

DATA  
CENTER

# NEXPAND



## AISLE CONTAINMENT

OPTIMAL COOLING AND ENERGY EFFICIENCY THROUGH  
THE SEPARATION OF HOT AND COLD AIRFLOWS

# AISLE CONTAINMENT

Aisle containment is the solution to the challenges which data centers have been presented with since day one: the optimisation of cooling and energy-efficiency through the separation of hot and cold airflows.

With the **Nexpand Corridor**, Minkels offers data center managers and owners 'future-proof' solutions which offer the flexibility and modularity needed to be able to anticipate the dynamic of the modern day data center. Minkels offers the best solution for every situation with the Nexpand Corridor.

The Nexpand Corridor is the ultimate answer to the ever increasing demand for flexible and modular solutions. In the form of the Nexpand Corridor, Minkels lifts modular thinking and energy-efficient data center design to a higher level. Important features of the Nexpand Corridor are:

## MODULARITY

Through the highly modular concept of the Nexpand Corridor, Minkels offers extensive possibilities to implement a Corridor solution in a phased and thus cost-efficient manner.

## FLEXIBILITY

Because of its modular design, the Nexpand Corridor is flexible and thus can be adapted to fit the specific building environment.

## EASE OF INSTALLATION

Modularity in the construction details ensure that the solution is easily and cost-efficiently installed.

## ENERGY-EFFICIENCY

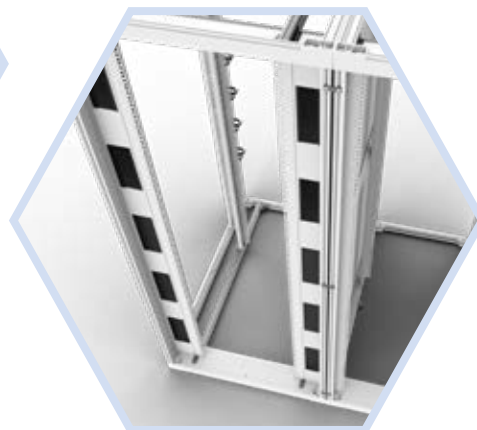
With the Nexpand Corridor, Minkels offers a solution which is more energy-efficient than other containment solutions on the market.

