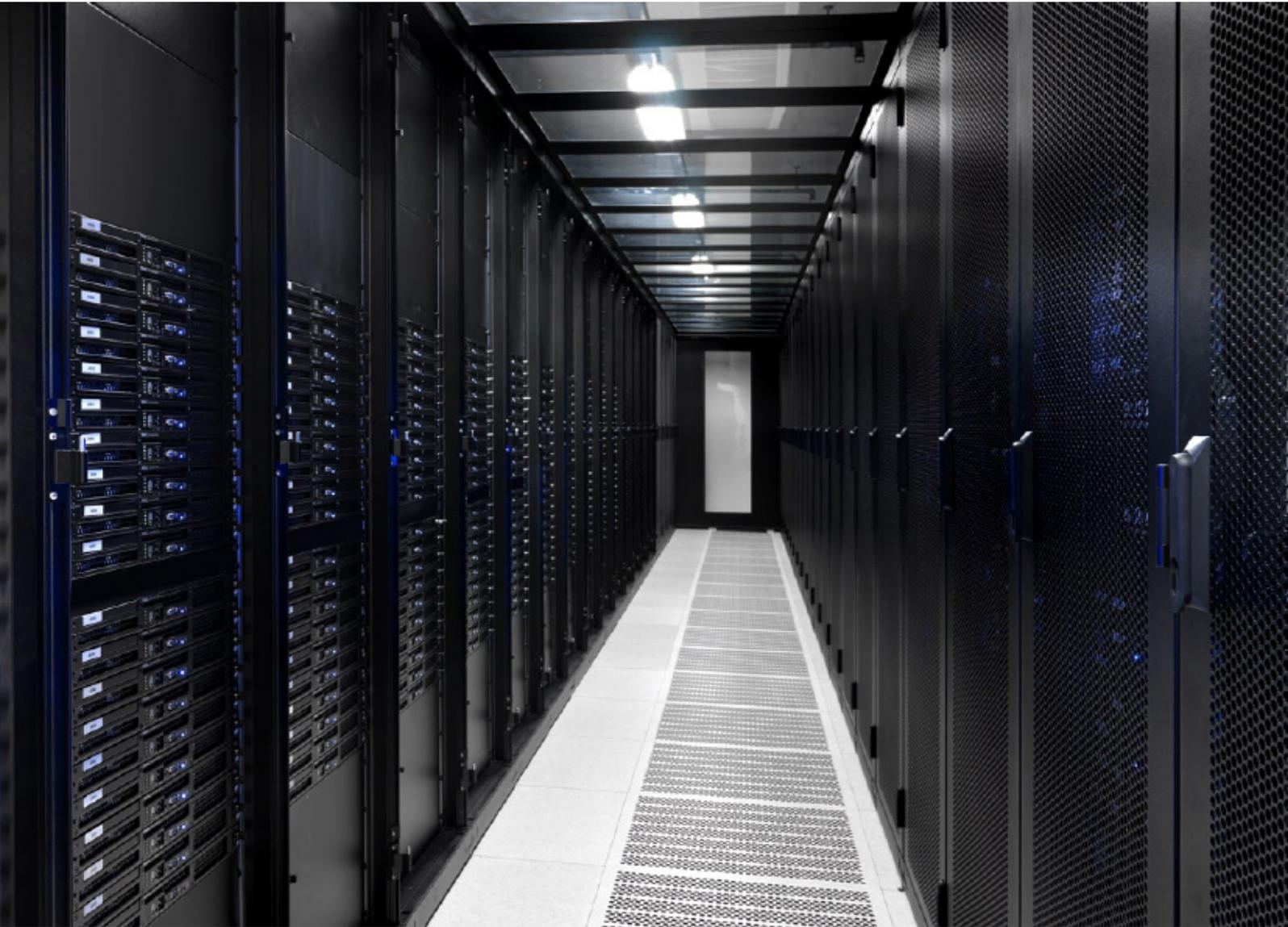


# CATALOGUE



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**

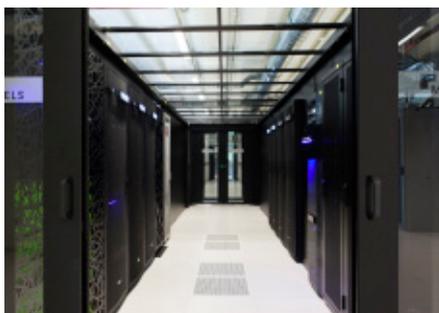
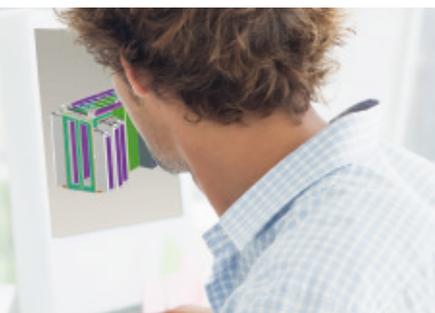
Legrand and Minkels value Corporate Social Responsibility (CSR) very highly. Minkels therefore aims to retain its leading position in energy-efficient solutions, allowing both the customer and the environment to benefit.

- **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!

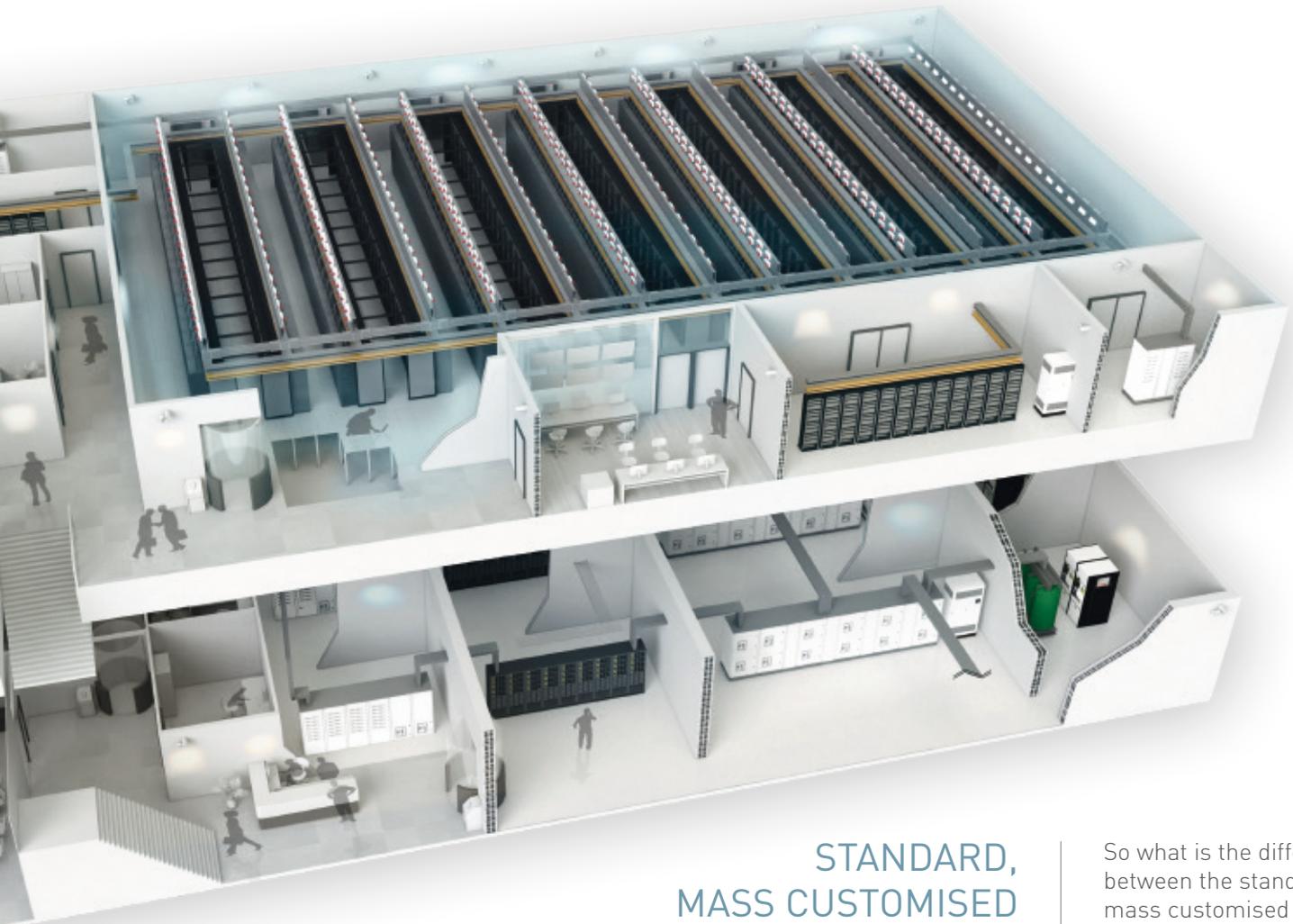
The emphasis of this catalogue is on our standard products. If you cannot find the products you are looking for and would like to know more about mass customisation or the customised products we can supply, we will be happy to help you. You can find the contact details on the back side of this catalogue.

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)

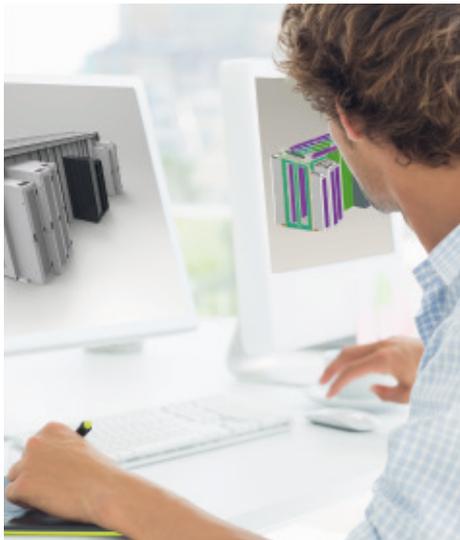
# MINKELS SERVICES

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.



