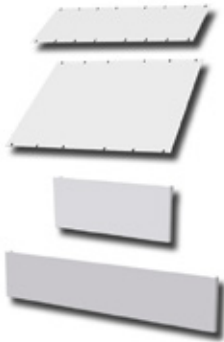
Width of H2O - DX - Archimod UPS in mm	RAL7047	RAL9011
	Partition	Partition
300	MCM0414	MCM0414B
600	MCM0504	MCM0504B
800	MCM0505	MCM0505B

**Delivery consists of:** 1 narrow cable tray incl. assembly materials or 1 wide cable tray incl. assembly materials and internal partition





## 1. Housing 1.7 Cable management



### Covers and end plates for cable trays

Covers can be fitted to cable trays. They can be assembled directly onto the cable trays. The covers keep content safely separated and provide protection against dust. The cable trays can also be closed off at the end of the row using end plates. The covers and end plates do not require any cutting to size and are available in the colours RAL 7047 and RAL 9011.

Material: Steel  
 Finishing: Powder coating  
 Depth of narrow cable tray: 200 mm  
 Depth of wide cable tray: 600 mm



With of the rack in mm	RAL7047		RAL9011	
	Narrow cable tray cover	Wide cable tray cover	Narrow cable tray cover	Wide cable tray cover
300	MCM0318	MCM0319	MCM0318B	MCM0319B
600	MCM0310	MCM0312	MCM0310B	MCM0312B
800	MCM0311	MCM0313	MCM0311B	MCM0313B
1000	MCM0328	MCM0329	MCM0328B	MCM0329B

With of the rack in mm	RAL7047		RAL9011	
	Narrow end plate	Wide end plate	Narrow end plate	Wide end plate
600, 800 and 1000 mm	MCM0320	MCM0321	MCM0320B	MCM0321B

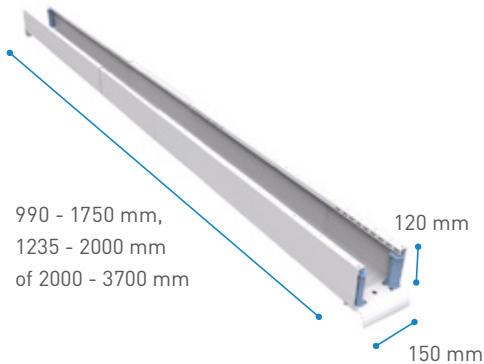
**Delivery consists of:** incl. assembly materials

## 1. Housing 1.7 Cable management



### Cable bridges

Where a hot or cold corridor has to be crossed, a cable bridge can be used. The cable bridge is suitable for a wide or narrow cable tray. It can also be combined with aisle containment. The cable bridge is available in three types, for bridging (cable tray to cable tray) 990 mm to 1750 mm, 1235 mm to 2000 mm and 2000 mm to 3700 mm. The bridges use a sliding system so that the distance between the cable trays can be bridged at any spot without any sawing being necessary. The cable tray can be installed at various distances along the depth of the corridor. It can be used for instance to save on the number of branches in the main supply or for intra-connectivity within the aisle containment. You can choose to use several bridges depending on the capacity required, or to keep various cables separate.



Material: Steel  
Finishing: Powder coating  
Height: 120 mm  
Width: 150 mm

Usable length in mm	990 to 1750 mm	1235 to 2000 mm	2000 to 3700 mm
RAL 7047	MCM0306	MCM0307	MCM0308
RAL 9011	MCM0306B	MCM0307B	MCM0308B



Delivery consists of: incl. assembly materials

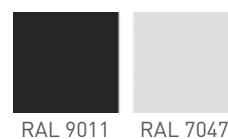
### Covers for cable bridges

Covers can be fitted to the cable bridges. They are assembled directly onto the cable bridges. The covers keep content safely separated and provide protection against dust. It is possible to have the covers overlap so that multiple covers can be used to ensure proper coverage of the cable bridge.



Material: Steel  
Finishing: Powder coating  
Capacity: 150 mm

Usable width in mm	1030	1700
RAL 7047	MCM0323	MCM0322
RAL 9011	MCM0323B	MCM0322B

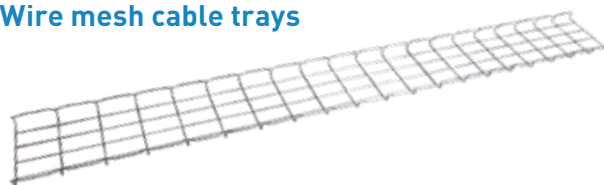


Delivery consists of: incl. assembly materials

**1. Housing** 1.7 Cable management



**Wire mesh cable trays**



The wire mesh tray offers various possibilities for vertical cable management within the rack. Cables can be attached to the wire mesh over the entire height of the rack. The wire mesh tray can be fitted to the upper and lower frames and can be used in both 600 mm and 800 mm racks.

Height: 30 mm  
Material: Steel  
Finishing: Galvanised

Height in U	41	46	50	52
Width 200 mm	MCM0146	MCM0147	MCM0148	MCM0149
Width 300 mm	MCM0156	MCM0157	MCM0158	MCM0159

**Delivery consists of:** 1 wire mesh cable tray including assembly materials

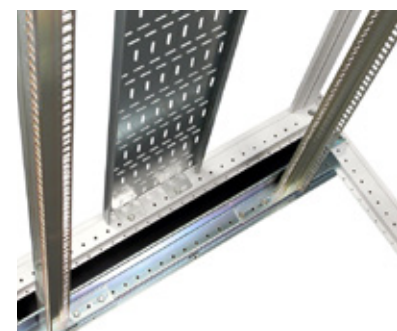


**Cable trunking**

Cable trunking is available in various heights. It is suitable for vertical cable management. Cables can be attached to the trunking using tie-wraps and/or Velcro (page 42). The trunking can easily be fitted from the inside (left or right) to the upper and lower frame.

Material: Sheet steel  
Finishing: Galvanised

Height in U	Width 200 mm	Width 300 mm
25	MCM0124	MCM0134
41	MCM0126	MCM0136
46	MCM0127	MCM0137
50	MCM0128	MCM0138
52	MCM0129	MCM0139



**Delivery consists of:** 1 cable trunking element incl. fasteners



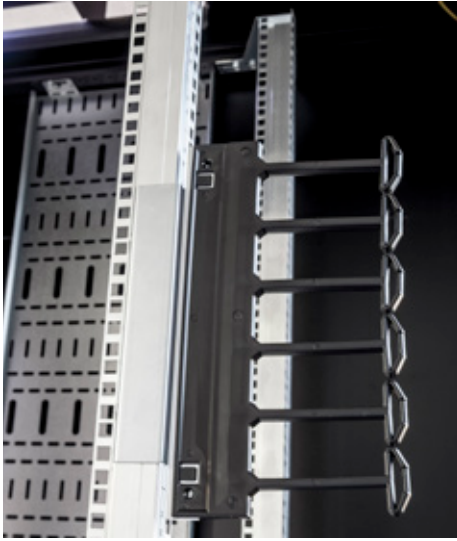
**Fibre-optic cable guides**

Cable guides for fibre-optic and UTP cabling with a controlled radius and strain relief.

Width in mm	86
Left	MCM0023
Right	MCM0024

**Delivery consists of:** 1 fibre-optic cable guide incl. fasteners

**1. Housing** 1.7 Cable management



**Assembly profile incl. high-volume cable guide on 19-inch profiles**

The high-volume cable guides are ideal for rapid and effective cabling. This high-volume solution allows you to guide more cables than normal cable guides do.

Material: Polyamide  
Colour: Black

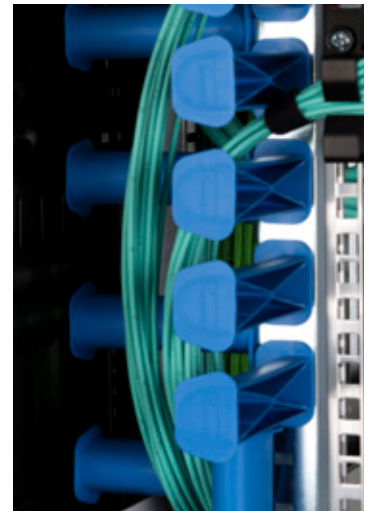
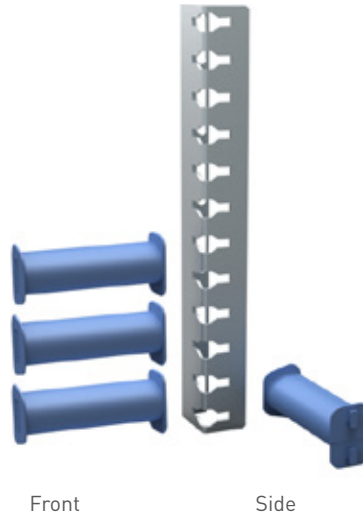
<b>3U module</b>	MCM2021	<b>41U assembly profile</b>	MCM2026
<b>6U module</b>	MCM2022	<b>46U assembly profile</b>	MCM2027
		<b>50U assembly profile</b>	MCM2028
		<b>52U assembly profile</b>	MCM2029

**Delivery consists of:** incl. assembly materials

**Assembly profile incl. cable guides**

The cable guides are ideal for achieving clearly ordered and arranged cabling. A cable guide is 87 mm long. It can be fitted and removed without machine tools. Cables can be laid per 1U. The radius is particularly suitable for fibre-optic cables. There is room for 24 cables per 1U. The assembly profile incl. cable guides cannot be used in a rack that is 600 mm wide.

Halogen-free  
Fire class: UL94-V0  
Material: Polyamide  
Colour: RAL 5015

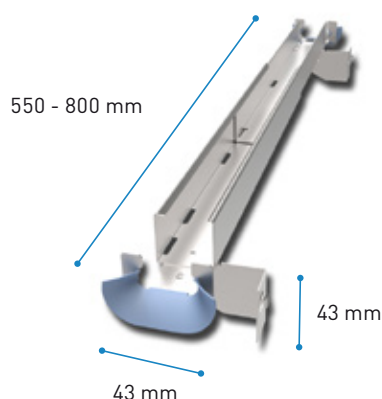


20 cable guides (can be ordered separately)	MCM2009
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Number of cable guides	6 front	10 front	38 front	39 front	43 front	47 front	49 front	76 front and side	78 front and side	86 front and side	94 front and side	98 front and side
<b>Height in U</b>												
6	MCM2001											
25	MCM2014											
41	MCM2016 MCM2003						MCM2004					
42	MCM2216			MCM2203			MCM2204					
46	MCM2017				MCM2005				MCM2006			
50	MCM2018						MCM2007			MCM2008		
52	MCM2019						MCM2109			MCM2119		

**Delivery consists of:** assembly profile, cable guides incl. fasteners

## 1. Housing 1.7 Cable management



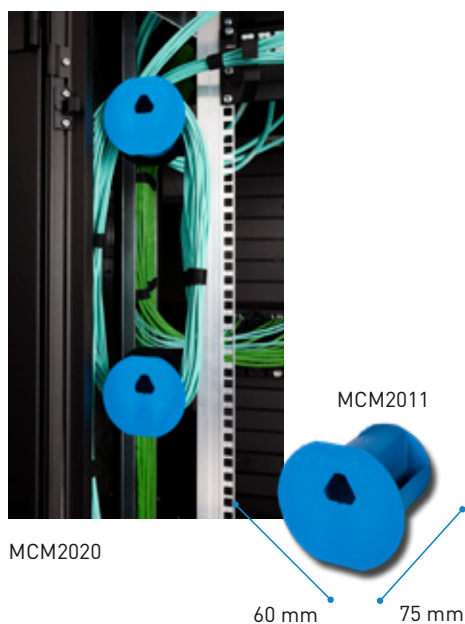
### Cable ducting, front to back, sliding

A telescopic cable duct can be used for guiding cables from the front to the back. The ducting can be attached to the side of the 19-inch profile. Cable conduit foam can be used together with side sealing plates to optimise the airflow (MCS5004 RAL 7047, MCS5004B RAL 9011, see page 49 for more information). The cable ducting can be adjusted from 550 to 800 mm.