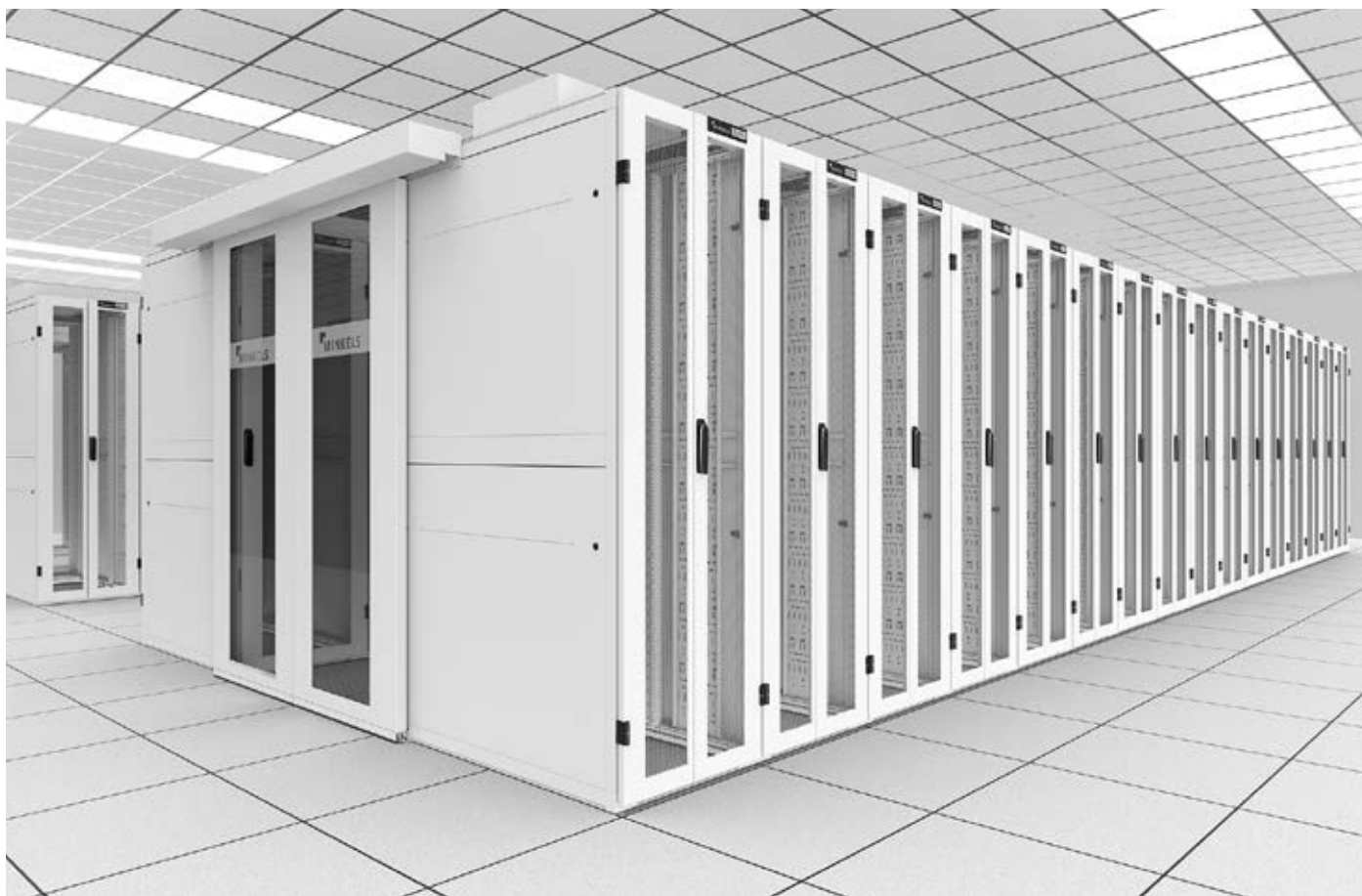
## OPTIMAL INTEGRATION

The Nexpand Corridor can be integrated with row-based cooling systems which brings cooling close to the heat source, but also with more traditional forms of cooling which require a raised floor. In addition, this concept offers plug & play integration with e.g. fire detection and suppression systems, monitoring sensors and access control.