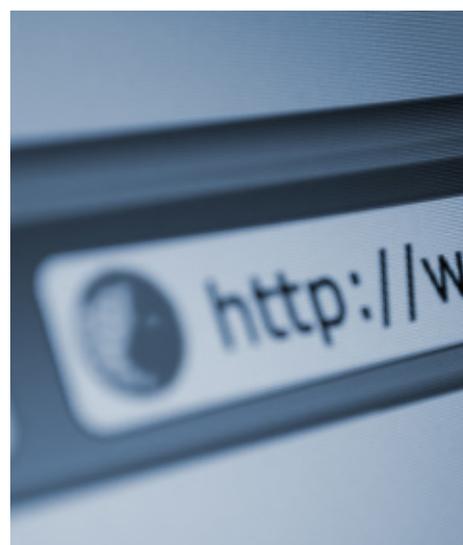
## Logistical services

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

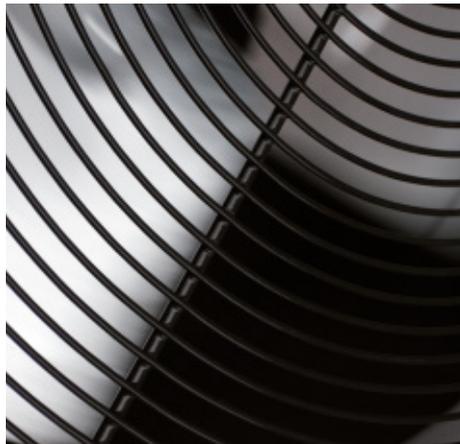
## WHAT WILL YOU FIND IN THIS STANDARD PRODUCT CATALOGUE?

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.

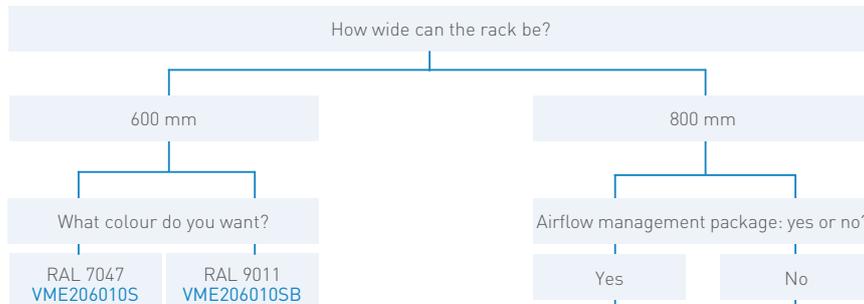


### 5. Micro data centre

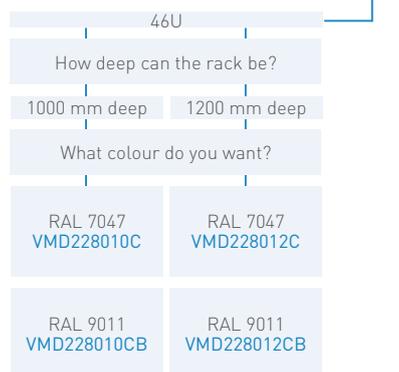
Minkels micro data centre solutions are all about making ordering easy. Simplicity combined with reliability, efficiency and cost-effectiveness. Complete, assembled solutions can be ordered using just a single item number! And all the solutions can of course be extended with a number of options and accessories.

# Preassembled SERVER AND NETWORK racks

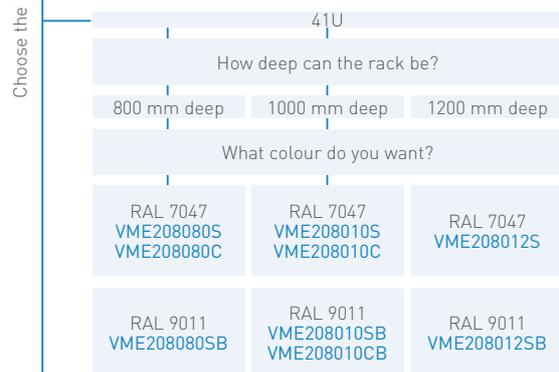
Use the flow diagram below to find the right rack!



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](#)



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

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.

## 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.



RAL 9011

RAL 7047

| Connecting rack RAL 7047 | VMD208010C   | VMD208012C   | VMD228010C   | VMD228012C   |
|--------------------------|--|--|--|--|
| Connecting rack RAL 9011 | VMD208010CB  | VMD208012CB  | VMD228010CB  | VMD228012CB  |
| Height in U              | <b>41</b>  | <b>41</b>  | <b>46</b>  | <b>46</b>  |
| Height in mm             | <b>2000</b>  | <b>2000</b>  | <b>2200</b>  | <b>2200</b>  |
| Width in mm              | 800  | 800  | 800  | 800  |
| Depth in mm              | <b>1000</b>  | <b>1200</b>  | <b>1000</b>  | <b>1200</b>  |
| 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.



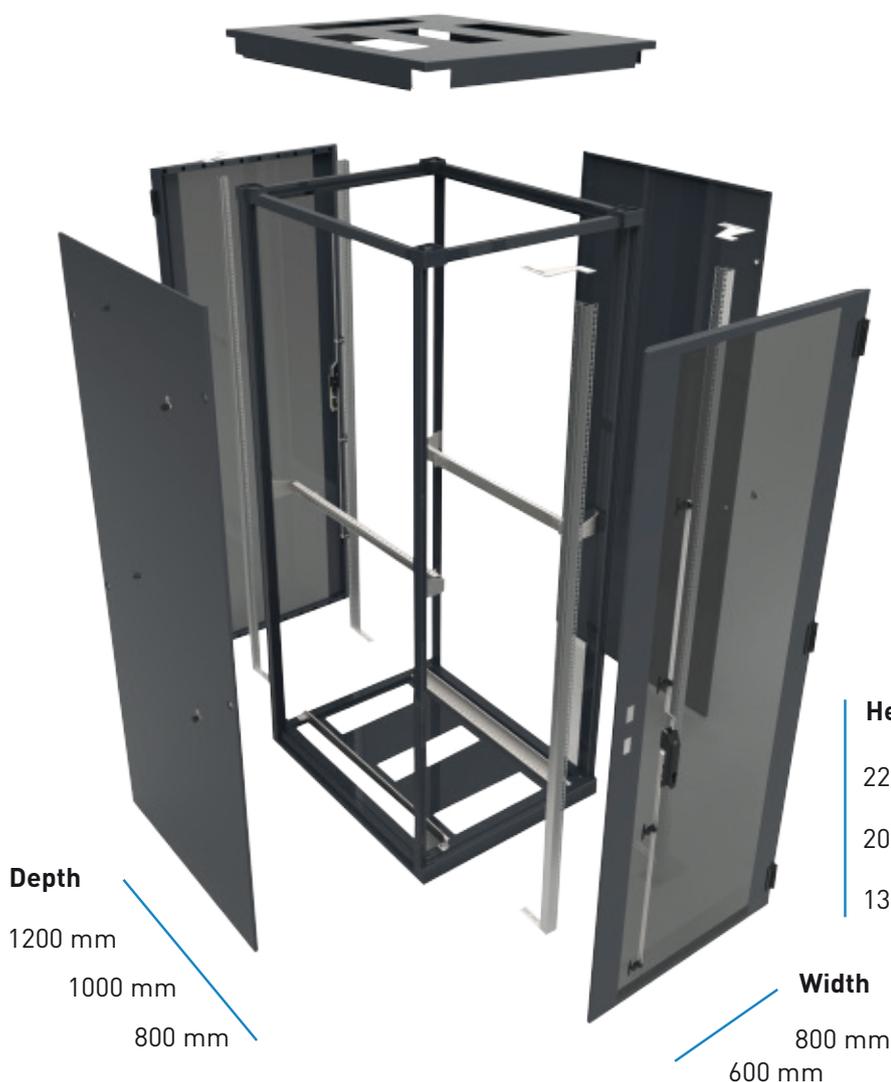
RAL 9011

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

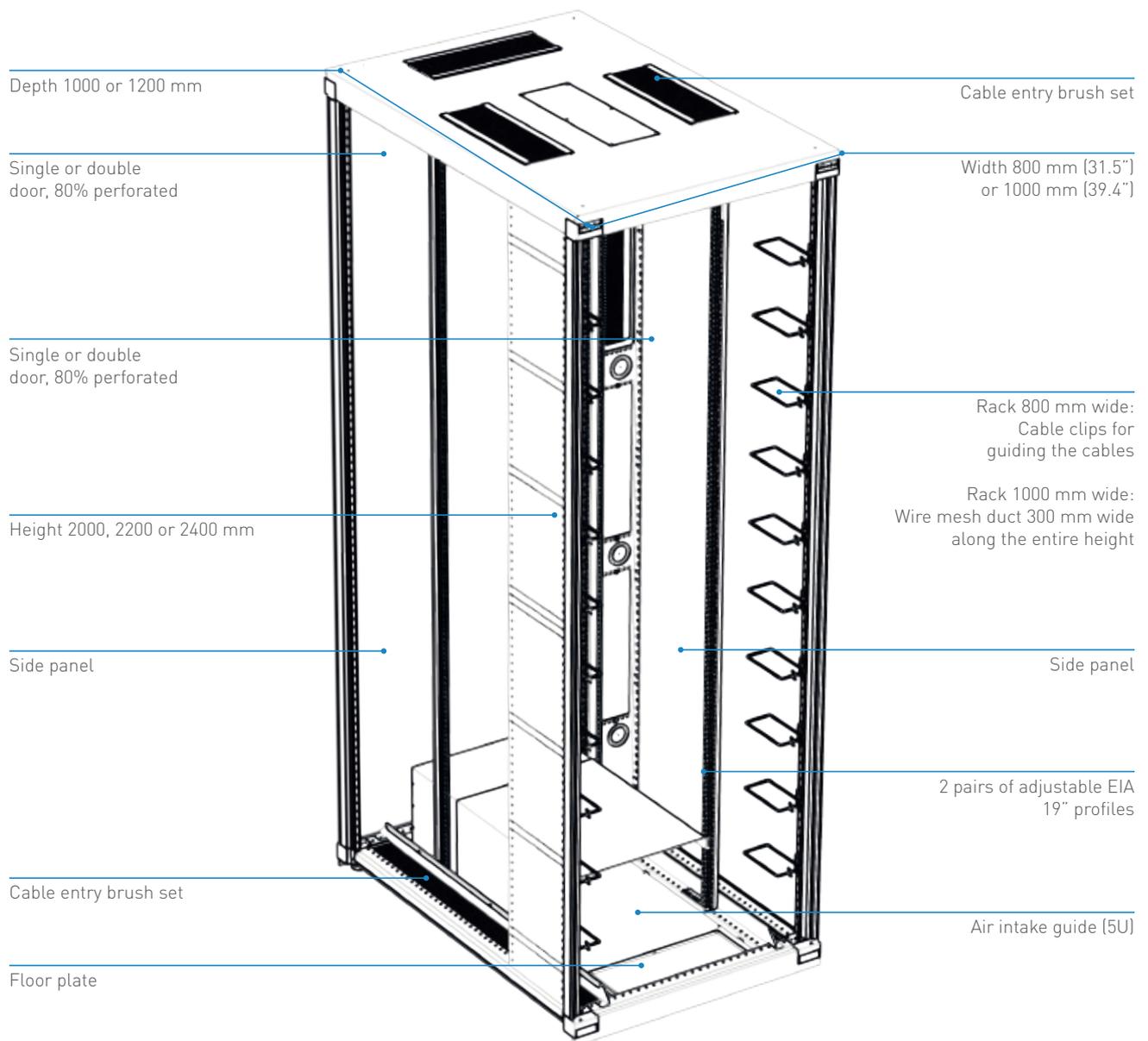
**Width**

- 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     |

# SWITCHING & ROUTING racks

Many pieces of switching and routing equipment require a different airflow than 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.