Cable duct material:	Sheet metal
Finish:	Galvanised
Cable guide material:	Plastic (noryl; halogen-free)
Colour:	Blue

	<b>MCM0028</b>
Variable depth in mm	550 - 800

**Delivery consists of:** Cable duct including assembly materials



### Cable reels

The cable reels are guaranteed to make the cabling as easy as possible. A cable reel is 75 mm long. It is possible to click the cable reels together (length of 2 reels: 150 mm / length of 3 reels: 225 mm). 3 Cable reels fitted together have a maximum load of 15 kg when the weight is evenly distributed. The 60 mm diameter is particularly suitable for fibre-optic cables. Fire class: UL94-V0

	<b>MCM2010</b>	<b>MCM2010B</b>
Description	2U front plate incl. 2 cable reels	2U front plate incl. 2 cable reels
Colour of the front plate	RAL 7047	RAL 9011
Colour of the cable reel	RAL 5015	RAL 5015
Material	Front plate: sheet metal Cable reel: polyamide	Front plate: sheet metal Cable reel: polyamide

	<b>MCM2020</b>	<b>MCM2011</b>
Description	Mounting bracket (4x) for the cable reel incl. 4 cable reels	1 cable reel to be ordered separately
Colour of the mounting bracket	RAL 9011	-
Colour of the cable reel	RAL 5015	RAL 5015
Material	Mounting bracket: steel Cable reel: polyamide	Cable reel: polyamide

### Cable storage cassette

A cable storage cassette for effective and user-friendly cable management.

Material:	Sheet steel
Colour:	RAL 9011



<b>RAL 9011</b>	<b>MCM1111</b>
Height unit	2
Material	Sheet steel



**Delivery consists of:** 1 cable storage cassette incl. assembly materials



**1. Housing** 1.7 Cable management



**Velcro**

Velcro is very useful for attaching cables to a cable trunking element. Using Velcro avoids sharp bends in your cables (copper or fibre-optic).

<b>Roll of Velcro</b>	<b>FDH1610</b>
Length (m)	10
Width in mm	16

**Delivery consists of:** 10 metres of Velcro



**Plastic cable clip**

The plastic cable clip is an 'eye' which can be used for cable management. It can be attached without tools to the standard cable trunking (page 39). Set of 10

Material: Polyamide  
Fire class: UL94-V0  
Width: 40 mm  
Depth: 78 mm



<b>Plastic cable clips</b>	<b>MCM0014</b>
set	10 pcs

**Delivery consists of:** 10 plastic cable clips



**Metal cable comb with 4 teeth**

The cable comb lets you arrange and guide network or patch cabling horizontally. The comb consists of two identical parts that are fitted one above the other on the 19-inch profiles as mirrors of each other.

Material: Metal  
Finishing: Powder coating

<b>RAL 7047</b>	<b>MCM0011</b>	
<b>RAL 9011</b>		<b>MCM0011B</b>
Height	2 x 1/2U	2 x 1/2U



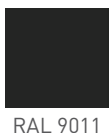
**Delivery consists of:** 1 cable comb incl. assembly materials



**Plastic cable comb with 5 toolless mount cable clips**

The cable comb lets you arrange and guide network or patch cabling horizontally. The comb consists of one 1U panel to mount up to 5 toolless mount cable clips (MCM0014).

Material: Sheet steel  
Colour: Black



<b>RAL 9011</b>	<b>MCM0013</b>
Height	1 x 1U

**Delivery consists of:** 1 cable comb with 5 plastic cable clips incl. assembly materials

**1. Housing** 1.7 Cable management



**Horizontal cable clip**

This cable clip is used for finishing the assembly of cable bundles. The cable clip can be fitted to the 19-inch profiles.

Width: 40 mm  
Depth: 86 mm

Horizontal	MCM0002	MCM0202	MCM1002
U	1	1	1
Qty	1	20	100

**Delivery consists of:** incl. assembly materials



**Vertical cable clip**

This cable clip is used for finishing the assembly of cable bundles. The cable clip can be fitted to the 19-inch profiles.

Width: 45 mm  
Depth: 74 mm

Vertical	MCM0001	MCM0201	MCM1001
Qty	1	20	100

**Delivery consists of:** incl. assembly materials



**Vertical cable clip**

This cable clip is used for finishing the assembly of cable bundles. The cable clip can be fitted to the 19-inch profiles.

Width: 110 mm  
Depth: 154 mm

Fits on 19-inch profile	MCM0007	MCM0207	MCM1007
Qty	1	20	100

**Delivery consists of:** incl. assembly materials



MCM0002



MCM0001



MCM0007

**1. Housing** 1.7 Cable management

**Vertical cable clip**

This cable clip is used for finishing the assembly of cable bundles. The cable clip can be fitted to the frame uprights.



Width: 85 mm  
Depth: 165 mm

Fits on the upright posts	MCM0008	MCM0208	MCM1008
Qty	1	20	100

**Delivery consists of:** incl. assembly materials

**Vertical cable clip**

This cable clip is used for finishing the assembly of cable bundles. The cable clip can be fitted to the frame uprights.



Width: 130 mm  
Depth: 120 mm

Fits on the upright posts	MCM0009	MCM0209	MCM1009
Qty	1	20	100

**Delivery consists of:** incl. assembly materials

**Vertical cable clip**

This cable clip is used for finishing the assembly of cable bundles. The cable clip can be fitted to the frame uprights.



Width: 77 mm  
Depth: 100 mm

Fits on the upright posts	MCM0010	MCM0210
Qty	1	20

**Delivery consists of:** incl. assembly materials

**1. Housing** 1.7 Cable management

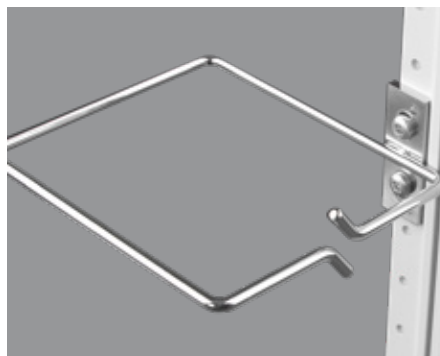


**QUESTIONS ABOUT CABLE MANAGEMENT?**

If you would like structured cabling in your data centre or server room, if you have questions about the subject or if you cannot find what you are looking for, please contact us and we will be happy to help you. You can find the contact details on the back side of this catalogue.



MCM0008



MCM0009



# AIRFLOW optimisation

Airflow management is the next step in energy efficiency for data centres and server rooms.



## THE CORRECT AIRFLOW OPTIMISATION ACCESSORIES WILL CREATE AN ENERGY-EFFICIENT SOLUTION

Studies by Minkels have shown that using the right airflow optimisation accessories can result in massive reductions in energy consumption. Based on this research, Minkels has developed accessories that provide the concrete answers to specific airflow optimisation requirements. More information on this subject can be found in Minkels' white paper 04, 'Rack Airflow Optimisation', which is available through the Minkels website:

[www.minkels.com/whitepapers](http://www.minkels.com/whitepapers)





## 1. Housing 1.8 Airflow optimisation



### Door seals - left or right, suitable for all heights

The rubber door seals can be used on both the left-hand and right-hand sides. The door seal will reduce penetration by dust, counteract incorrect airflows and mute noise.

	<b>MFR0010</b>
<b>Material</b>	Rubber
<b>Colour</b>	Black

**Delivery consists of:** 1 rubber profile, self-adhesive

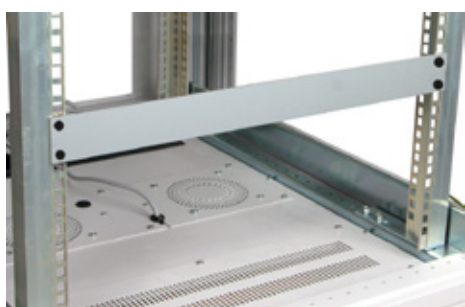


### Sealing set

This sealing set is intended for sealing the gaps between the side plates of connected racks. Use of this set ensures that no cold air can leak through to the back of the rack. The sealing set is available in 46U and 50U. If you want to use this set for smaller racks, it can be cut to the appropriate size. The sealing set for side plates is made of fire-retardant foam (UL94). If you would like to have a 41U sealing set, you can order the 46U set and cut it to the desired height!

	<b>MCS0011</b>	<b>MCS0012</b>
<b>U</b>	41/46	50
<b>Material</b>	Rubber	Rubber
<b>Colour</b>	Grey	Grey

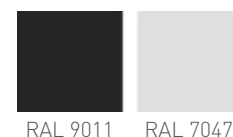
**Delivery consists of:** 1 vertical sealing strip, 1 horizontal sealing strip



### Fix Easy front plate

The front plate is used for creating an airtight seal of the 19-inch surface. When this front plate was designed, the emphasis was on the ease of installation. The front plate can therefore be fitted in no time. A special plastic connector is used for fitting the front plate between the 19-inch profiles. You do not need any tools for the installation!

Material: Steel  
Thickness: 1.0 mm  
19-inch: Yes  
Finishing: Powder coating



<b>RAL 7047</b>	<b>MFE0101</b>	<b>MFE0102</b>	<b>MFE0103</b>	<b>MFE0104</b>	<b>MFE0105</b>
<b>RAL 9011</b>	<b>MFE0101B</b>	<b>MFE0102B</b>	<b>MFE0103B</b>	<b>MFE0104B</b>	<b>MFE0105B</b>
Height in U	1	2	3	6	9
Qty	1	1	1	1	1

<b>RAL 7047</b>	<b>MFE0111</b>	<b>MFE0112</b>	<b>MFE1120</b>
<b>RAL 9011</b>	<b>MFE0111B</b>	<b>MFE0112B</b>	<b>MFE1120B</b>
Height in U	1	2	240
Qty	Set of 6	Set of 6	Mix

The mix consists of:  
24 plates of 1U = 24U in total  
24 plates of 2U = 48U in total  
24 plates of 3U = 72U in total  
16 plates of 6U = 96U in total

**Delivery consists of:** front plate incl. plastic connectors

**1. Housing** 1.8 Airflow optimisation



**Plastic front plate**

The plastic front plate is used for creating an airtight seal of the 19-inch surface. The front plates were specifically designed to make them as easy as possible to install and to provide an airtight 19-inch seal. The front plate can be fitted inbetween the 19-inch profiles easily. No fasteners are needed for this. Airtight accessories create energy savings because they prevent air leaks.

Material: ABS (UL94-V0)  
Colour: RAL 9005

RAL 9005	MFE1105
Height in U	1
Qty	25

**Delivery consists of:** 25x 1U plastic front plates



**Switching & routing air inlet duct**

Minkels has developed an air inlet duct for the 1U and 2U converters. The equipment is installed at the back of the rack and takes its supply of cold air from the front of the rack (corridor). This means that the cables can remain at the back of the rack and the product can still receive enough cold air to keep it cool.

The 1U variant can be extended from 210 mm to 300 mm.  
The 2U variant can be extended from 350 mm to 500 mm.

Height 1 HE	MRS0001	MRS0012	MRS0013	MRS0014
Height 2 HE			MRS0022	MRS0002
Variable depth in mm	210 - 300 mm	300 - 450 mm	160 - 200 mm	350 - 500 mm

**Delivery consists of:** air inlet duct including assembly materials

**1. Housing** 1.8 Airflow optimisation



**Inserts in the side seal plates**

The plates are fitted in the side sealing plates' 2U x 19 inch cut-aways and can be used for airtight cable entry (you can see some examples in the photos on page 46). The accessories which use foam are even more airtight. Airtight accessories create energy savings because they prevent air leaks. The airtight front panel can also be used for covering the cut-aways.