**WATCH ALL FEATURES:** [www.minkels.com/videos/nexpand](http://www.minkels.com/videos/nexpand)





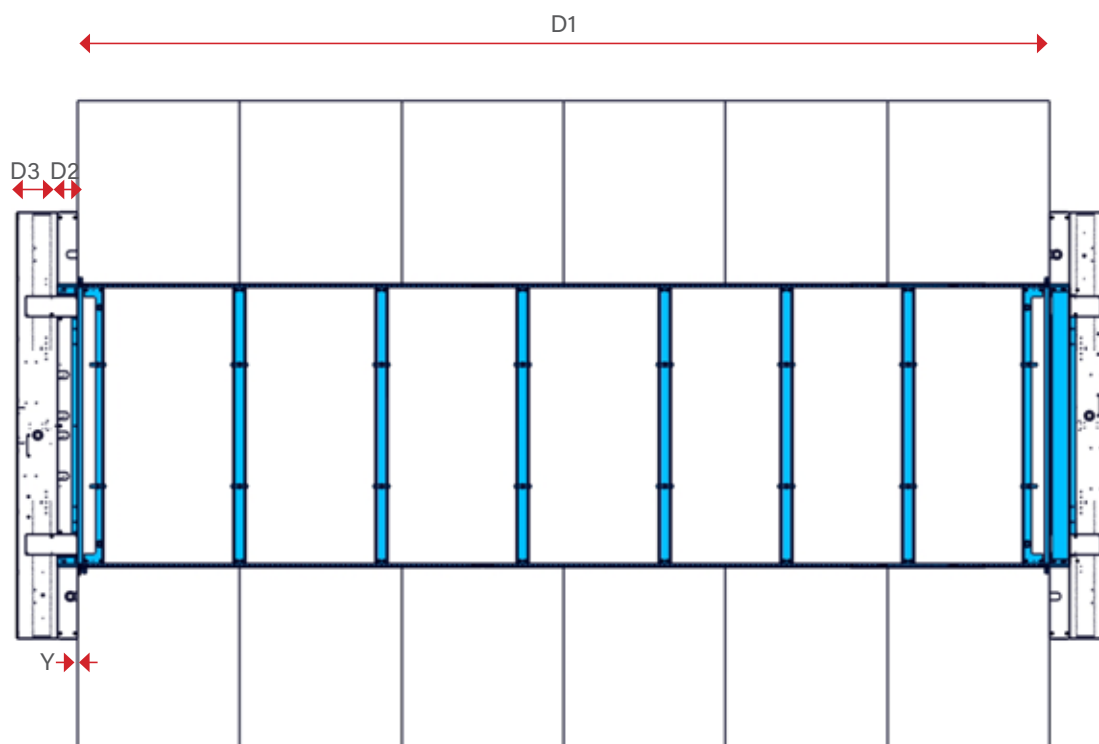
#### Corridor - Standard

|                     |    |   |
|---------------------|----|---|
| Aisle width         | mm | Variable between 1000-1800<br>Standard width: 1200 & 1800 |
| Overall width       | mm | Aisle width + 200   |
| Standard row height | mm | 1978/2200/2422  |
| Overall height      | mm | Row height + 55.5/135.5 (Hr)                              |
| Colours             |    | RAL 9003 (white) / RAL 9005 (black)                       |
| Materials           |    | Powder coated sheet metal                                 |
| Working conditions  |    | Max. 5 - 40°C / 20 - 80% RV                               |
| Standardisation     |    | CE  |

#### Portal - optional

|                    |    |      |
|--------------------|----|------|
| Depth              | mm | 100  |
| Total width portal | mm | 2100 |

## TOP AND FRONT VIEW AISLE CONTAINMENT



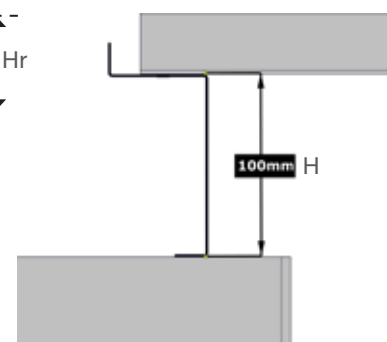
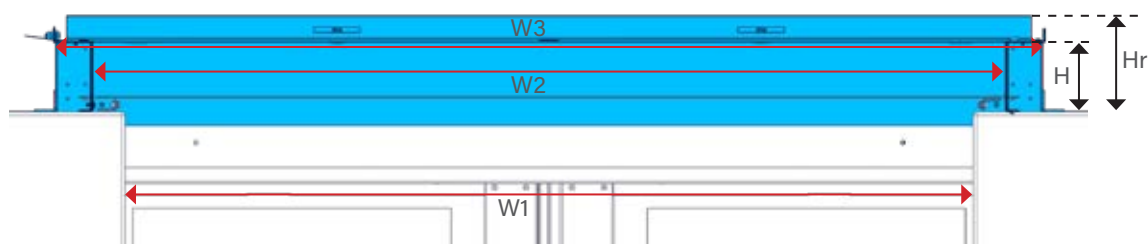
### Dimension

D1 = Corridor length

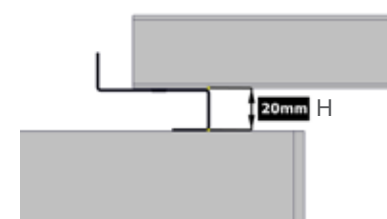
D2 = Portal depth is 100mm

D3 = Sliding door beam depth is 200mm

Y = Flexible start/end panel (flexible in this case means extendable from 0-75 mm)