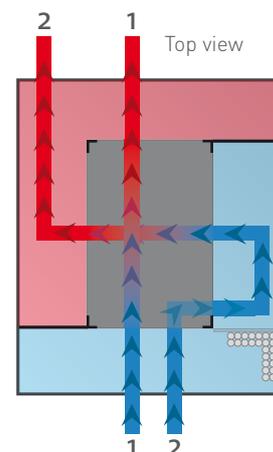
## 1. Housing 1.3 Switching & routing racks



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.



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

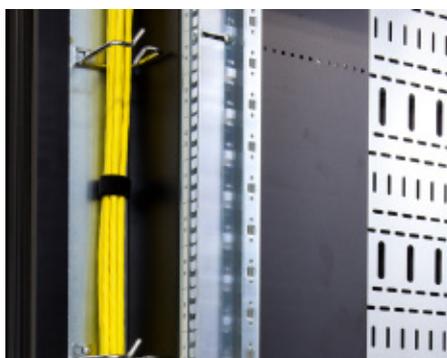
The empty space between the switching and routing devices must to be covered with Fix Easy front plates, which you can find on page 45. To block off the gaps in the depthwise direction, cover plates are needed that run from front to back. These cover plates are available in heights 2U and 3U.

| <b>Height 2U</b>       | <b>MRS0102</b> | <b>MRS0112</b> | <b>MRS0122</b> |
|------------------------|----------------|----------------|----------------|
| <b>Height 3U</b>       | <b>MRS0103</b> | <b>MRS0113</b> | <b>MRS0123</b> |
| <b>Slide-in, in mm</b> | 450 - 550 mm   | 550 - 650 mm   | 650 - 850 mm   |

# MINKELS INTEGRATION racks

can be moved with equipment  
already installed

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.



## Cable management for the integration rack

Minkels integration racks can be fitted with cable fitting strips and cable management panels.

### Cable fitting strips

Cable fitting strips allow compact cable bundling, particularly when combined with closed-loop cooling

### Cable management panels

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<br>incl. 6x cable clips | MIR0201 | MIR0210 |
|--|---------|---------|
| Height in U                                    | 41      | 46      |
| Colour   | RAL9011 | RAL9011 |

## 1. Housing 1.4 Integration rack



MIR208010-01CB

### Integration rack

- 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: 1000 kg**



RAL 9011

| 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                                  |
| 19-inch profiles        | 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                                  |
| 19-inch profiles        | 4 pcs  |

# MECHANICAL accessories

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## Other accessories

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## Front and back

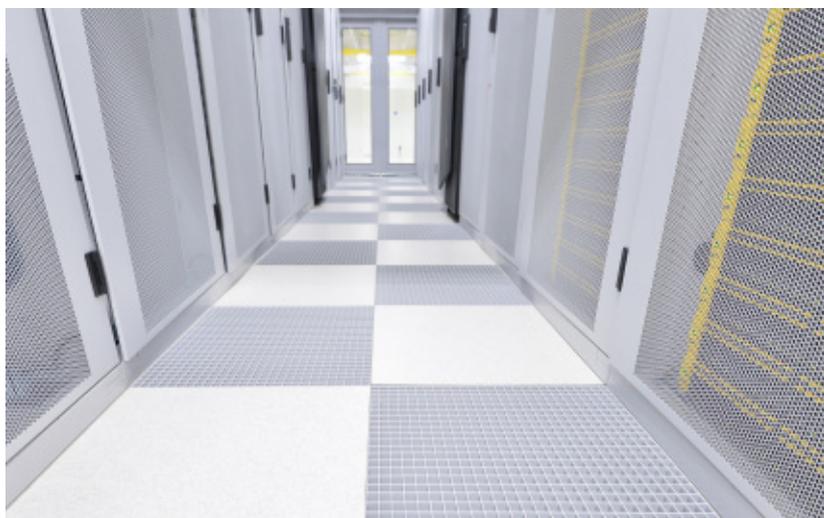
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**1. Housing** 1.5 Mechanical accessories

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 23).



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

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

## 1. Housing 1.5 Mechanical accessories



### 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                |

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



### 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       |

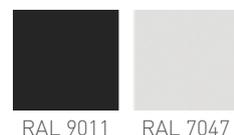
**Delivery consists of:** 1 expansion set incl. fasteners and assembly guide



### 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

## 1. Housing 1.5 Mechanical accessories



### 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



### 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

### 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).

Casing material: Steel  
Wheel material: Plastic

| Castors               | MSM3002 |
|-----------------------|---------|
| Max. load in kg       | 400     |
| Built-on height in mm | 100     |
| Number of pcs         | 4       |

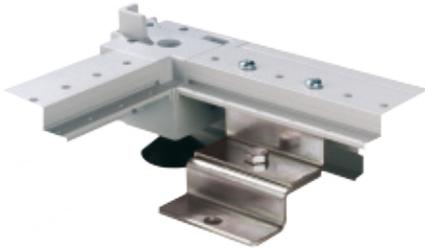


Transport castors

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

**Delivery consists of:** 4 wheels incl. assembly materials

## 1. Housing 1.5 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)



### 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 52).

|                        |                       |                       |
|------------------------|-----------------------|-----------------------|
| 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 |

**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 1.5 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



### 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     |
|----------------------|-------------|-------------|-------------|
| Built-in depth in mm | 300 - 450   | 450 - 750   | 740 - 1050  |
| Material             | Sheet steel | Sheet steel | Sheet steel |
| Finishing            | Galvanised  | Galvanised  | Galvanised  |
| Max. load in kg      | 100         | 100         | 100         |

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



### 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

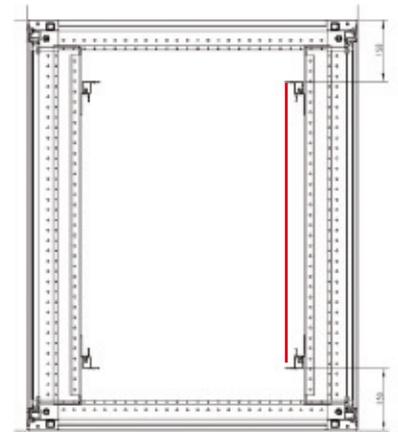
### FOUR-POINT SHELVES

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       |
| 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 |

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.

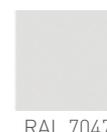
## 1. Housing 1.5 Mechanical accessories



### 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.

|                      | MPL0011   | MPL0012   | MPL0013   |
|----------------------|-----------|-----------|-----------|
| 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

| RAL 7047             | MPL0014   | MPL0015   |
|----------------------|-----------|-----------|
| RAL 9011             | MPL0014B  | MPL0015B  |
| 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** 1.5 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** 1.5 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 1.5 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>MPR0260</b>                          | <b>MPR1060</b>                          |
|--------------------|---|---|---|
| <b>Description</b> | Numbering strip for 19-inch 46U profile | Numbering strip for 19-inch 46U profile | Numbering strip for 19-inch 46U profile |
| <b>Qty</b>         | 1                                       | 20                                      | 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            |

### 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.

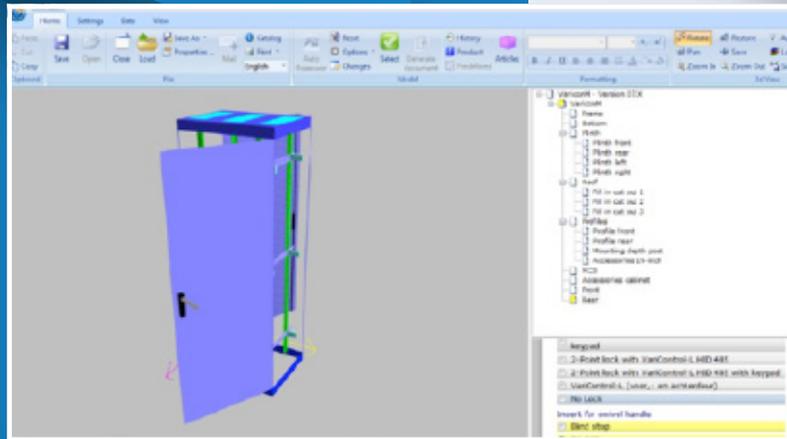


|                    | <b>MCM0031B</b> | <b>MCM0032B</b> |
|--------------------|-----------------|-----------------|
| <b>Height unit</b> | 1               | 2               |
| <b>Width</b>       | 19-inch         | 19-inch         |
| <b>Colour</b>      | RAL 9005        | RAL 9005        |

**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**

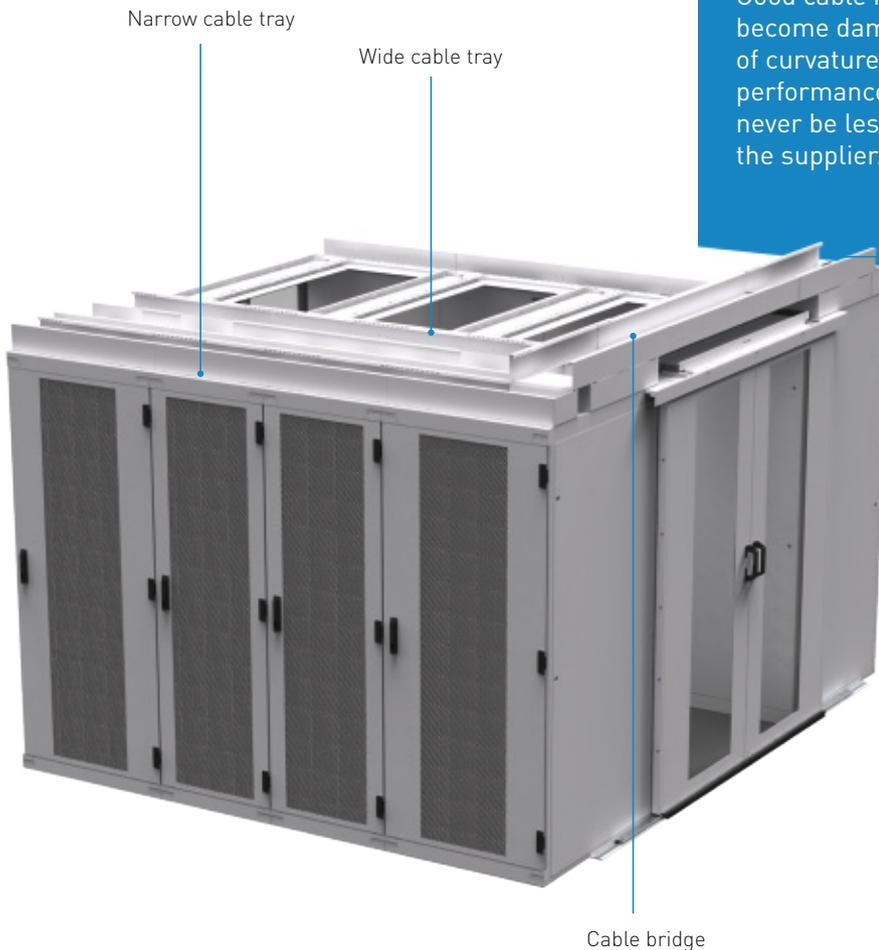
Good cable management ensures that the equipment's air intake points are kept as clear as possible. This allows sufficient air to pass through the equipment in order to cool them adequately. Proper cooling avoids equipment failures and results in longer lifespans.