RAL 9011 RAL 7047

RAL 7047	MCS5001	MCS5002	MCS5004	MCS5005
RAL 9011	MCS5001B	MCS5002B	MCS5004B	MCS5005B
Height in U	2	2	2	2
Description	Front plate	Cable entry plate with brush	Cable entry plate with foam	1U cable entry plate with foam combined with 1U front plate

**Delivery consists of:** including assembly materials



**Cable entry plates between the 19-inch profiles**

These cable entry plates are suitable for creating a cable entry point. The cable entry plates are fitted between the 19-inch profiles (you can see some examples in the photos on page 46). The types which use foam are particularly airtight. Airtight accessories yield energy savings because air leaks are prevented.



RAL 9011 RAL 7047

RAL 7047	MCS5006
RAL 9011	MCS5006B
Height in U	1

**Delivery consists of:** including assembly materials



# SECURITY of racks and aisle containment

IT infrastructures are vulnerable. Securing access to data and equipment therefore does not end at the walls of a data centre or server room. Security at the rack level is becoming increasingly important for organisations.

This emphasis of this catalogue in terms of security is on our standard locking systems. In addition to the standard locking options, Minkels offers a wide range of electronic locking systems. This offer can be found in our mass customisation brochure.

## ELECTRONIC LOCKING SYSTEMS

These security solutions involve not only cylinder locks on the racks, but also electronic security with pass code systems such as RFID technology for authorising and registering activities, so that a user can see afterwards who was at a certain rack and at what time they were there. Minkels offers a data centre security product line with three different solutions, varying in intelligence and fine-tuned to a broad spectrum of customer specific products.

## HID-DIRECT AND HID-485

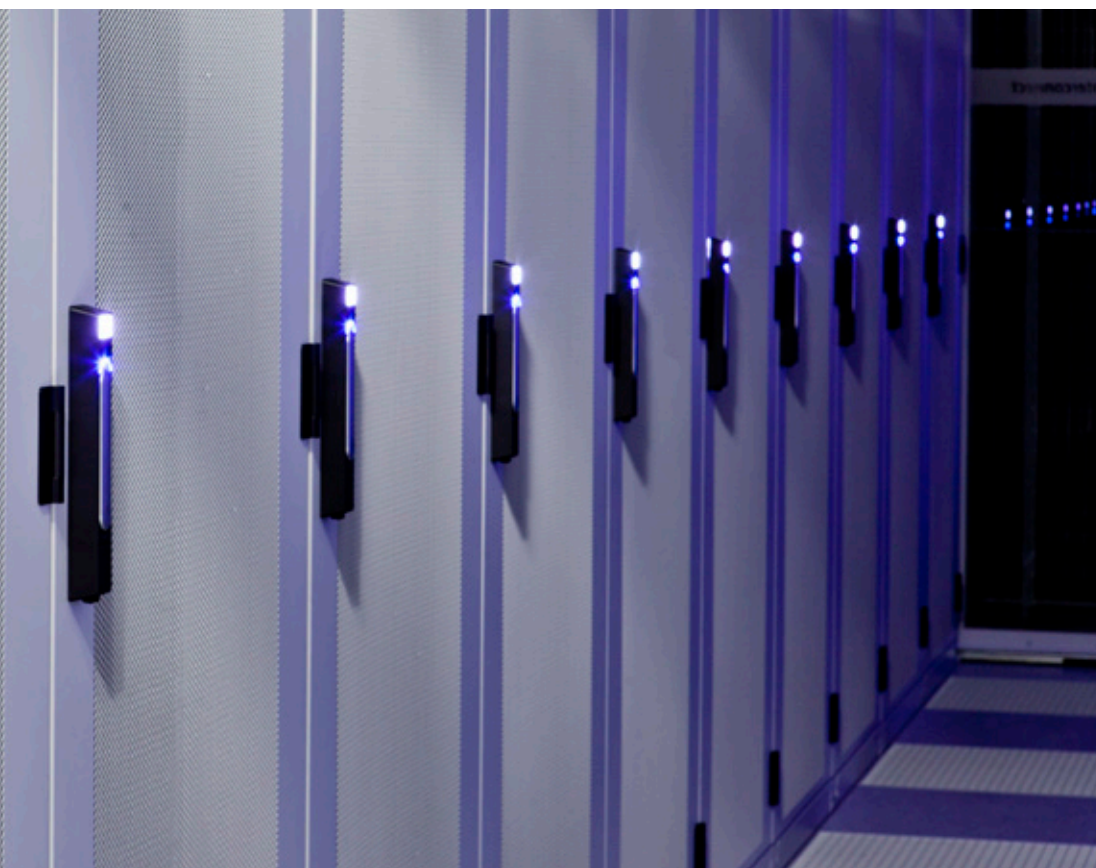
HID-Direct is very well suited for racks which are distributed over a larger area with connectivity via a single network. HID-485 is a smart and cost-effective solution for

centralised data rooms, for environments with a maximum of 32 handles that share a single gateway on the network.

## BASIC

The Basic solution can be integrated into an existing building management or access control system. Basic will open a rack when given a signal by an authorised user via the host system. In addition, the Basic handle can also be coupled as a 'slave' to an HID handle. Depending on the access status of the HID handle, the Basic will automatically be opened or closed as well. Advantages of this master/slave combination are simplicity of the management and cabling, and cost savings.

More information about the Minkels electronic locking systems can be found in our mass customisation brochure: [www.minkels.com/downloads](http://www.minkels.com/downloads). Or contact us for more information! You can find the contact details on the back side of this catalogue.



**1. Housing** 1.9 Security



**Locking systems**

Locking systems for the front and back doors (without locking rods).

Swivel handle, Fix Easy, conversion set	<b>MLK0011</b>	
Swivel handle, Fix Easy, with number lock, conversion set		<b>MLK0010</b>
locking points	2 points	2 points
Height unit	25, 37, 41, 46 and 50	25, 37, 41, 46 and 50

**Delivery consists of:** single items incl. assembly materials



**Inserts for swivel handles**

There are two possibilities for filling in the swivel handles: a blank or a cylinder lock.

<b>Blank</b>	MLK9001
<b>EK-333 cylinder lock</b>	MLK9003

**Delivery consists of:** 1 lock and 2 keys where applicable, incl. assembly materials



**Cylinder lock for front and side panels**

The cylinder lock replaces the locking clip and it can be fitted to the rear and side panels. This adds extra security to prevent unauthorised access to the rack. The number of locks depends on the height of the panel. Above 37U, 4 locks are used. If the panel is less than 37U, 2 locks are used.

<b>simple cylinder lock</b>	MSP0199
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**Delivery consists of:** 1 cylinder and 2 keys



# WALL enclosures



The wall enclosure systems are constructed with an emphasis on flexibility and accessibility.

## **MWE**

Minkels MWEs have eliminated awkward-to-use wall housings once and for all. These attractive and flexible housing elements have been specially developed to allow building-related IT networks to be installed and managed as quickly and efficiently as possible.

Unlike traditional wall housing, the MWE is not delivered in assembled form. A single fitter can install the MWE in very little time.



## 1. Housing 1.10 Wall enclosures



### MWE wall enclosure

The basic frame consists of a wall element with an integrated strain relief profile, four bars running front to back, two cable entry plates (top and bottom) and a set (2 pcs) of 19-inch profiles. The depth of the 19-inch profiles can be adjusted in steps of 50 mm. The cable holes always fit because the installation engineer can change their size on the spot thanks to the handy bend-away fingers. The 19-inch profiles have a pattern of holes on the side to allow accessories to be fitted. The casing consists of two identical upper and lower panels with ventilation slots at the rear, two identical side panels and a Securit glass door with an EK-333 cylinder lock with a handle.

Width: 600 mm  
 Colour: RAL 7047 and RAL 9011  
 Finishing: Powder coating  
 Max. load: 100 kg

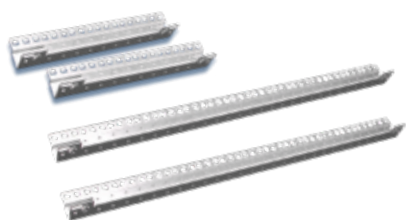


Height in U and mm	Single items					
	Depth 425 mm		Depth 525 mm		Depth 625 mm	
	Built-in depth: 0 - 370 mm		Built-in depth: 0 - 470 mm		Built-in depth: 0 - 570 mm	
Colour	RAL 7047	RAL 9011	RAL 7047	RAL 9011	RAL 7047	RAL 9011
6U - 342 mm	446220	-	446221	446180	-	-
9U - 476 mm	-	-	446222	446181	446225	446182
12U - 609 mm	-	-	446223	446183	446226	446184
15U - 742 mm	-	-	446224	446185	446227	446186
21U - 1009 mm	-	-	-	-	446228	446187



Height in U and mm	Pallet			
	Depth 525 mm		Depth 625 mm	
	Built-in depth: 0 - 470 mm		Built-in depth: 0 - 570 mm	
Colour	RAL 7047	RAL 9011	RAL 7047	RAL 9011
6U - 342 mm	-	-	-	-
9U - 476 mm	446229 (8 pcs)	446235 (8 pcs)	446232 (8 pcs)	446238 (8 pcs)
12U - 609 mm	446230 (8 pcs)	446236 (8 pcs)	446233 (8 pcs)	446239 (8 pcs)
15U - 742 mm	446231 (8 pcs)	446237 (8 pcs)	-	-
21U - 1009 mm	-	-	446234 (4 pcs)	446240 (4 pcs)

**Delivery consists of:** 1 rear plate, 4 depthwise bars, 2 cable entry plates, 2 19-inch profiles, 2 roof and floor plates, 2 side panels, 1 glass door, 1 assembly set, incl. assembly guide



### 19-inch profiles for MWE wall enclosure

The flat profiles can be used when fitting shelves of equipment is desired (with attachments front and back). Delivered in sets of 2.

	MWEPR06	MWEPR09	MWEPR12	MWEPR15	MWEPR21
Height unit (U)	6	9	12	15	21

**Delivery consists of:** 2 profiles incl. assembly materials

## 1. Housing 1.10 Wall enclosures



### MWE roof plate with integrated fan unit

This fan unit can be added as an option to generate a forced flow of cooling air through the MWE wall enclosure. To do that, the existing roof panel must be removed and replaced with this item. The MCSTF01 thermostat can be used in combination with this MWE roof plate.

	MWEFP525	MWEFP525-B	MWEFP625	MWEFP625-B
Colour	RAL 7047	RAL 9011	RAL 7047	RAL 9011
Depth in mm	525	525	625	625

**Delivery consists of:** 1 roof plate with 2 fan units, incl. assembly materials



### Thermostat for MWE wall enclosure

The thermostat can be used together with the following fans and a roof plate:

- triple fan unit MCS1004(B), page 26.
- MWE roof plate with integrated double fan unit, MWEFP525 and MWEFP625 – see page 54.

The thermostat ensures that the fan switches on at a temperature you have selected.

**MCSTF01**

Thermostat

**Delivery consists of:** 1 thermostat with cable

## 1. Housing 1.10 Wall enclosures

MPL0011 (page 29), MPL0311 and MPL0312 (page 30) shelves can be used in all wall enclosure elements. For more information, please refer to the corresponding pages in this standard product catalogue.



### Cable entry strip for MWE wall enclosure

For dust-free cable entry, instead of the top and/or bottom cable entry plate. Suitable for MWE wall enclosure



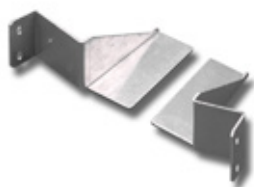
**360 mm conduit**

MWECB01

**Delivery consists of:** 1 cable entry brush, incl. assembly materials

### MWE corner guide set

The corner guide set supports heavy 19-inch equipment. The corners are fitted to the sides of the 19-inch profiles and therefore do not use up any height units in the front plane. Suitable for MWE wall enclosure.