*Internal space for mounting accessories*

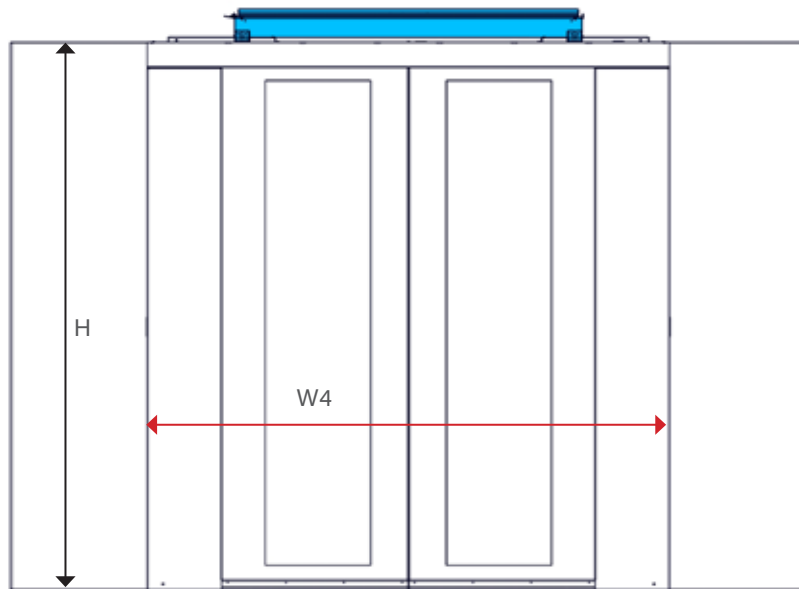


*Internal space when no accessories are needed*

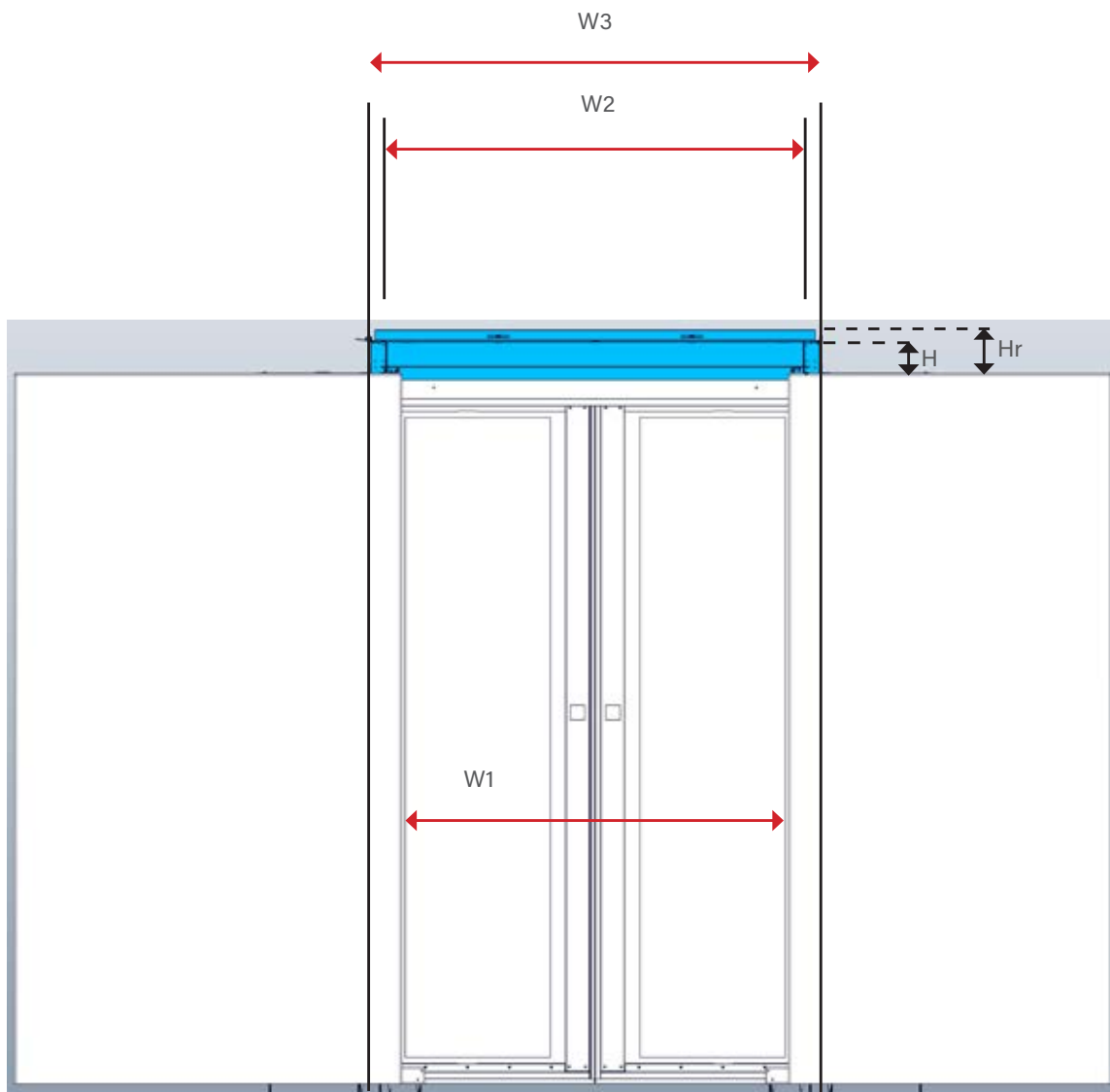
| Dimension                              | 1200 mm width aisle  | 1800 mm width aisle  |
|--|--|--|
| W1 = aisle width                       | 1200 mm  | 1800 mm  |
| W2 = Interior width roof system        | 1291 mm  | 1891 mm  |
| W3 = Total width roof system           | 1400 mm  | 2000 mm  |
| Hr = Height roof system (total height) | Hr = 135,5 mm to allow mounting accessories:<br>sensors/cameras/LED lighting<br>H = 100 mm | Hr = 135,5 mm to allow mounting accessories:<br>sensors/cameras/LED lighting<br>H = 100 mm |
| H = Height of the beam                 | Hr = 55,5 mm (when no accessories are needed)<br>H = 20 mm                                 | Hr = 55,5 mm (when no accessories are needed)<br>H = 20 mm                                 |

Please note that the dimensions refer to an electric sliding door.

Page 11 shows the different dimensions for both mechanical and electric sliding doors.



| Dimension                 | 1200 mm width aisle | 1800 mm width aisle |
|---------------------------|---------------------|---------------------|
| H = height of the cabinet | -                   | -                   |
| W4 = Total portal width   | 2100 mm             | 2100 mm             |



## FREE STANDING

When the highest amount of flexibility is required, the **Free Standing Corridor** is the most optimal solution. The Free Standing Corridor is a fully self-supporting aisle containment system, with which closed off aisles can be created independent from the IT-racks – which is not usual in the data center market.

### 'PAY-AS-YOU-GROW' SOLUTION

Immediately after implementation, the Free Standing corridor reaches the same energy-efficiency as a regular aisle containment system with IT-racks would. The Free Standing Corridor can be used for both cold aisle containment and hot aisle containment. The system – a modular design consisting only of a carrying construction, wall panels, roof panels and sliding doors – offers corporate and commercial data centers a cost-efficient 'pay-as-you-grow' solution in order to create energy-efficiency at low initial investments (CAPEX).