## **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 1.6 Cable management



### 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** 1.6 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



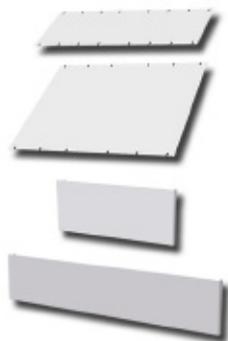
| Width of H2O - DX - Archimod UPS in mm | RAL7047           |                 | RAL9011           |                 |
|--|-------------------|-----------------|-------------------|-----------------|
|  | Narrow cable tray | Wide cable tray | Narrow cable tray | Wide cable tray |
| 300                                    | 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 1.6 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** 1.6 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.



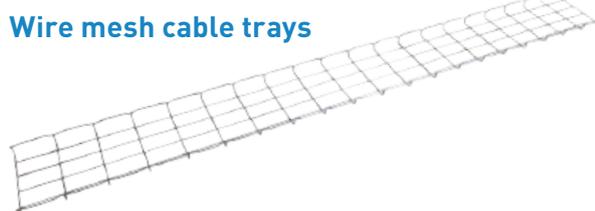
Material: Steel  
Finishing: Powder coating  
Capacity: 150 mm

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



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

**1. Housing** 1.6 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      |
|--------------|---------|---------|---------|
| Width 200 mm | MCM0146 | MCM0147 | MCM0148 |
| Width 300 mm | MCM0156 | MCM0157 | MCM0158 |

**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 40). 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      |



**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** 1.6 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

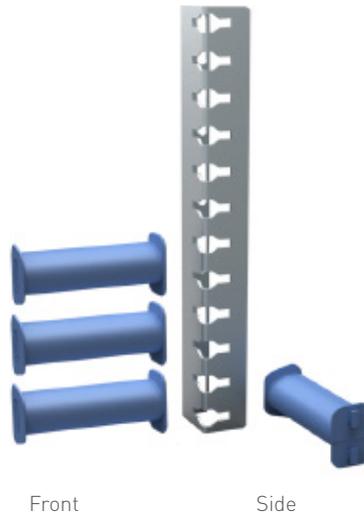
|                  |         |                             |         |
|------------------|---------|-----------------------------|---------|
| <b>3U module</b> | MCM2021 | <b>41U assembly profile</b> | MCM2026 |
| <b>6U module</b> | MCM2022 | <b>46U assembly profile</b> | MCM2027 |
|               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

**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

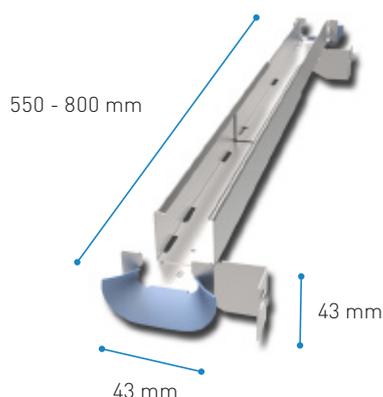


| Height in U | 6 cable guides front | 10 cable guides front | 38 cable guides front | 43 cable guides front | 47 cable guides front | 76 cable guides front and side | 86 cable guides front and side | 94 cable guides front and side |
|-------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------------|--------------------------------|--------------------------------|
| 6           | MCM2001              |                       |                       |                       |                       |                                |                                |                                |
| 25          | MCM2014              |                       |                       |                       |                       |                                |                                |                                |
| 41          | MCM2016              |                       | MCM2003               |                       | MCM2004               |                                |                                |                                |
| 46          | MCM2017              |                       | MCM2005               |                       |                       | MCM2006                        |                                |                                |
| 50          | MCM2018              |                       | MCM2007               |                       |                       | MCM2008                        |                                |                                |

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

|  |         |
|--|---------|
| <b>20 cable guides (can be ordered separately)</b> | MCM2009 |
|--|---------|

**1. Housing** 1.6 Cable management



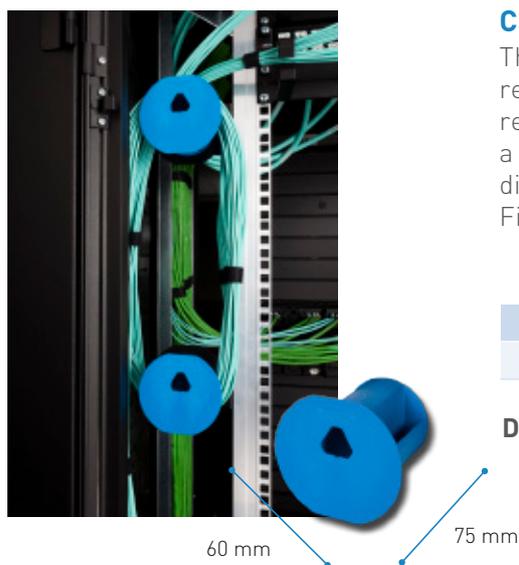
**Cable ducting, front to back, sliding**

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 46 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>RAL 5015</b> | <b>MCM2011</b> |
| Material        | Polyamide      |

**Delivery consists of:** 1 cable reel

**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** 1.6 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> |
| <b>Length (m)</b>     | 10             |
| <b>Width in mm</b>    | 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 37). Set of 10

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



|                            |                |
|----------------------------|----------------|
| <b>Plastic cable clips</b> | <b>MCM0014</b> |
| <b>set</b>                 | 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>MSM0011B</b> |
| <b>Height</b>   | 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



RAL 9011

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

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

**1. Housing** 1.6 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** 1.6 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      |

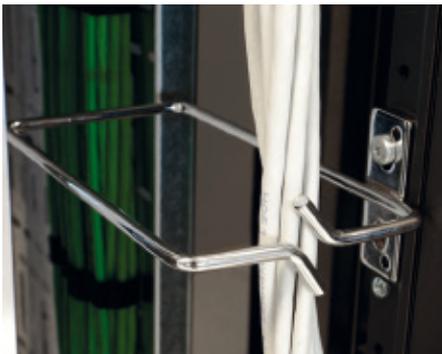
**Delivery consists of:** incl. assembly materials

**1. Housing** 1.6 Cable management

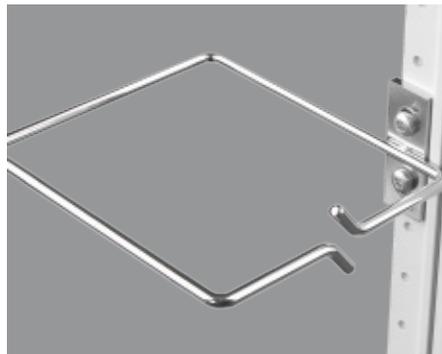


**QUESTIONS ABOUT CABLE MANAGEMENT?**

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 1.7 Airflow optimisation



### Door seals - left or right

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.

|          | MFR0006 | MFR0007 |
|----------|---------|---------|
| U        | 41      | 46      |
| Material | Rubber  | Rubber  |
| Colour   | Black   | Black   |

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

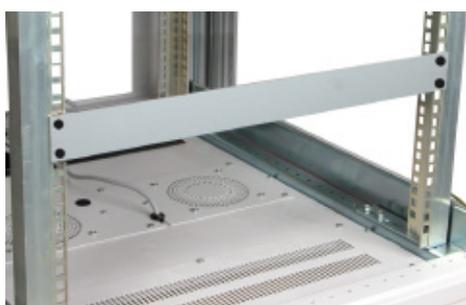


### Sealing set

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!

|          | MCS0011 | MCS0012 |
|----------|---------|---------|
| U        | 41/46   | 50      |
| Material | Rubber  | Rubber  |
| Colour   | 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 next to 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



| RAL 7047    | MFE0101  | MFE0102  | MFE0103  | MFE0104  | MFE0105  |
|-------------|----------|----------|----------|----------|----------|
| RAL 9011    | MFE0101B | MFE0102B | MFE0103B | MFE0104B | MFE0105B |
| Height in U | 1        | 2        | 3        | 6        | 9        |
| Qty         | 1        | 1        | 1        | 1        | 1        |

| RAL 7047    | MFE0111  | MFE0112  | MFE1120  |
|-------------|----------|----------|----------|
| RAL 9011    | MFE0111B | MFE0112B | MFE1120B |
| 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** 1.7 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 receives 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.

| Air inlet duct | MRS0001      | MRS0002      |
|----------------|--------------|--------------|
| Height in U    | 1            | 2            |
| Width          | 19-inch      | 19-inch      |
| Variable depth | 210 - 300 mm | 350 - 500 mm |

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

**1. Housing** 1.7 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 44). 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 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 44). The types which use foam are particularly airtight. Airtight accessories yield energy savings because air leaks are prevented.