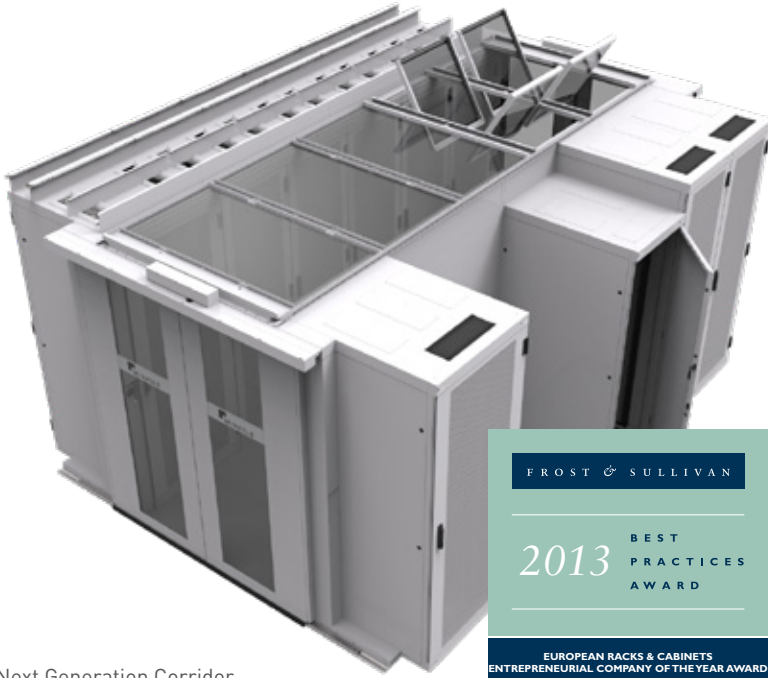


Material: Sheet steel  
Colour: Sendzimir

	MWECS01
Height unit (U)	1
Max. load	50

**Delivery consists of:** 1 corner guide support (left), 1 corner guide support (right), incl. assembly materials

# COOLING aisle containment



Next Generation Corridor

Aisle containment systems are the solution to the challenge that data centres have faced from the very start: how to optimise cooling and energy efficiency through optimum separation of the warm and cold airflows. Servers are installed in insulated corridors. Cold air is blown into these corridors (aisles) to cool the servers. The warm air produced by the servers is extracted at the back.

In the form of the Next Generation Corridor and the Free Standing Corridor, Minkels offers two modular and flexible aisle containment solutions. These future-proof solutions enable Minkels offer the flexibility and modularity needed to keep a step ahead of the dynamic changes present in a modern-day data centre.

In this standard product catalogue, Minkels presents a number of components which can be used to expand your aisle containment. We would also like to refer you to our mass customisation brochure: [www.minkels.com/downloads](http://www.minkels.com/downloads) for more information about the aisle containment solutions, which can be assembled in whatever way you desire using the building blocks listed.



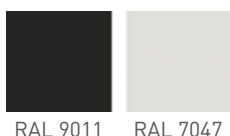
Watch the Free Standing Corridor and Drop Away Panels clip on the Minkels YouTube channel:

[Youtube.com/c/minkelshq](https://www.youtube.com/c/minkelshq)



Free Standing Corridor

## 2. Cooling 2.1 Passive cooling: Aisle containment - Roof systems



### Drop away panels

Drop away panels provide seamless integration of aisle containment solutions with sprinkler or water mist systems. In the event of a fire in the data centre, the plastic Drop away panels automatically soften and drop down so that they do not cause an obstruction when the sprinklers are activated.



Drop away panels	RAL 7047	RAL 9011
Length 4000 mm	MCS221224	MCS221224B
6000 mm	MCS221226	MCS221226B
8000 mm	MCS221228	MCS221228B
9600 mm	MCS221229	MCS221229B

**Delivery consists of:** Roof system, drop away panels and sealing

### High Transparency Roof

Your aisle containment solution can be fitted with a High Transparency Roof. These roof panels provide high translucency / light transmission – up to 83%. The roof panels are mounted on rails, separate from the server racks. The length is the overall length of the aisle containment, i.e. including the start and end panels.



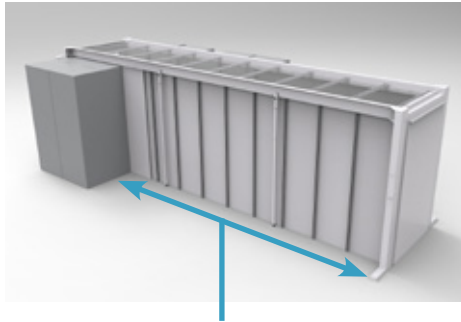
High Transparency Roof	RAL 7047	RAL 9011
Length 4000 mm	MCS221214	MCS221214B
6000 mm	MCS221216	MCS221216B
8000 mm	MCS221218	MCS221218B
9600 mm	MCS221219	MCS221219B

**Delivery consists of:** Roof system, glass panels and sealing





**2. Cooling** 2.2 Passive cooling: Aisle containment - Panel systems

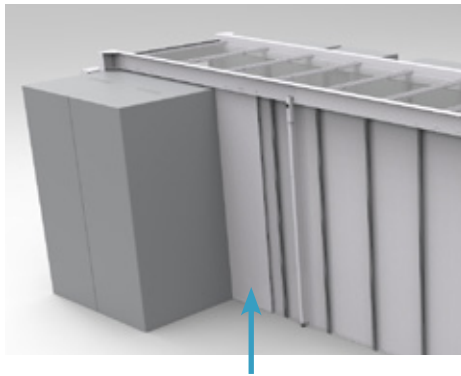


**Panels for the Free Standing**

You can use steel panels to create an airtight seal for the Free Standing Corridor in spaces where there are no racks. The side panels are connected by three quarter-turn locks. The panels are available in two different widths and colours and you can fill the remaining widths by turning the panel around. The side panels are earthed upon being attached to the free standing structure. The panels can be attached to the floor if desired.



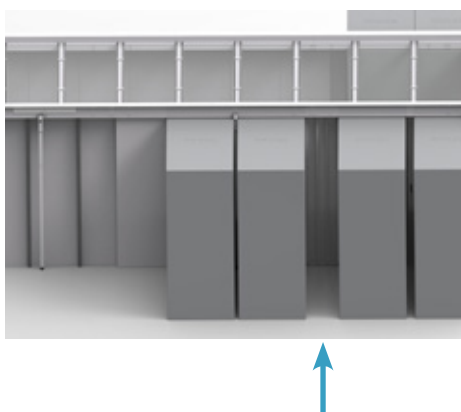
**Panel filler for widths from 325 to 600 mm**



You can fill the remaining widths by turning the side panel around.

Panels	RAL 7047	RAL 9011
325 x 2200 mm (w x h)	MCS3337	MCS3337B
325 x 2400 mm (w x h)	MCS3338	MCS3338B
600 x 2200 mm (w x h)	MCS3367	MCS3367B
600 x 2400 mm (w x h)	MCS3368	MCS3368B

**Delivery consists of:** Pre-assembled panel including installation materials for floor assembly



**Flexible steel panel for the Free Standing Corridor**

Use the flexible, steel panels to fill and create an airtight seal in widths ranging from 100 to 400 mm. The flexible panels are earthed upon being attached to the free standing structure.



Flexible steel panel	RAL 7047	RAL 9011
100-175 x 2200 mm (w x h)	MCS3625	MCS3625B
150-275 x 2200 mm (w x h)	MCS3626	MCS3626B
250-350 x 2200 mm (w x h)	MCS3627	MCS3627B
300-400 x 2200 mm (w x h)	MCS3628	MCS3628B
100-175 x 2400 mm (w x h)	MCS3645	MCS3645B
150-275 x 2400 mm (w x h)	MCS3646	MCS3646B
250-350 x 2400 mm (w x h)	MCS3647	MCS3647B
300-400 x 2400 mm (w x h)	MCS3648	MCS3648B

**Panel filler for widths from 100 to 400 mm**

**Delivery consists of:** Flexible panels, top, bottom and side profiles including installation materials

## 2. Cooling

### 2.2 Passive cooling: Aisle containment - Panel systems



#### Steel side filler for the Free Standing Corridor

The steel side fillers are for filling and sealing small openings between 50 and 110 mm in size. The side fillers are easy to mount using the integrated handle. After installation, simply turn the handle until it is out of the way.



RAL 9011 RAL 7047

Steel Side filler	RAL 7047	RAL 9011
50-70 x 2200 mm (w x h)	MCS3622	MCS3622B
70-90 x 2200 mm (w x h)	MCS3623	MCS3623B
90-110 x 2200 mm (w x h)	MCS3624	MCS3624B

#### Panel filler for widths from 50 to 110 mm

**Delivery consists of:** Panel with handle, foam sealant and bottom profile



#### Foam for vertical support

You can use the foam to seal openings between the racks and the posts or other openings under 50 mm in size.

Foam for vertical support	50 x 2200 mm (w x h)	50 x 2400 mm (w x h)
	MCS3621	MCS3641

**Delivery consists of:** Foam sealant

#### Panel filler for widths from < 50 mm



#### Top filler HPL package for the Free Standing Corridor

If racks of different heights are being used, you can seal the space between the free standing structure and the racks with a top filler. The top fillers are made of HPL material and are automatically earthed once they are attached to the free standing structure.

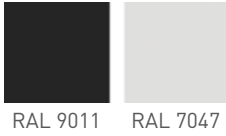


RAL 9011 RAL 7047

Top filler HPL package	RAL 7047	RAL 9011
Size XL 1100 x 1300 mm (w x h)	MCS5161	MCS5161B
Size L 1100 x 920 mm (w x h)	MCS5162	MCS5162B
Size M 900 x 620 mm (w x h)	MCS5163	MCS5163B
Size S 900 x 320 mm (w x h)	MCS5164	MCS5164B

**Delivery consists of:** HPL panel, top, bottom and side profiles, cutting template including installation materials

## 2. Cooling 2.2 Passive cooling: Aisle containment - Panel systems



### Panel systems for the Next Generation Corridor

Use the flexible panel systems to fill openings and create an airtight seal. These panel systems have been specifically designed for the Next Generation Corridor and are automatically earthed once they are attached to the structure. It is very easy to join the panels together.

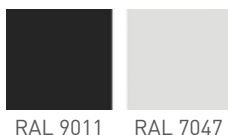
Panel systems	RAL 7047	RAL 9011
300 x 2000 x 25 mm (w x h x d)	MCS5111	MCS5111B
600 x 2000 x 25 mm (w x h x d)	MCS5112	MCS5112B
800 x 2000 x 25 mm (w x h x d)	MCS5113	MCS5113B
1200 x 2000 x 25 mm (w x h x d)	MCS5114	MCS5114B
300 x 2075 x 25 mm (w x h x d)	MCS5121	MCS5121B
600 x 2075 x 25 mm (w x h x d)	MCS5122	MCS5122B
800 x 2075 x 25 mm (w x h x d)	MCS5123	MCS5123B
1200 x 2075 x 25 mm (w x h x d)	MCS5124	MCS5124B
300 x 2200 x 25 mm (w x h x d)	MCS5131	MCS5131B
600 x 2200 x 25 mm (w x h x d)	MCS5132	MCS5132B
800 x 2200 x 25 mm (w x h x d)	MCS5133	MCS5133B
1200 x 2200 x 25 mm (w x h x d)	MCS5134	MCS5134B
300 x 2275 x 25 mm (w x h x d)	MCS5141	MCS5141B
600 x 2275 x 25 mm (w x h x d)	MCS5142	MCS5142B
800 x 2275 x 25 mm (w x h x d)	MCS5143	MCS5143B
1200 x 2275 x 25 mm (w x h x d)	MCS5144	MCS5144B
300 x 2400 x 25 mm (w x h x d)	MCS5151	MCS5151B
600 x 2400 x 25 mm (w x h x d)	MCS5152	MCS5152B
800 x 2400 x 25 mm (w x h x d)	MCS5153	MCS5153B
1200 x 2400 x 25 mm (w x h x d)	MCS5154	MCS5154B

**Delivery consists of:** Flexible side panels, top, bottom and side profiles including installation materials



**2. Cooling** 2.3 Passive cooling: Aisle containment - Door systems

If our standard product range doesn't fit your requirements, we would like to refer you to our Mass Customisation brochure: [www.minkels.com/downloads](http://www.minkels.com/downloads) where you can find more possibilities and options. You can of course also contact us for more information. You can find the contact details on the back side of this catalogue.