| 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

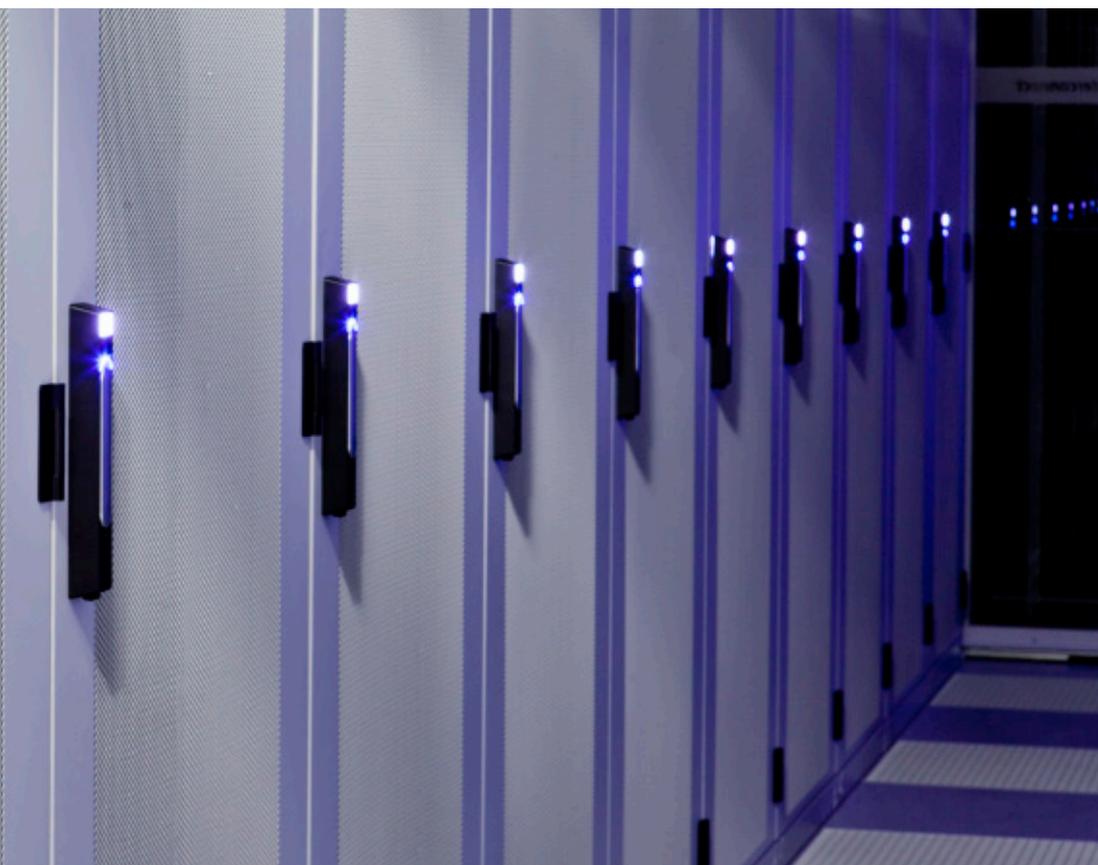
HID-Direct is very well suited for racks which are distributed over a larger area with connectivity via a single network. HID-485 is a smart and cost-effective

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** 1.8 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 |
|-----------------------------|---------|

**Delivery consists of:** 1 cylinder and 2 keys

# WALL enclosures



MWE wall enclosure



Duopac stand-alone or wall enclosure



Tripac wall enclosure



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.

## **DUOPAC**

The compact Duopac can be fixed to a wall, or it can be placed stand-alone. Its limited dimensions allow for the Duopac to fit easily on or under a desk.

The removable side panels make the Duopac extremely accessible, which is one of the reasons why this smart system is extremely well suited to e.g. housing smaller networks or decentralised network nodes.

## **TRIPAC**

The Tripac wall enclosure is a carefully thought out robust housing that offers optimum accessibility. The front door, the middle section and the wall attachment are in fact all hinged.

Tripac is a space-saving system which can be used multi-functionally, for instance for housing network components such as cabling, patch panels, hubs and switches. The default sealing standard for Tripac wall enclosures is IP-54.

## 1. Housing 1.9 Wall enclosures



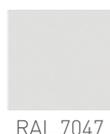
### MWE wall enclosure

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

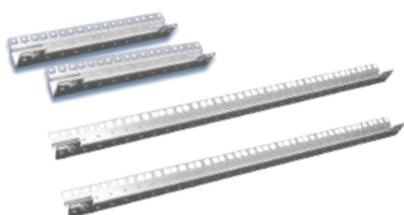


| Height in U and mm | Single items               |          |                            |             |                            |             |
|--------------------|----------------------------|----------|----------------------------|-------------|----------------------------|-------------|
|                    | 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        | MWE06425G                  | -        | MWE06525G                  | MWE06525G-B | -                          | -           |
| 9U - 476 mm        | -                          | -        | MWE09525G                  | MWE09525G-B | MWE09625G                  | MWE09625G-B |
| 12U - 609 mm       | -                          | -        | MWE12525G                  | MWE12525G-B | MWE12625G                  | MWE12625G-B |
| 15U - 742 mm       | -                          | -        | MWE15525G                  | MWE15525G-B | MWE15625G                  | MWE15625G-B |
| 21U - 1009 mm      | -                          | -        | -                          | -           | MWE21625G                  | MWE21625G-B |



| 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 7047                   |
| 6U - 342 mm        | -                          | -                          |
| 9U - 476 mm        | MWP09525P (16 pcs)         | MWP09625P (16 pcs)         |
| 12U - 609 mm       | MWP12525G (16 pcs)         | MWP12625G (16 pcs)         |
| 15U - 742 mm       | MWP15525G (16 pcs)         | -                          |
| 21U - 1009 mm      | -                          | MWP21625 (8 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** 1.9 Wall enclosures



**Power strip for MWE wall enclosure**

Can be ordered with German (SCHUKO) or French (UTE) style earth contacts. The power strip is delivered with assembly materials to allow it to be attached to the rear wall of the wall enclosure. The cord is 1.5 metres long.

|                 | <b>MWEPS01</b> |
|-----------------|----------------|
| <b>Outlets</b>  | SCHUKO (6)     |
| <b>Plug</b>     | SCHUKO         |
| <b>Assembly</b> | 19 inch (1U)   |

**Delivery consists of:** 1 power strip, 2 attachment brackets, incl. assembly materials



**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.

|                    | <b>MWEFP525</b> | <b>MWEFP625</b> |
|--------------------|-----------------|-----------------|
| <b>Depth in mm</b> | 525             | 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 24.
- double fan unit TRI.VE.00.02, see page 55.
- MWE roof plate with integrated double fan unit, MWEFP525 and MWEFP625 – see page 52.

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

| <b>MCSTF01</b> |
|----------------|
| Thermostat     |

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

**1. Housing** 1.9 Wall enclosures



**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

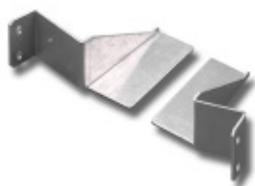


|                       |         |
|-----------------------|---------|
| <b>360 mm conduit</b> | MWECB01 |
|-----------------------|---------|

**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

|                        | <b>MWECS01</b> |
|------------------------|----------------|
| <b>Height unit (U)</b> | 1              |
| <b>Max. load</b>       | 50             |

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

MPL0011 (page 27), MPL0311 and MPL0312 (page 28) shelves can be used in all wall enclosure elements. For more information, please refer to the corresponding pages in this standard product catalogue.



## 1. Housing 1.9 Wall enclosures



### Duopac stand-alone or wall enclosure

The compact Duopac can be fixed to a wall, or it can be placed stand-alone. Its limited dimensions allow for the Duopac to fit easily on or under a desk. The removable side panels make the Duopac extremely accessible, which is one of the reasons why this smart system is extremely well suited to e.g. housing smaller networks or decentralised network nodes.

The Duopac is delivered in standard dimensions with two 19-inch profiles that can be adjusted to any desired depth. The casing is fitted with rubber studs on the underside to ensure its stability and that it does not scratch the surface on which it is placed. The roof has ventilation slots that provide natural ventilation. The side walls are fitted with a quick-click connector so that they can be removed and replaced quickly. Assembly materials for fixing to a wall are not included.

Colour: RAL 7047

Description: Door with smoked glass

Finishing: Powder coating

|                 | DUO.034515 | DUO.064515 | DUO.094515 |
|-----------------|------------|------------|------------|
| Height unit (U) | 3          | 6          | 9          |
| Height in mm    | 207        | 343        | 516        |
| Width in mm     | 530        | 530        | 530        |
| Depth in mm     | 450        | 450        | 450        |
| Weight in kg    | 11         | 14         | 17         |

**Delivery consists of:** Complete assembled housing, 2 keys

### Insert module (floor/roof) for Duopac and Tripac wall enclosure

These insert modules can be fitted in either the Duopac or the Tripac wall enclosure. Both modules can be used in the floor and the roof. Note that the Tripac wall enclosure then no longer complies with the IP-54 sealing figures.



|                          | TRI.KA.00.01 |
|--------------------------|--------------|
| Max. cross-section in mm | 360 x 50     |

**Delivery consists of:** Single items, incl. assembly materials

A set of adjustable feet allow for easy horizontal alignment of your Duopac. MSM1001 adjustable feet can be found on page 23 of this standard product catalogue



## 1. Housing 1.9 Wall enclosures



### Tripac wall enclosure

The Tripac wall enclosure is a carefully thought out, robust housing which offers optimum accessibility. The front door, the middle section and the wall attachment are in fact all hinged. Tripac is a space-saving system that can be used multi-functionally, for instance for housing network components such as cabling, patch panels, hubs and switches. The default sealing standard for Tripac wall enclosure is IP-54.

The Tripac has two 19-inch profiles at the front, which can be adjusted at 20 mm intervals. In addition, two assembly profiles have been fitted in the wall-mounted part. Cable entry is possible at the top or bottom of this element. A cylinder bar lock in the front door secures your Tripac. The mechanism by which the middle segment is unlocked is on the inside, allowing the front part of the casing to be swung away.

Colour: RAL 7047

Finishing: Powder coating

Description: Smoked glass door

|                 | TRI.095015 | TRI.155015 | TRI.215015 |
|-----------------|------------|------------|------------|
| Height unit (U) | 9          | 15         | 21         |
| Height in mm    | 478        | 744        | 1011       |
| Width in mm     | 600        | 600        | 600        |
| Depth in mm     | 500        | 500        | 500        |
| Weight in kg    | 26         | 34         | 43         |

**Delivery consists of:** Single items, incl. assembly materials



### Fan unit for Tripac wall enclosure

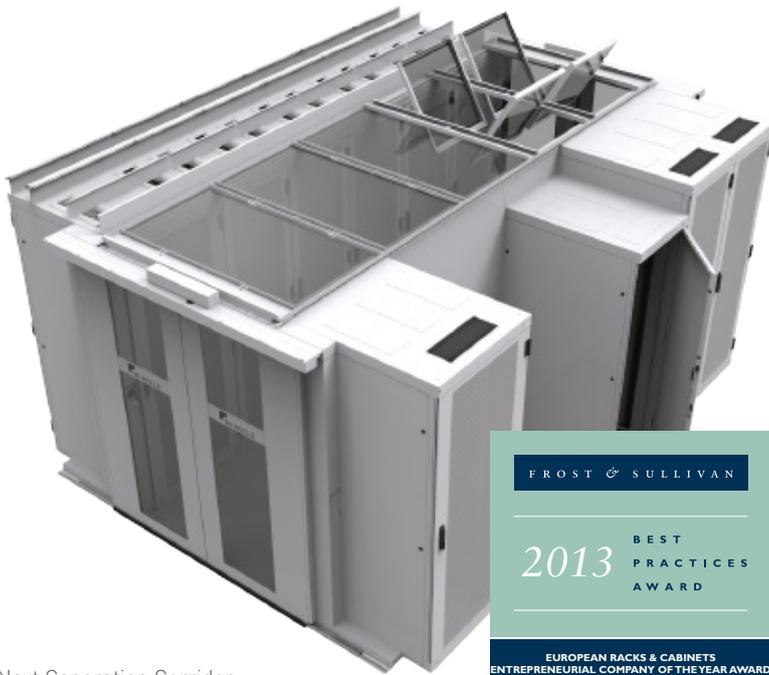
If you desire active ventilation in your Tripac wall enclosure, you can simply fit a fan unit into the top of your housing. The MCSTF01 thermostat (see page 52) can be used in combination with a fan unit. The thermostat ensures that the fan switches on at a temperature you have selected.

|                   | TRI.VE.00.02                            |
|-------------------|---|
| Technical details | 230VAC / 50Hz - 110mA - 23 dB - 12 watt |

**Delivery consists of:** 1 fan unit including assembly materials

If you have any questions about our wall enclosure units, 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.

# 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.

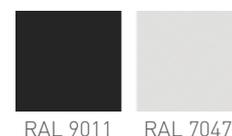


| Drop away panels | RAL 7047  | RAL 9011   |
|------------------|-----------|------------|
| Length 4000 mm   | MCS221224 | MCS221224B |
| 6000 mm          | MCS221226 | MCS221226B |
| 8000 mm          | MCS221228 | MCS221228B |
| 9600 mm          | MCS221229 | MCS221229B |

**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.

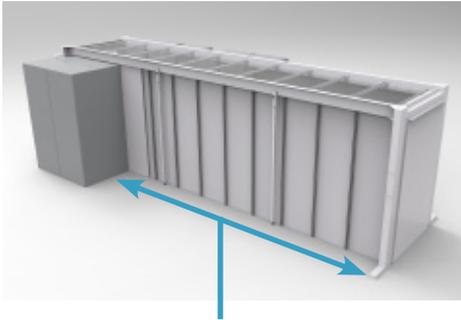


| High Transparency Roof | RAL 7047  | RAL 9011   |
|------------------------|-----------|------------|
| Length 4000 mm         | MCS221214 | MCS221214B |
| 6000 mm                | MCS221216 | MCS221216B |
| 8000 mm                | MCS221218 | MCS221218B |
| 9600 mm                | MCS221219 | MCS221219B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

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



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

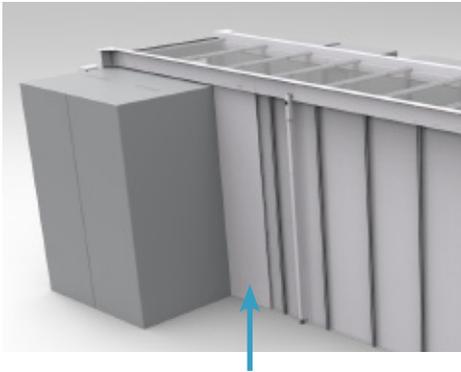


**Panels for the Free Standing**

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.



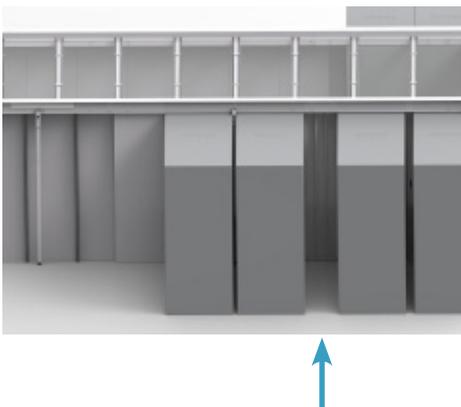
**Panel filler for widths from 325 to 600 mm**



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              |

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

**Delivery consists of:** Foam sealant



#### 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



RAL 9011



RAL 7047

### Panel systems for the Next Generation Corridor

Use the flexible, steel 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.



RAL 9011



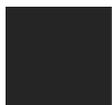
RAL 7047

**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



RAL 9011



RAL 7047

**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

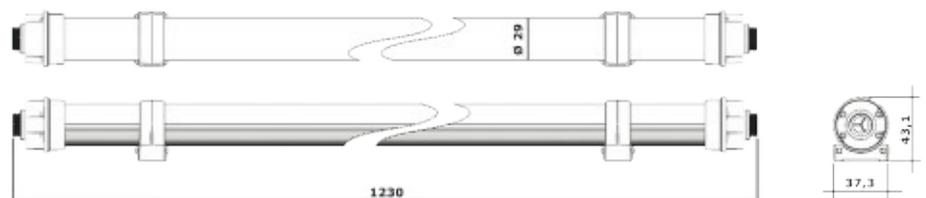
Minkels can offer energy-efficient LED Tubes that improve visibility within data centres, thereby creating a safer and healthier working environment. The highest safety certification level, IEC 62471:2006, guarantees that the eyes of users will be protected. These LED Tubes have been optimised for both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

#### 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

#### 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).

# POWER & CONNECTIVITY



1 RAPID ASSEMBLY

## NO TOOLS NEEDED FOR ASSEMBLY

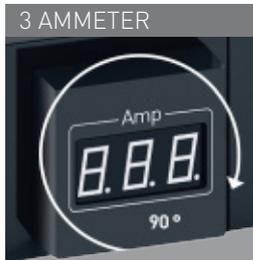
Can be fitted onto the 19-inch profiles quickly and without tools. No screws or nuts are needed.



2 CABLE GUIDE

## OPTIMISATION OF SPACE

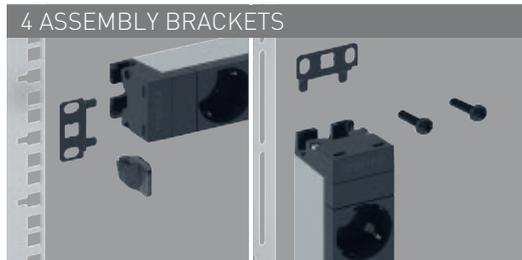
Cables are kept firmly in place by a cable guide.



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.

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.



Toolless mount to the 19-inch profile



In combination with a Raritan PDU



In combination with a Legrand PDU

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



Assembly bracket: LPS0095



Assembly bracket: LPS0097

Toolless mount to the frame uprights



In combination with a Raritan PDU



In combination with a Legrand PDU

### 3. Power & Connectivity 3.1 Basic PDU

#### Basic PDU

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. The PDUs can however also be mounted vertically in the rack; for vertical assembly you do need to fasten it in place. The PDUs with C13 and C19 outlets have a locking system so that they cannot be removed accidentally.



| 19-inch 1U        | 646806  | 646840          | 646841          | 646820                  |
|-------------------|---|-----------------|-----------------|-------------------------|
| Plug              | SCHUKO/UTE plug   | SCHUKO/UTE plug | SCHUKO/UTE plug | SCHUKO/UTE plug         |
| Outlets           | SCHUKO (6)  | UTE (6)         | SCHUKO (6)      | UTE (9)                 |
| Assembly          | 19-inch   | 19-inch         | 19-inch         | 19-inch                 |
| Power supply      | 1 Phase 16A   | 1 Phase 16A     | 1 Phase 16A     | 1 Phase 16A             |
| Technical details | -   | Ammeter         | Ammeter         | Current indicator light |
| Branding          |  |                 |                 |                         |

| 19-inch 1U        | 646821   | LPS0101         | 646813      | 646815         |
|-------------------|--|-----------------|-------------|----------------|
| Plug              | SCHUKO/UTE plug  | SCHUKO/UTE plug | BS1363 plug | IEC 60309 plug |
| Outlets           | SCHUKO (9)   | OSB, 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 | Current indicator light  | -               | -           | -              |
| Branding          |  |                 |             |                |

| Zero-U            | LPS0004   | LPS1004                 | LPS0203          | LPS1203         |
|-------------------|---|-------------------------|------------------|-----------------|
| Plug              | SCHUKO/UTE plug   | SCHUKO/UTE plug         | SCHUKO/UTE plug  | SCHUKO/UTE plug |
| Outlets           | SCHUKO (14)   | UTE (14)                | OSB, SCHUKO (12) | OSB, 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 | Current indicator light   | Current indicator light | -                | -               |
| Branding          |  |                         |                  |                 |

| 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 | -   | -                             | -                     | -                                  |
| Branding          |  |                               |                       |                                    |

| 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 |
| Branding        |  |                              |                           |                           |

| Assembly bracket | LPS0091                                      | LPS0092                                       | LPS0095  | LPS0097  |
|------------------|--|---|--|--|
|                  | Toolless assembly bracket for 1 vertical PDU | Toolless assembly bracket for 2 vertical PDUs | Assembly brackets for mounting 1 aluminum PDU Mounting to the frame uprights | Assembly brackets for mounting 1 or 2 aluminum PDU('s). Mounting to the frame uprights and on the 19-inch profiles |
|                  | Set of 2 pcs                                 | Set of 2 pcs                                  | Set of 2 pcs   | Set of 2 pcs   |
| Suitable for     | Legrand and Raritan PDU                      | Legrand and Raritan PDU                       | Legrand PDUs   | Legrand PDUs   |

**3. Power & Connectivity** 3.2 Intelligent PDU

The Raritan PXE series is an intelligent rack PDU that allows the user to read off the power consumption at the PDU and fuse level, both locally and remotely. You can choose from a wide spectrum of models. The optional plug-and-play air humidity and temperature sensors also monitor the server cabinet environment closely and the user is warned when freely definable threshold values are exceeded, which avoids downtime. The rack PDUs can also be delivered as a fully integrated, preassembled solution in combination with other Minkels data centre and server room solutions.