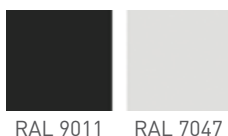


**Self-closing sliding door**

Minkels can offer mechanically self-closing sliding doors which provide an airtight enclosure for your aisle containment system. The self-closing sliding door system is available in two different colours, RAL 7047 and RAL 9011. The doors can be opened manually. After opening, the doors close by themselves. When the doors close, a soft closing mechanism ensures that the doors do not bang against each other unexpectedly. The door panels contain safety glass panels to guarantee the safety of your staff and to allow ambient light into the containment area, as well as making it possible to see into the corridors from outside.

<b>RAL 7047</b>	<b>MCS221220</b>
<b>RAL 9011</b>	<b>MCS221220B</b>
<b>Self-closing sliding door</b>	1200 x 2200 (w x h)

**Delivery consists of:** Sliding door beam, set of doors and assembly materials



**Extension beam**

If the corridor has racks that are higher than the self-closing sliding door, you can correct the height difference with the extension beam. Example: If there is a rack (2200 mm high) with an elevated plinth at the end of the row, the rack will be 2275 mm high. However, the self-closing sliding door is 2200 mm high. You can correct the difference (2275-2200 = 75 mm) using the extension beam.

<b>RAL 7047</b>	<b>MCS6035</b>
<b>RAL 9011</b>	<b>MCS6035B</b>
<b>Extension beam for corridor door</b>	75 mm (w)

**Delivery consists of:** Extension beam with cap

**2. Cooling** 2.4 Passive cooling: Aisle containment - Accessories

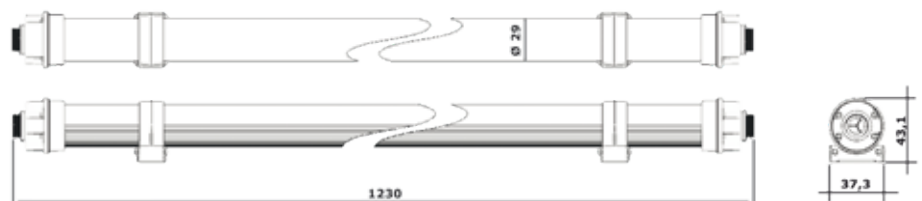
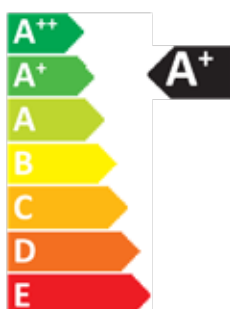
Minkels can offer energy-efficient LED Tubes that improve visibility within data centres, thereby creating a safer and healthier working environment. The highest safety certification level, IEC 62471:2006, guarantees that the eyes of users will be protected. These LED Tubes have been optimised for both the Next Generation and the Free Standing Corridors.



**LED lighting**

Minkels LED Tubes are extremely easy to install. The suspension points are easy to position, allowing LED lighting to be fitted in a corridor in very little time. Once assembled, the Minkels LED Tube is highly flexible. The rotation capability in the tubes allows the lighting to be targeted specifically at particular pieces of equipment. The high lighting intensity and the energy efficiency of Minkels LED Tubes are particularly effective in the aisles of Free Standing or Next Generation Corridors. Particularly when black racks are used, these LED Tubes provide improved visibility. Minkels LED Tubes can be easily extended using extension cords that are hidden away behind small covers so that they appear as a single whole. Each LED Tube can be fitted with a motion sensor so that the lights turn off if no motion is detected for a period of time. This functionality again underlines the energy efficiency of this lighting solution for a data centre.

	Description	
	LED light 120 cm wide	MCS4011
	LED light 120 cm wide with PIR sensor	MCS4012
Start and end panel kit for Next Generation Corridor and Free Standing Corridor for LED 1200 mm - RAL 7047		MCS4013
Start and end panel kit for Next Generation Corridor and Free Standing Corridor for LED 1200 mm - RAL 9011		MCS4013B
Start and end panel kit for Next Generation Corridor and Free Standing Corridor for LED 1800 mm - RAL 7047		MCS4014
Start and end panel kit for Next Generation Corridor and Free Standing Corridor for LED 1800 mm - RAL 9011		MCS4014B
	Power cable, 4 metres, C14 connector	MCS4021
	Plastic cover + power cable (10 cm), male-female connector	MCS4022





## 2. Cooling

### 2.5 Active cooling: VariCondition dummy coolers and fillers



Dummy cooler

#### VariCondition dummy coolers

You can use dummy coolers if you want to reserve space for a future 300 mm row-based cooler. The reserved space at the top, front and back side will already have an airtight seal thanks to the dummy cooler. The dummy cooler you select depends on the cooling method you choose: closed loop, open loop or hybrid loop. Both the dummy and the actual row-based cooler are 2000 mm high. If a different height is required, you can fill the space with the VariCondition fillers for top of unit, which are listed in the second table below.

VariCondition Dummy cooler	RAL 7047	RAL 9011
Open loop - 300 mm wide	MCS7021	MCS7021B
Hybrid loop - 300 mm wide	MCS7022	MCS7022B
Closed loop - 300 mm wide	MCS7023	MCS7023B

**Delivery consists of:** dummy frame, front and back panel including installation materials

#### VariCondition filler for top of unit

The VariCondition fillers are used in combination with the dummy coolers or row-based coolers and are equipped with a cut-out for cables. The fillers fill the remaining space and create an airtight seal.

VariCondition filler for top of unit	RAL 7047	RAL 9011
300 x 1000 x 2075 mm (w x d x h)	MCS7041	MCS7041B
300 x 1000 x 2200 mm (w x d x h)	MCS7042	MCS7042B
300 x 1000 x 2275 mm (w x d x h)	MCS7043	MCS7043B
300 x 1100 x 2075 mm (w x d x h)	MCS7051	MCS7051B
300 x 1100 x 2200 mm (w x d x h)	MCS7052	MCS7052B
300 x 1100 x 2275 mm (w x d x h)	MCS7053	MCS7053B
300 x 1200 x 2075 mm (w x d x h)	MCS7061	MCS7061B
300 x 1200 x 2200 mm (w x d x h)	MCS7062	MCS7062B
300 x 1200 x 2275 mm (w x d x h)	MCS7063	MCS7063B

**Delivery consists of:** filler including installation materials

#### Closed loop

In a closed loop solution, all airflow from the cooler is routed directly into the adjacent 19-inch racks.

#### Open loop

In an open loop solution, the cold air just outside the racks is routed into the space.

#### Hybrid cold loop

This solution is a combination of a closed loop and an open loop solution. The hot air is extracted from the cabinet, just like with a closed loop solution, thus directly from the back side of the rack. This hot air is then cooled in the cooler and transported to the front side of the racks in the same manner as with an open loop solution. It is also possible to completely reverse the airflows (hybrid hot loop solution).

#### VariCondition H20-324 bottom filler

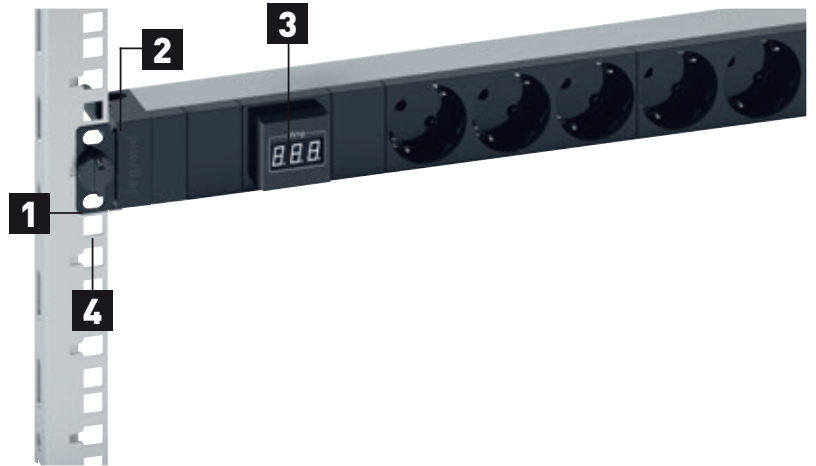
If you wish to connect your row-based cooler to a rack with an elevated plinth, you can use the below fillers to fill the bottom of the unit.

VariCondition H20-324 bottom filler	RAL 7047	RAL 9011
1100/1200 x 75 mm (d x h)	MCS7267	MCS7267B

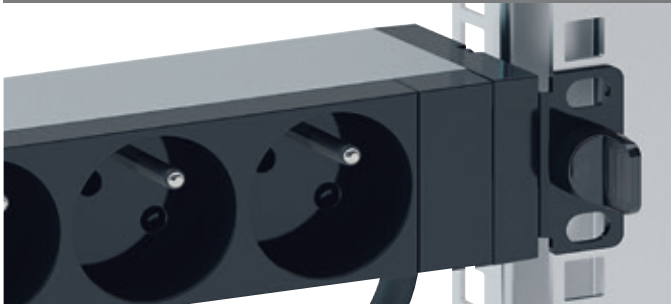
**Delivery consists of:** filler, plinth and earthing cables

# POWER & CONNECTIVITY

Power is an operationally critical component of any server room and any data centre. Even the slightest interruption to the power supply can have a huge impact. Minkels Power & Connectivity solutions make it possible to manage the risks of power outages. Minkels has made this part of the policy for supplying energy-efficient solutions for data centres. Together with Legrand and sister company Raritan, we can provide basic and intelligent PDUs that not only meet your requirements today but will fulfil your needs tomorrow.



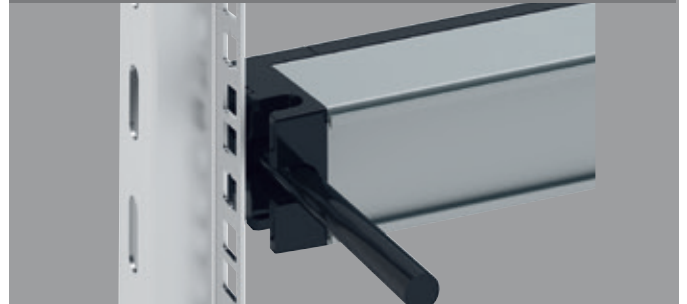
## 1 RAPID ASSEMBLY



### NO TOOLS NEEDED FOR ASSEMBLY

Can be fitted onto the 19-inch profiles quickly and without tools. No screws or nuts are needed.

## 2 CABLE GUIDE



### OPTIMISATION OF SPACE

Cables are kept firmly in place by a cable guide.

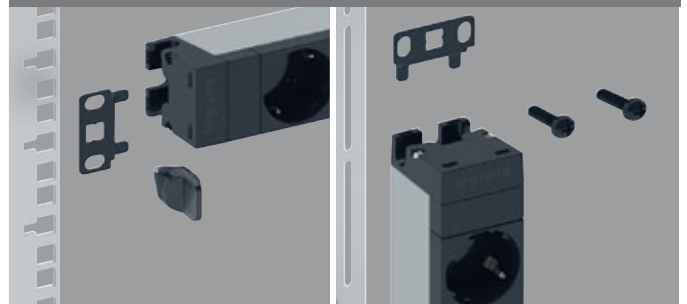
## 3 AMMETER



### CHANGING THE POSITION

The ammeter can be rotated 90 degrees to make sure it is easy to read, irrespective of the orientation in which it is assembled (horizontal or vertical).