**Power strip, IEC, single phase, up to 16A**

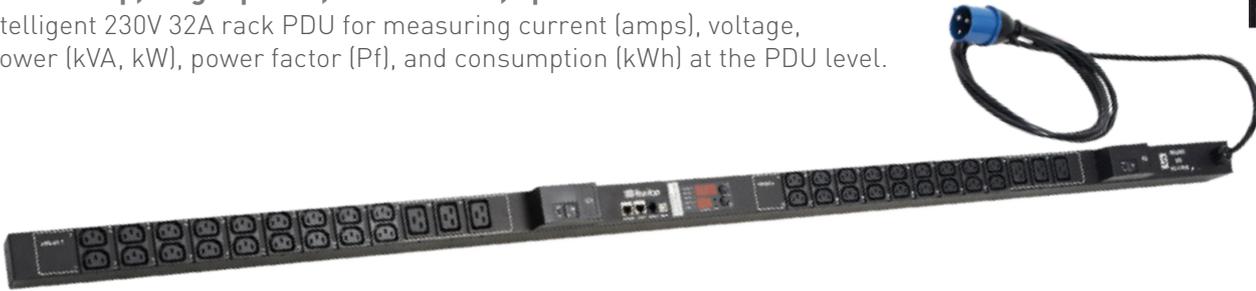
Intelligent 230V 16A rack PDU for measuring current (amps), voltage, power (kVA, kW), power factor (Pf), and consumption (kWh) at the PDU level.



| CEE (IEC 60309) plug | PXE-1190R  | PXE-1488   |
|----------------------|--|--|
| Outlets              | IEC C13 (8)  | IEC C13 (20) and IEC C19 (4)   |
| Assembly             | 19 inch, 1U horizontal   | 0U vertical  |
| Technical details    | 230-240VAC - Ethernet, RS485 serial, USB-B, Environmental Rack Sensor Port | 230-240VAC - Ethernet, RS485 serial, USB-B, Environmental Rack Sensor Port |

**Power strip, single phase, 230-240VAC, up to 32A**

Intelligent 230V 32A rack PDU for measuring current (amps), voltage, power (kVA, kW), power factor (Pf), and consumption (kWh) at the PDU level.



| CEE (IEC 60309) plug | PXE-1392  | PXE-1493                                   | PXE-1847                                   |
|----------------------|---|--|--|
| Outlets              | 16A MCBs (2) and IEC C13 (16)   | 16A MCBs (2), IEC C13 (20) and IEC C19 (4) | 16A MCBs (2), IEC C13 (36) and IEC C19 (6) |
| Assembly             | 0U vertical   | 0U vertical                                | 0U vertical                                |
| Technical details    | 7.4 - 7.7 kVA, Ethernet, RS-485 serial, USB-B, Environmental Rack Sensor Port |  |  |

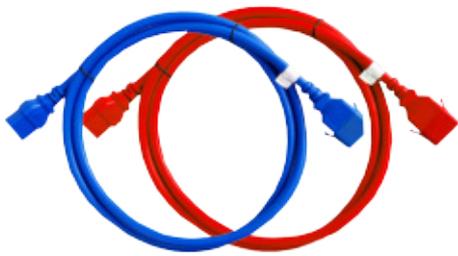
**PDU – metered, non-switched, 400 volt / 3-phase AC model**

Intelligent three-phase 400V 16A rack PDU with 42 power connections (36x IEC320 C13, 6x IEC320 C19) that makes it possible not only to provide power but also to measure current (amps), voltage, power (kVA, kW), power factor (Pf), and consumption (kWh) at the PDU level.



| IEC 60309 16A plug, 3P+N+PE | PXE-1966   |
|-----------------------------|--|
| Outlets                     | IEC C13 (36) and IEC C19 (6)                                   |
| Assembly                    | 0U vertical  |
| Technical details           | Ethernet, RS-485 serial, USB-B, Environmental Rack sensor port |

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 PX2/PX3 PDU - 3 mtr cable with RJ12 connector | Combo of temperature (3) and humidity (1) sensor with replaceable sensor head for PX2/PX3 - 3 mtr cable with RJ12 connector |

# MONITORING

## Environmental Monitoring System

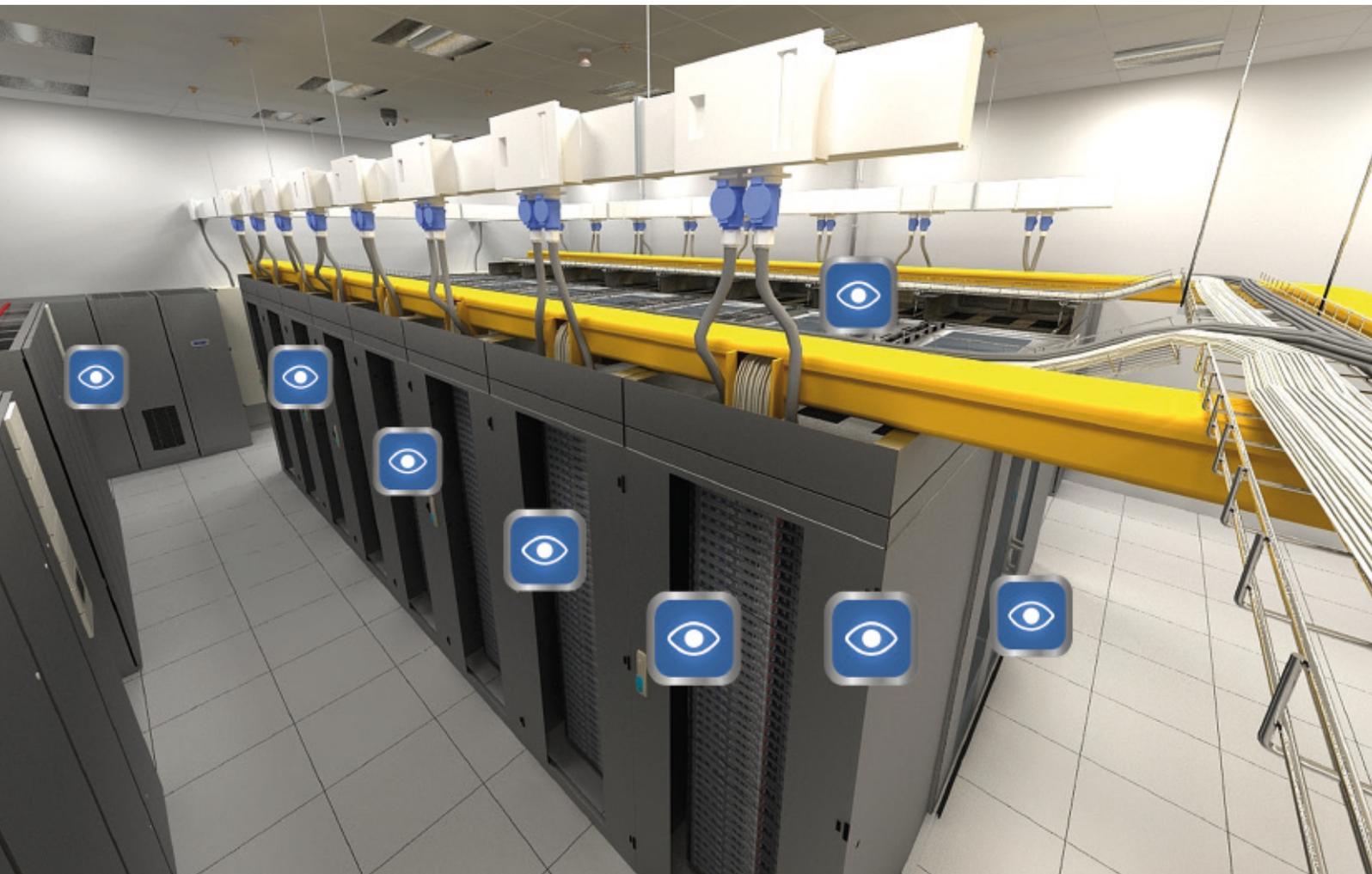
Minkels monitoring systems are capable of monitoring the direct surroundings of your racks. The modular and efficient construction of the system makes it easy to check up on a single rack or an entire room. The systems can of course be integrated seamlessly and managed using your existing network management 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



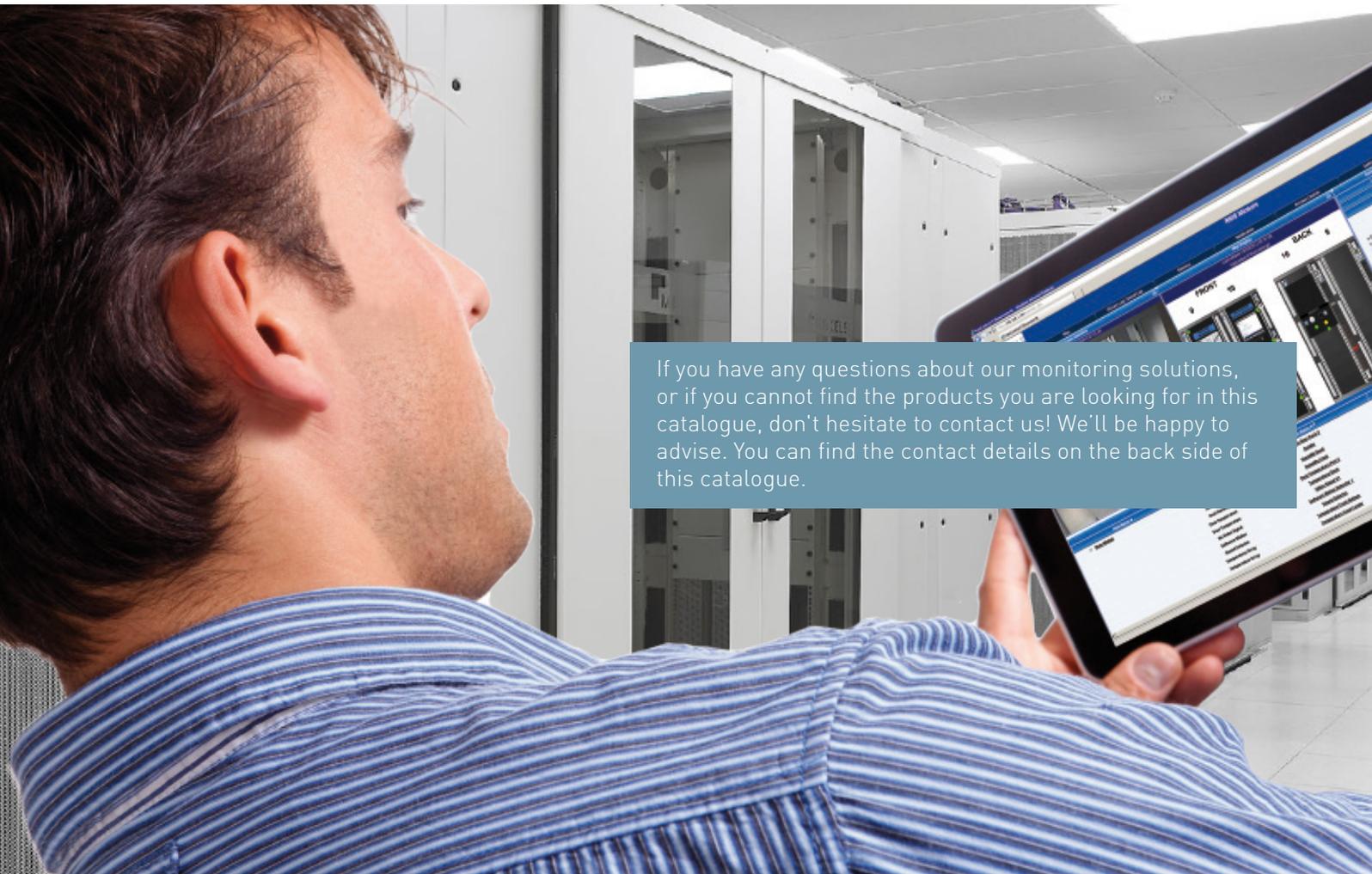
MRM0114



MRM0116

| 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.