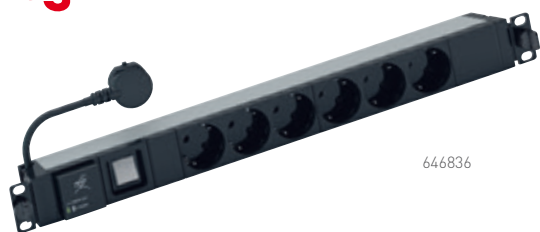
## 4 ASSEMBLY BRACKETS



### HORIZONTAL OR VERTICAL

Designed for horizontal assembly without tools. The Zero-U PDUs can also be fitted vertically, simply by rotating the assembly brackets. When fitted vertically, a bolt and screw are needed, however, to fit the PDU firmly upright.

**3. Power & Connectivity** 3.1 Basic PDU 19-inch



646836

**Basic PDU 19-inch**

The ease with which the innovative basic PDUs can be installed is a major benefit. If you fit the PDU horizontally, you do not need any tools or fasteners for assembly

19-inch 1U	646806	646841	646836
Plug	SCHUKO/UTE plug	SCHUKO/UTE plug	SCHUKO/UTE plug
Outlets	SCHUKO (6)	SCHUKO (6)	SCHUKO (6)
Assembly	19-inch	19-inch	19-inch
Power supply	1 Phase 16A	1 Phase 16A	1 Phase 16A
Technical details	-	<b>Ammeter</b>	<b>Current indicator light, OSB</b>

19-inch 1HE	646821	LPS0101	646813	646815
Plug	SCHUKO/UTE plug	SCHUKO/UTE plug	BS1363 plug	IEC 60309 plug
Outlets	SCHUKO (9)	SCHUKO (7)	BS1363 (8)	C13 (12)
Assembly	19-inch	19-inch	19-inch	19-inch
Power supply	1 Phase 16A	1 Phase 16A	1 Phase 13A	1 Phase 16A
Technical details	<b>Current indicator light</b>	<b>OSB</b>	-	-

19-inch 1HE	646840	646820	646835
Plug	SCHUKO/UTE plug	SCHUKO/UTE plug	SCHUKO/UTE plug
Outlets	UTE (6)	UTE (9)	UTE (6)
Assembly	19-inch	19-inch	19-inch
Power supply	1 Phase 16A	1 Phase 16A	1 Phase 16A
Technical details	<b>Ammeter</b>	<b>Current indicator light</b>	<b>Current indicator light, OSB</b>

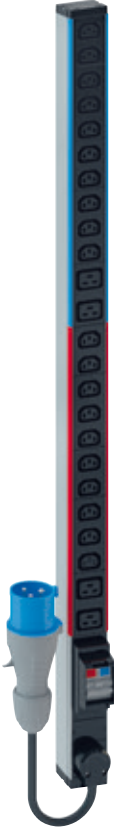


**3. Power & Connectivity** 3.2 Basic PDU Zero-U



**Basic PDU Zero-U**

These PDUs are mounted vertically in the rack; for vertical assembly you do need to fasten it in place.



646861

Zero-U	LPS0004	LPS1004	LPS0203	LPS1203
Plug	SCHUKO/UTE plug	SCHUKO/UTE plug	SCHUKO/UTE plug	SCHUKO/UTE plug
Outlets	SCHUKO (14)	UTE (14)	SCHUKO (12)	UTE (12)
Assembly	Zero-U	Zero-U	Zero-U	Zero-U
Power supply	1 Phase 16A	1 Phase 16A	1 Phase 16A	1 Phase 16A
Technical details	<b>Current indicator light</b>	<b>Current indicator light</b>	<b>OSB</b>	<b>OSB</b>

Zero-U	646853	646861	LPS8001	LPS9002
Plug	IEC 60309 plug	IEC 60309 plug	IEC 60309 plug	IEC 60309 plug
Outlets	SCHUKO (24) and MCB (2)	MCB (2), C13 (20) and C19 (4)	C13 (30) and C19 (12)	MCB 16A (3), C13 (24) and C19 (12)
Assembly	Zero-U	Zero-U	Zero-U	Zero-U
Power supply	1 Phase 32A, MCB 16A (2)	1 Phase 32A, MCB 16A (2)	3 Phase 16A	3 Phase 32A, MCB 16A (3x2)
Technical details	-	-	-	-



**Output blocking**

The PDUs with C13 and C19 outlets have a locking system so that they cannot be removed accidentally.

Output blocking	646890	646892	646894	646895
Description	SCHUKO/UTE set of 6 pcs with key	BS1363 set of 6 pcs with key	C13 set of 6 pcs with key	C19 set of 6 pcs with key

### 3. Power & Connectivity 3.3 Intelligent PDU



#### PDU metered & switched PDUs and sensors

The range of PDUs from Legrand offers you innovative solutions for data centers and local networks.

##### Zero-U: for data centers / server rooms

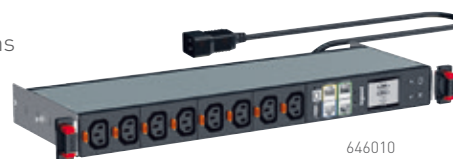
These are used in server cabinets where:

- there is a high density of active equipment
- electrical distribution quality is crucial

##### 19-inch: for data centers / server rooms and computer rooms

These are used in patching and server enclosures where:

- there is a low density of active equipment to be powered
- ease of installation is an advantage



**Legrand metered and switched PDUs** provide the most common power supply configurations to meet the needs of data centers and local networks. The intelligent PDUs can be used to monitor and control the rack power infrastructure remotely, in order to efficiently manage power capacity and ensure uptime. With input metering and output level switching, these can be used to remotely control the power of devices and supply the necessary information as needed. Legrand PDUs also integrate input metering and output level switching, providing granular power switching of each device connected to the iPDU, and making it easier to manage IT installations remotely, while helping to improve availability.

PDU 19-inch	646010	646011
Plug	C20	IEC 60309
Outlets	C13 (12)	C13/C19 (12+4)
Assembly	19-inch	19-inch
Power supply	1 Fase 16A	1 Fase 32A

PDU Zero-U	646012	646013	646014	646015
Plug	IEC 60309	IEC 60309	IEC 60309	IEC 60309
Outlets	C13/C19 (18+4)	C13/C19 (36+6)	C13/C19 (36+6)	C13/C19 (36+12)
Assembly	Zero-U	Zero-U	Zero-U	Zero-U
Power supply	1 Fase 16A	1 Fase 32A	3 Fase 16A	3 Fase 32A

PDU 19-inch	646020	646021
Plug	C20	IEC 60309
Outlets	C13 (8)	C13 (16)
Assembly	19-inch	19-inch
Power supply	1 Fase 16A	1 Fase 32A

PDU Zero-U	646022	646023	646024	646025
Plug	IEC 60309	IEC 60309	IEC 60309	C14
Outlets	C13/C19 (21+3)	(C13/C19 21+3)	C13/C19 (21+3)	C13 (16)
Assembly	Zero-U	Zero-U	Zero-U	Zero-U
Power supply	1 Fase 16A	1 Fase 32A	3 Fase 16A	1 Fase 10A

Sensors	646000	646001	646002
Description	Temperature sensor for intelligent PDUs	Temperature and humidity sensor for intelligent PDUs	Potential free contact sensor for intelligent PDUs



**3. Power & Connectivity** 3.4 PDU assembly brackets

**Assembly brackets**

In addition to the standard Legrand assembly brackets, Minkels also offers toolless assembly brackets (LPS0091 and LPS0092) and other assembly brackets (LPS0095, LPS0096 and LPS0097).

Assembly bracket	LPS0091	LPS0092
	Toolless assembly bracket for 1 vertical PDU	Toolless assembly bracket for 2 vertical PDUs
	Set of 2 pcs	Set of 2 pcs
Suitable for	Legrand and Raritan PDU	Legrand and Raritan PDU

**Toolless mount to the 19-inch profile**



In combination with a Raritan PDU

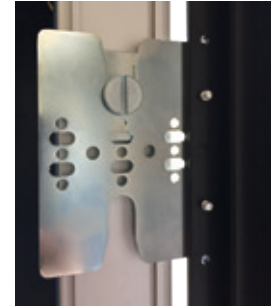


In combination with a Legrand PDU

**Toolless mount to the frame uprights**



In combination with a Raritan PDU



In combination with a Legrand PDU



Assembly bracket	LPS0095	LPS0096	LPS0097
	Assembly brackets for mounting 1 aluminum PDU	Assembly brackets for mounting 1 aluminum PDU	Assembly brackets for mounting 1 or 2 aluminum PDU(s)
	Mounting to the frame uprights	Mounting to the frame uprights co-location racks	Mounting to the frame uprights and on the 19-inch profiles
	Set of 2 pcs	Set of 2 pcs	Set of 2 pcs
Suitable for	Legrand PDUs	Legrand PDUs	Legrand PDUs



Assembly bracket: LPS0095

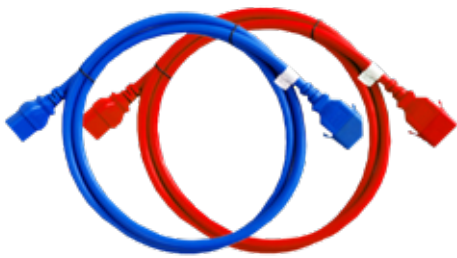


Assembly bracket: LPS0096



Assembly bracket: LPS0097

If you have any questions about our power solutions or if you cannot find the products you are looking for in this catalogue, don't hesitate to contact us! We'll be happy to advise. You can find the contact details on the back side of this catalogue.



### SECURELOCK™ Power Cords

Prevent costly downtime from accidental power cord disconnects with securelock outlets and power cords.



SECURELOCK™ Power Cords	Red	Blue
1.0M, 1 x IEC C14, 1 x IEC C13	SLC14C13-1.0MK1-6PK	SLC14C13-1.0MK2-6PK
1.5M, 1 x IEC C14, 1 x IEC C13	SLC14C13-1.5MK1-6PK	SLC14C13-1.5MK2-6PK
2.0M, 1 x IEC C14, 1 x IEC C13	SLC14C13-2.0MK1-6PK	SLC14C13-2.0MK2-6PK
1.0M, 1 x IEC C20, 1 x IEC C19	SLC20C19-1.0MK1-6PK	SLC20C19-1.0MK2-6PK
1.5M, 1 x IEC C20, 1 x IEC C19	SLC20C19-1.5MK1-6PK	SLC20C19-1.5MK2-6PK
2.0M, 1 x IEC C20, 1 x IEC C19	SLC20C19-2.0MK1-6PK	SLC20C19-2.0MK2-6PK

**Delivery consists of:** Package with 6 SECURELOCK™ Power Cords



### Air humidity and temperature sensor

Easy to connect to the PXE and immediately ready to use, Raritan's environmental sensors offer added value in data centres and server rooms by monitoring the conditions in and around the server cabinet. The temperature and humidity are monitored very precisely and the user receives a warning at the moment particular thresholds are exceeded, in order to prevent potential problems.



Air humidity and temperature sensor	DPX2-T1H1	DPX2-T3H1
<b>Description</b>	Temperature (1) and humidity (1) sensor with replaceable sensor head for PXE and PX2/PX3 PDU - 3 mtr cable with RJ12 connector	Combo of temperature (3) and humidity (1) sensor with replaceable sensor head for PXE and PX2/PX3 PDU - 3 mtr cable with RJ12 connector

# MONITORING

## Environmental Monitoring System

Minkels monitoring systems are capable of monitoring the direct surroundings of your racks. The modular and efficient construction of the system makes it easy to check up on a single rack or an entire room. The systems can of course be integrated seamlessly and managed using your existing network management software. A variety of products are available. The various versions feature different numbers of ports. We make a distinction here between intelligent ports and the so-called 'dry contact' ports. The intelligent ports are used e.g. for measuring temperature, humidity and air flows. The dry contact ports, on the other hand, are simple on/off switches where e.g. alerts can be read out from CRAC or UPS systems, or which can be used for door contacts.