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

## 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

## 5. Micro data centre solutions

### 5.1 MatrixCube

|                          |                  |
|--------------------------|------------------|
| 16A (2.5 kW/server rack) | <b>MXC1600**</b> |
| 32A (5 kW/server rack)   | <b>MXC3200**</b> |
| Power distribution rack  | 1                |
| Server rack              | 2                |
| VariCondition-DX cooler  | 1                |
| Width in mm              | 2700             |
| Depth in mm              | 1200             |
| Height in mm             | 2350             |
| Overall weight in kg     | ± 770            |
| Colour                   | RAL 9011         |
| Certification            | CE               |

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

### MatrixCube basic configuration

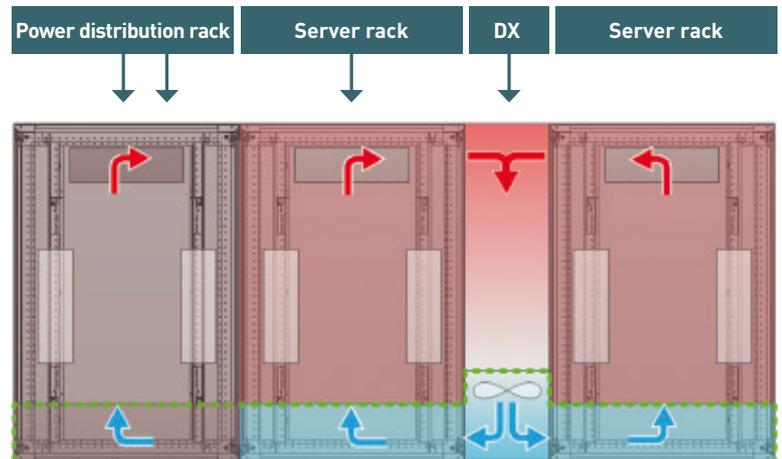
The basic configurations are classed by IT power per rack, either 2.5 or 5kW per server rack. A basic configuration always consists of:

- 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.



Watch the MatrixCube clip on the Minkels YouTube channel:

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



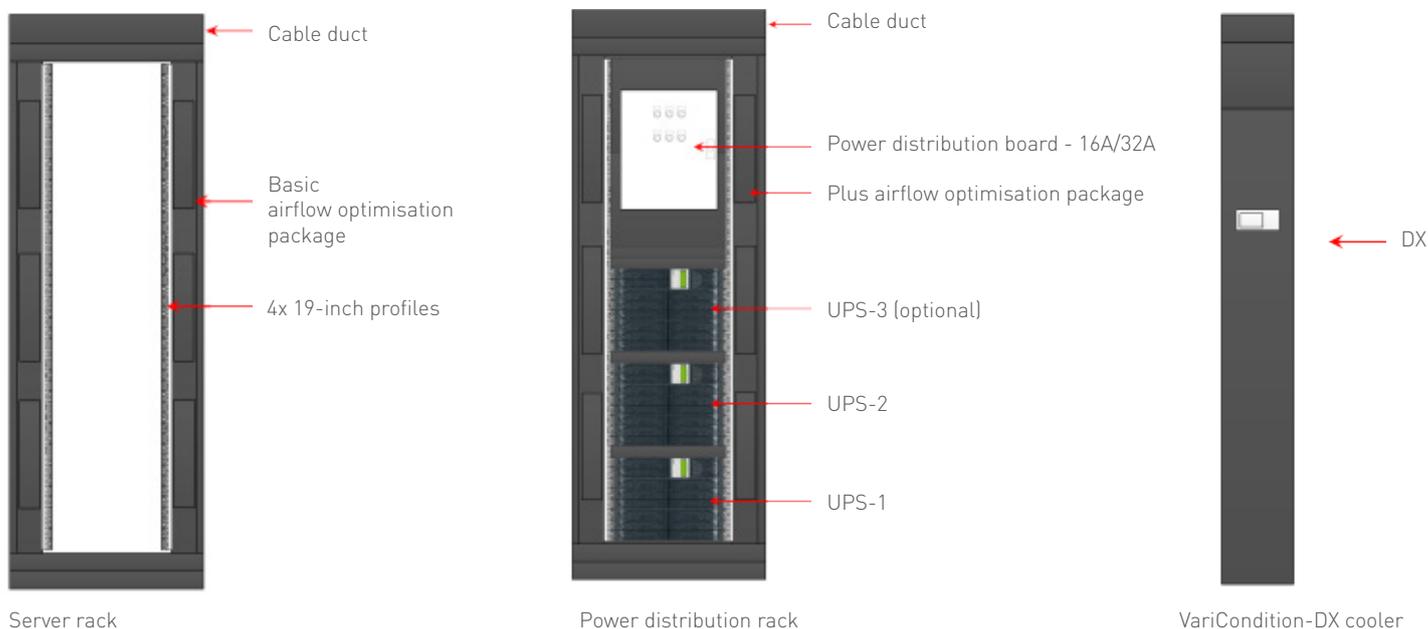
Power distribution



UPS systems

## 5. Micro data centre solutions

### 5.1 MatrixCube



### Expansion modules for the MatrixCube

#### Extra options:

- Extra power distribution rack which provides a redundant power supply and 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.
- Extra autonomous operation time for the UPS systems.

### Cable tray set for the MatrixCube

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

| Expansion modules                                |           |
|--|-----------|
| Server rack 16A (+ UPS)                          | MXC1610** |
| Server rack 32A (+ UPS)                          | MXC3210** |
| Power distribution rack 16A (without monitoring) | MXC1620** |
| Power distribution rack 32A (without monitoring) | MXC3220** |
| VariCondition-DX 11kW                            | MXC1001** |
| VariCondition-DX 22kW                            | MXC1002** |
| VariCondition-DX 11 kW end-of-row                | MXC1003   |
| VariCondition-DX 22 kW end-of-row                | MXC1004   |
| Extended UPS set                                 | MXC2001   |
| Extended UPS Autonomy - Battery Tray (per UPS)   | MXC2002   |

| Cable tray set 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 |

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

**5. Micro data centre solutions**

5.2 MiniCube



**MiniCube basic configuration**

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

|  |  |                                   |
|--|--|-----------------------------------|
|  | <b>MiniCube 2 kW - Basic</b>                                 | <b>MIC2000</b>                    |
|  | <b>MiniCube 3,5 kW - Advanced</b>                            | <b>MIC3500A</b>                   |
|  | <b>MiniCube 3,5 kW - Advanced, automatic door opener</b>     | <b>MIC3510A</b>                   |
|  | Server rack  | 1                                 |
|  | Top of rack cooler   | 1                                 |
|  | Width in mm  | 800                               |
|  | Depth in mm  | 1200                              |
|  | Height in mm   | 2300                              |
|  | Minimum dimensions conditions to place the MiniCube solution | 2800 x 2800 x 2800 mm (w x d x h) |
|  | Total weight in kg   | ± 280                             |
|  | Colour   | RAL 9011                          |
|  | Certification  | CE / IEC60950                     |



UPS system back



UPS system front

## 5. Micro data centre solutions

### 5.2 MiniCube

If you have any questions about our micro data centre 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.

### Expansion modules for the MiniCube

The basic configuration of the MiniCube can be enhanced with a variety of enhancement modules:

- SNMP card for UPS
- Additional 19 inch passive PDUs (region-dependent) for other equipment
- Additional passive or intelligent PDUs that can be used to create a 'B-feed'.



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

| IEC 60309 plug | MIC1020              | MIC1030                                     |
|----------------|----------------------|---|
| Outlets        | C13 (20) and C19 (4) | MCB 16A (2), C13 (20) and C19 (4)           |
| Assembly       | Vertical             | Vertical                                    |
| Branding       | <b>legrand</b>       | <b>Raritan</b><br>A brand of <b>legrand</b> |

| Stekker C20 | MIC1040        | MIC1050 | MIC1060    | MIC1070  |
|-------------|----------------|---------|------------|----------|
| Outlets     | SCHUKO (9)     | UTE (9) | BS1363 (7) | T23 (10) |
| Assembly    | 19-inch        | 19-inch | 19-inch    | 19-inch  |
| Branding    | <b>legrand</b> |         |            |          |

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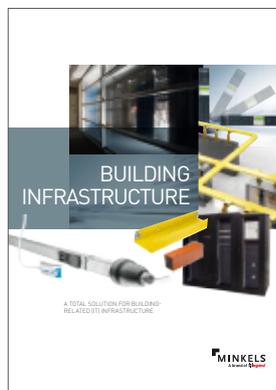
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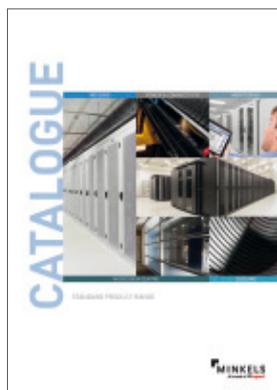
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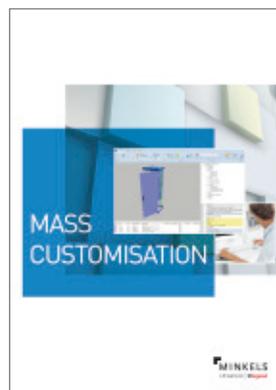
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