### Alerts

In the event of an emergency, the relevant people can be alerted in a variety of ways: by e-mail, text messaging, a web interface and SNMP. The monitoring system therefore allows you to always rest assured of the conditions in your computer and the control rooms.



## 4. Monitoring 4.1 Environmental monitoring system



MRM0011L - back

MRM0011L - front



MRM0020LS - back

### Controllers

Various controllers are available, depending on the number of measuring points and the types of sensors desired. In addition, the Pro version offers an even higher degree of management, providing you with more control of your environment.

	Controller	Controller	Controller	Controller	Controller
	MRM0001	MRM0003	MRM0010	MRM0020	MRM0030
Sensor ports	2	4	8	8	8
Dry contact ports	available via sensor port adapter (MRM0132)	available via sensor port adapter (MRM0132)	available via sensor port adapter (MRM0132)	20	60
Camera ports	0	0	0	0	0
Extension ports	0	0	0	0	0

**Delivery consists of:** incl. assembly materials. Delivery: in consultation

	Pro controller	Pro controller	Pro controller	Pro controller
	MRM0010LS	MRM0011L	MRM0020LS	MRM0030LS
Sensor ports	8	8	8	8
Dry contact ports	available via sensor port adapter (MRM0132)	available via sensor port adapter (MRM0132) and/or 8-port dry contact sensor (MRM0124)	20	60
Camera ports	0	4	0	0
Extension ports	2	2	2	2

**Delivery consists of:** incl. assembly materials. Delivery: in consultation

	Controller extension	Controller extension
	MRM0040	MRM0041
Sensor ports	0	8
Dry contact ports	16	available via sensor port adapter (MRM0132)
Camera ports	0	0
Extension ports	0	0

**Delivery consists of:** incl. assembly materials. Delivery: in consultation



## 4. Monitoring 4.1 Environmental monitoring system

### Environmental sensors

The environmental sensors measure the surroundings of the IT equipment and they are connected to the controllers. Using these sensors allows you to monitor e.g. the temperature and humidity.



MRM0101



MRM0102



MRM0118



MRM0122



MRM0117



MRM0109

	Description	
	Temperature sensor with fixed cable (1 m)	MRM0101
	Temperature sensor with fixed cable (2.5 m)	MRM0102
	Temperature sensor	MRM0118
	Temperature sensor (daisy chain to max. 8 sensors) – only with a Pro controller	MRM0122
	Air humidity and temperature sensor	MRM0117
	Airflow sensor	MRM0109

**Delivery consists of:** incl. assembly materials. Delivery: in consultation

### Security and safety sensors

The influence of cloud computing, tighter standards and new guidelines for data centres mean that there is a growing demand for data centre security and safety solutions. Minkels offers a wide variety of security and safety sensors such as motion detectors, smoke detectors and water leak detectors.



MRM0124



MRM0110



MRM0111



MRM0119



MRM0130



MRM0131



MRM0105



MRM0125



MRM0127



MRM0126



MRM0132

	Description	
	Dry contact sensor with 8 ports (only with Pro controller)	MRM0124
	Motion detector	MRM0110
	Smoke detector	MRM0111
	Siren and flashing light	MRM0119
	Universal camera (USB)	MRM0130
	Dome camera with pan/tilt control (USB)	MRM0131
	Water leak detector with fixed cable (4.5 m)	MRM0105
	Water leak detector with fixed cable (30 m)	MRM0125
	Water leak detection loop (3 m)	MRM0127
	Water leak detection loop extension (3 m)	MRM0126
	Dry contact sensor (adapter)	MRM0132

**Delivery consists of:** incl. assembly materials. Delivery: in consultation



## 4. Monitoring 4.1 Environmental monitoring system

### SENSORS

The plug-and-play sensors are recognised automatically by the system. All the sensors are powered by the unit. No separate power supply is therefore required for the sensors. All sensors are connected using an RJ 45 connector. If a registered sensor is removed, a notification will be issued.

### Other sensors

The environmental sensors measure the surroundings of the IT equipment and they are connected to the VariControl-S controllers.



MRM0112



MRM0114



MRM0116

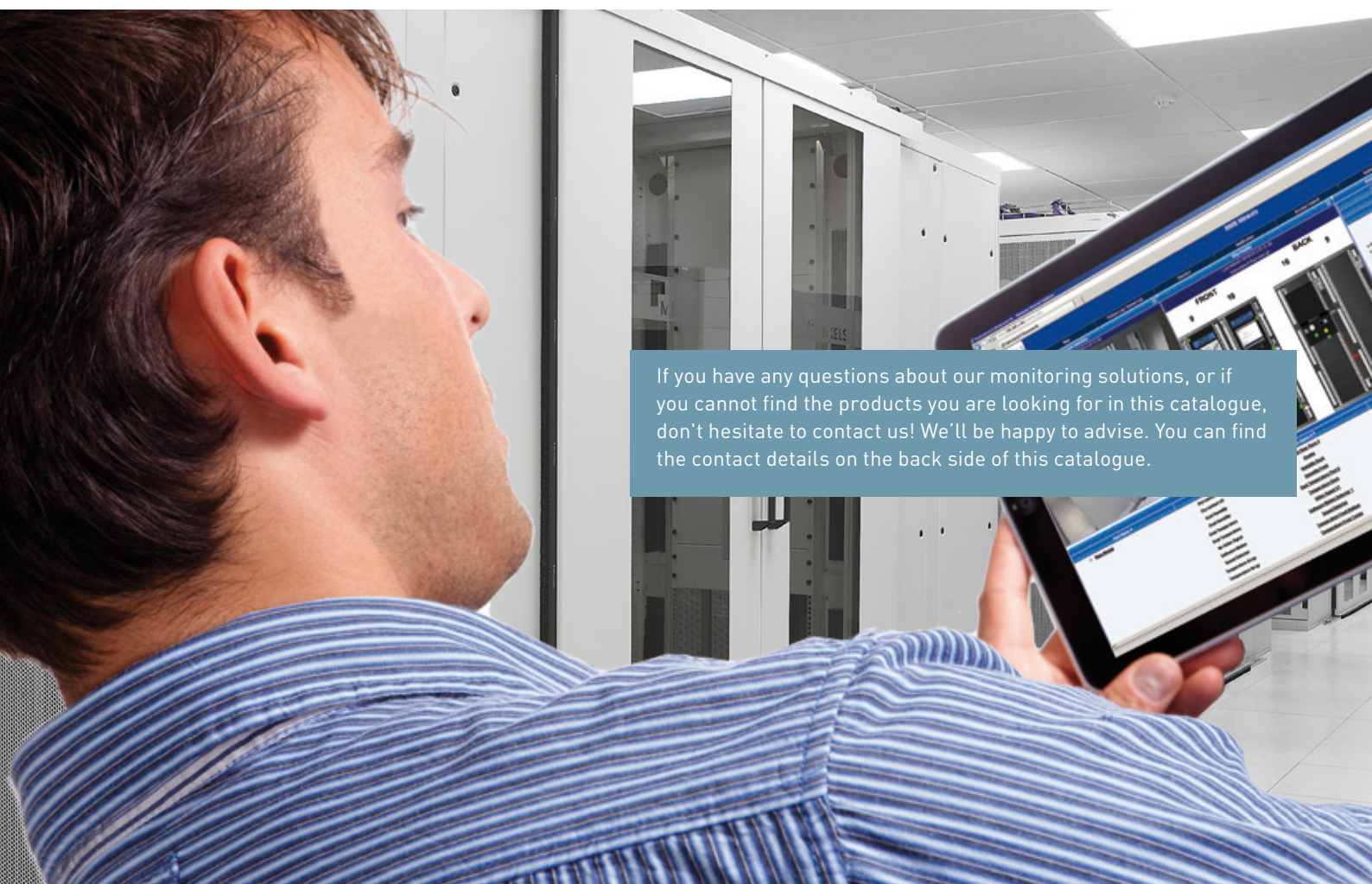


MRM0128

Description	
AC voltage detector	MRM0112
Sensor-controlled relay	MRM0114
4-20 mA signal converter	MRM0116
Magnetic door switch	MRM0128

**Delivery consists of:** incl. assembly materials.

Delivery: in consultation



If you have any questions about our monitoring solutions, or if you cannot find the products you are looking for in this catalogue, don't hesitate to contact us! We'll be happy to advise. You can find the contact details on the back side of this catalogue.

# MICRO DATA CENTRE

## solutions

With the adoption of cloud computing, many companies now have a need to reduce the size of their server rooms. Do you have fewer applications running from your in-house server room than before? Do you only want to house your business critical information on site? Then the time has come to deploy an efficient, turnkey micro data centre.

Minkels micro data centre solutions are all about making ordering easy. Simplicity combined with reliability and efficiency. Complete, assembled solutions can be ordered using just a single item number! And all solutions can of course be expanded upon with a number of options and accessories. In all cases, ease of configuration and ordering is the key!

Simple and rapid ordering of off-the-shelf, cost-effective professional IT infrastructure!



# Off-the-shelf, cost-effective professional IT infrastructure

# The MatrixCube



Rear of MatrixCube

Front of MatrixCube

## MATRIXCUBE

One of the Minkels micro data centre solutions is the MatrixCube. The MatrixCube is a preconfigured, turnkey IT infrastructure solution specifically targeting the SME sector. Minkels and Legrand have brought power distribution, cooling, housing and mechanical infrastructure together in a single solution. This turns the MatrixCube into a complete and compact server room. The MatrixCube does not depend on the room it is in and can be implemented at almost any location within a business. No radical modifications to the building are needed.

## ADVANTAGES

- A reliable and cost-effective solution for server rooms
- Not building-dependent, making it simple to implement
- Energy-efficient accommodation for your IT infrastructure
- Proven technology
- A turnkey solution, including installation and commissioning
- Customer specific modifications possible

Interested in how it works? Watch our MatrixCube clip: [youtube.com/minkels\\_hq](https://youtube.com/minkels_hq)



## 5. Micro data centre solutions

### 5.1 MatrixCube



#### MatrixCube configurations

The basic configurations are classed by IT power per rack, either 2.5 or 5kW per server rack. A basic configuration always consists of:

- One power distribution rack containing the power distribution, UPS systems and monitoring.
- Two server racks into which the customer's equipment can be installed. These racks have two intelligent power strips (A and B) for powering the IT equipment.
- One VariCondition-DX cooler to handle cooling requirements.
- Given how dependent server rooms are, it was decided to add a monitoring system to the standard configuration. This system provides continuous monitoring of temperature, safety, availability and energy consumption and is connected by default to a central system in the cloud. This means that you can always view the status of your IT equipment present in the MatrixCube online. Optionally, a proactive 24/7 notification service can be added to this monitoring system so that the service department will be contacted immediately in the event of an emergency.

MatrixCube - configurations	MXC1600**	MXC3200**
	16A (2.5 kW/server rack)	32A (5 kW/server rack)
Power distribution rack	1	1
Server rack	2	2
VariCondition-DX cooler	1	1
Width in mm	2700	2700
Depth in mm	1200	1200
Height in mm	2350	2350
Overall weight in kg	± 770	± 770
Colour	RAL 9011	RAL 9011
Certification	CE	CE
Use & Conditions	Only for interior use. Ambient conditions: 10 - 40°C Min 6,5°C DP, max 60% RH/ 15°C DP	

\*\* in the item number is replaced by the country code (e.g. NL, CH, BE, FR)

Download the datasheet for more detailed information  
[www.minkels.com/matrix/basic](http://www.minkels.com/matrix/basic)

Power distribution rack



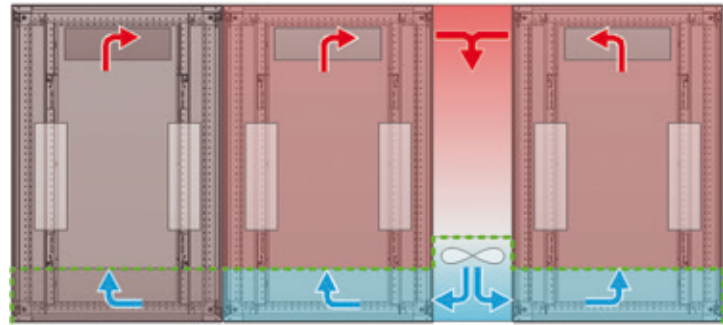
Power distribution rack: UPS systems



**5. Micro data centre solutions** 5.1 MatrixCube

Basic configuration

Power distribution rack    Server rack    DX    Server rack



Power distribution rack





Watch the MatrixCube clip on the Minkels YouTube channel:

**[Youtube.com/c/minkelshq](https://www.youtube.com/c/minkelshq)**



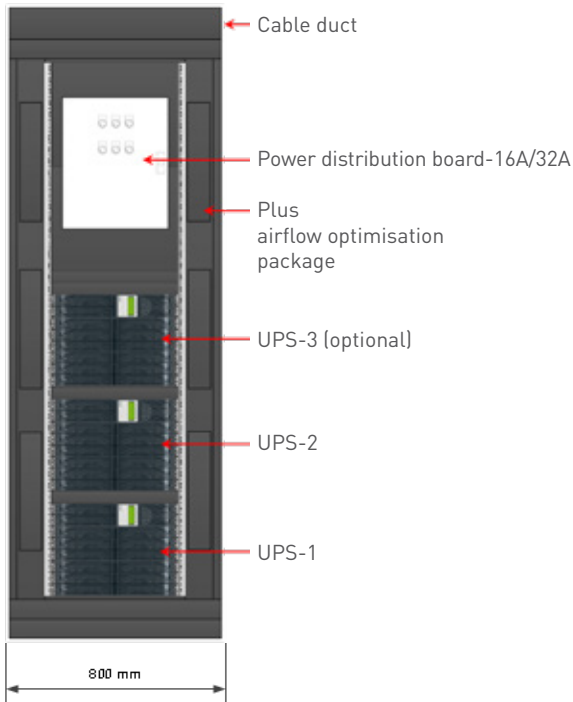
**5. Micro data centre solutions** 5.1 MatrixCube

**MatrixCube expansion modules**

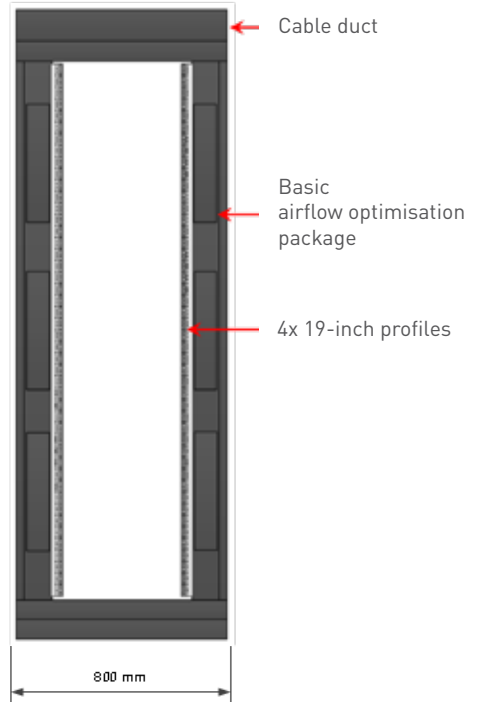
**Extra options:**

- Extra power distribution rack which provides a redundant power supply and UPS systems.
- Extra autonomous operation time for the UPS systems.
- Extra server rack so which provides more room for customer equipment. When an extra server rack is ordered, an additional UPS is delivered which can be added to the power distribution rack.
- Extra VariCondition-DX cooler to provide redundancy in the cooling.

**Power distribution rack**



**Server rack**



Power distribution rack	
Power distribution rack 16A (without monitoring)	MXC1620**
Power distribution rack 32A (without monitoring)	MXC3220**

Server rack	
Server rack 16A (+ UPS)	MXC1610**
Server rack 32A (+ UPS)	MXC3210**

UPS	
Extended UPS set	MXC2001
Extended UPS Autonomy - Battery Tray (per UPS)	MXC2002



\*\* in the item number is replaced by the country code (e.g. NL, CH, BE, FR)

**5. Micro data centre solutions** 5.1 MatrixCube



	DX	
VariCondition-DX 11kW		MXC1001**
VariCondition-DX 22kW		MXC1002**
VariCondition-DX 11 kW end-of-row incl. side panel		MXC1003
VariCondition-DX 22 kW end-of-row incl. side panel		MXC1004

**MatrixCube cable duct**

Cable ducts are available to allow you to optimise the way cables are led to the MatrixCube.

Cable duct for the MatrixCube	
Suitable for the server rack (expansion module) + top covers (expansion module)	MXC3002
Suitable for the power rack (expansion module) + top covers (expansion module)	MXC3003

## 5. Micro data centre solutions

### 5.2 MiniCube



#### MiniCube configurations

Due to the effects of the cloud, many companies have a need to reduce the size of their server rooms and to save costs. Do you have fewer and fewer applications physically running on the servers on site at your company? Do you only want to keep your business critical information in house? If so, this is the time to implement an efficient, turn-key data centre. The MiniCube is also the ideal solution if you want to be able to access your data more quickly – low latency – or professionalise your server room. The MiniCube comes with everything a complete data centre has in the most compact form possible: cabinets, power supply, monitoring and cooling. The MiniCube comes completely pre-configured and is fully plug-and-play. Therefore, the MiniCube makes your IT manager's life much easier!

#### Benefits

- Reliable and efficient solution for server rooms
- Building-independent, thus easy to implement
- Fast delivery times
- Use of proven technologies
- Turn-key solution

	Basic
<b>MiniCube - configurations</b>	<b>MIC2000</b>
	<b>MiniCube 2,0 kW – Basic</b>
Server Rack	1 pc
Top of Rack Cooler	1 pc
Width in mm	800
Depth in mm	1200
Height in mm	2300
Height in U	37
Available Height	33
Minimum dimensions conditions to place the MiniCube solution <sup>1</sup>	2800 x 2800 x 2800 mm (l x w x h)
Total Weight <sup>2</sup>	± 285 kg
Colour	RAL 9011
UPS	<b>Legrand Daker DK +3000; 3 kVA</b>
Power Distribution	<b>1 x Legrand Basic Zero-U PDU 16A/ 1 Phase (Feed A)</b>
Interior	<b>1 x 19-inch Variable shelf Location cabinet: 35 U</b>
Airflow optimisation	Airflow package (metal) incl. rubber door seals left and right, rubber door seals strips top and bottom
Cable management	2 x vertical cable tray 125 mm width, location: backside cabinet left and right side.
Monitoring	-
Use & Conditions	Only for interior use / Ambient conditions: 10 °C – 55 °C
Applicability <sup>3</sup>	Europe + Export regions with required CE certifications
Certification	CE / IEC60950

<sup>1</sup> Place the MiniCube Configuration only in a space / chamber which meets the minimum prescribed dimensions / ambient conditions.

<sup>2</sup> Total Weight MiniCube Basic Configuration is based on 1 x UPS-system including batteries and a Top of rack cooler.

<sup>3</sup> The MiniCube solution can only be placed in all regions where CE certification is applicable.

**5. Micro data centre solutions** 5.2 MiniCube



MiniCube 3,5 kW – Advanced with ExxFire fire suppression system

Advanced		
MIC3500A	MIC3510A	MIC3520A
<b>MiniCube 3,5 kW – Advanced</b>	<b>MiniCube 3,5 kW – Advanced with automatic door opener</b>	<b>MiniCube 3,5 kW – Advanced with ExxFire fire suppression system</b>
1 pc	1 pc	1 pc
1 pc	1 pc	1 pc
800	800	800
1200	1200	1200
2300	2300	2300
37	37	37
31	30	31
2800 x 2800 x 2800 mm (l x w x h)	2800 x 2800 x 2800 mm (l x w x h)	2800 x 2800 x 2800 mm (l x w x h)
± 302 kg	± 305 kg	± 330 kg
RAL 9011	RAL 9011	RAL 9011
<b>Legrand Daker DK +5000 ; 5,0 kVA</b>		
<b>1x Legrand PDU, metered C13/C19 (36+6), Zero-U, 1 Phase 32A • article number: 646013</b>		
<b>1 x 19-inch Variable shelf Location cabinet: 35 U</b>	<b>2 x Automatic door opener locks, front side cabinet (top and bottom installed). 2 x Automatic door opener locks, rear side cabinet (top and bottom installed). 1 x 19" inch (1U) controller unit incl. integrated power supply. Location Cabinet: 37U at backside cabinet.</b>	<b>1 x 19-inch Variable shelf Location cabinet: 35 U</b>
Airflow package (metal) incl. rubber door seals left and right, rubber door seals strips top and bottom		
2 x vertical cable tray 125 mm width, location: backside cabinet left and right side		
Raritan monitoring DPX2-T3H1, 3 x temperature & 1 x humidity sensor + Raritan DX-D2C6 sensor block, door contacts		
Only for interior use / Ambient conditions: 10 °C – 55 °C		
Europe + Export regions with required CE certifications		
CE / IEC60950	ROHS, EN55022/ 55014-1, Class B, RF emission, IEC/ EN 61326, IEC 55014-2, EN60950	CE

Download the datasheet for more detailed information  
[www.minkels.com/minicube/basic](http://www.minkels.com/minicube/basic)

**MiniCube accessories**

The configuration of the MiniCube can be enhanced with a variety of accessories:

- SNMP card for UPS
- Extra 19-inch PDU for Basic MiniCube (region-dependent)
- Extra Zero-U PDU for Advanced MiniCube (region-dependent)



PDU	MIC1020
Suitable for	Basic
Plug	IEC 60309
Outlets	C13 (20) en C19 (4)
Assembly	Verticaal
Power supply	1 Fase 16A



PDU	646013
Suitable for	Advanced
Plug	IEC 60309
Outlets	C13/C19 (36+6)
Assembly	Zero-U
Power supply	1 Fase 32A



SNMP card for UPS	MIC1010
Description	SNMP & Modbus communication card for UPS

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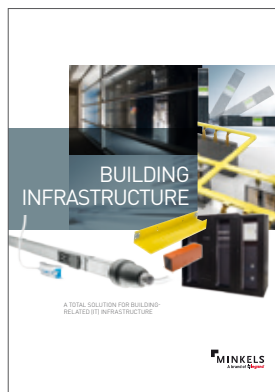
# MINKELS



# DOCUMENTATION

### Legrand Datacenter integrated solutions

If you would like to know the possibilities for the data centre market offered by the Legrand Group as a whole, consult the brochure 'Legrand Integrated Data Centre Solutions'



### Building Infra

This brochure allows you to discover the total solutions which Minkels and Legrand can offer for your building-related IT infrastructure.



### Data Centre Integrated Solutions

This brochure allows you to discover what Minkels and Legrand can mean for data centres specifically. Minkels focuses on the 'white space' – the heart of the data centre – and Legrand on the 'technical space' with its building-related infrastructure



### Standard Product Catalogue

You are now reading the standard product catalogue. It provides details on our entire product range: total solutions for data centres and building-related systems. The standard products can be delivered from stock.



### Mass Customisation brochure

A mass customised product is made up of preconfigured building blocks. These building blocks ultimately provide a modular and integrated solution which matches your requirements.



### Minkels Magazine

Minkels issues the Minkels Magazine twice a year. The magazine is full of interesting and relevant customer cases, product introductions and the latest market trends.

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