### MINIMAL INITIAL INVESTMENTS

The Free Standing Corridor can be used in combination with an existing infrastructure and already fitted racks, and drastically

improves the airtightness and with this the energy-efficiency. The Free Standing Corridor can also be used for a new room where the end user will fill the corridor themselves based on their own demands and requirements, or those of a customer. This allows for a start with a minimal initial investment. Depending on the length of the corridor, racks can be added stepwise while the required airtightness is maintained.

### FREE STANDING FRAME

The free standing frame carries the sliding door systems, roof systems, corridor walls and vertical panels/chimneys, without any support other than the floor onto which the entire construction is installed. The frame consists of two sheet metal rigid door portals at the beginning and end of the construction and modular, plate steel beam sections. The minimum length of the free standing frame is 1800 mm and can be added onto with 600 mm sections. The maximum length of the free standing frame is 26400 mm. The standard walkways are enclosed by the containment system, and have a width of either 1200 or 1800 mm.



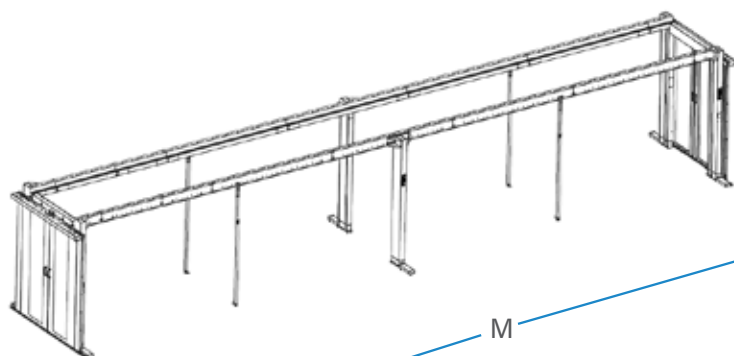
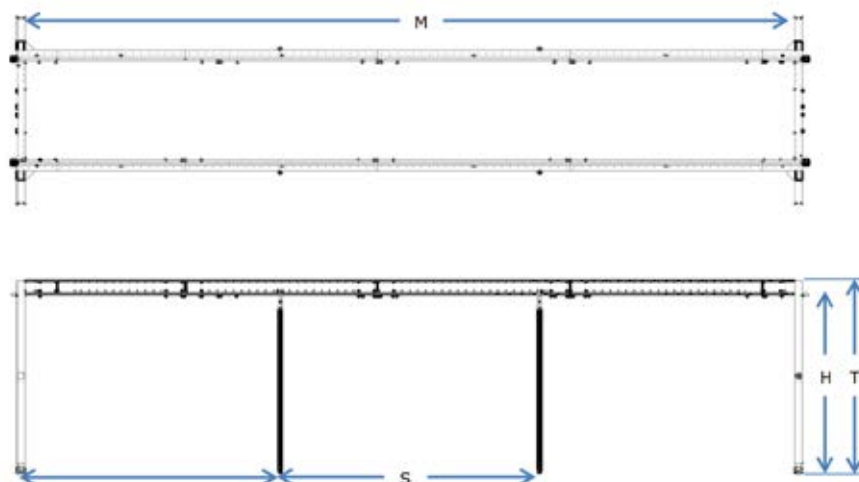
| Features  | Nexpand Corridor | Free Standing |
|---|------------------|---------------|
| Integration differing cabinet depths                | ● ● ●            | ● ● ●         |
| Integration differing cabinet heights               | ● ● ○            | ● ● ●         |
| Integration differing cabinet widths                | ● ● ○            | ● ● ●         |
| Integration differing brands of cabinets            | ● ○ ○            | ● ● ●         |
| Modularity  | ● ● ○            | ● ● ●         |
| Integration sensors                                 | ● ● ●            | ● ● ●         |
| Expansion with extra cabinets                       | ● ● ○            | ● ● ●         |
| Row-based cooling                                   | ● ● ●            | ● ● ○         |
| Integration fire suppression systems                | ● ● ●            | ● ● ●         |
| Initial investments*                                | ● ● ○            | ● ● ●         |
| Separation of hot and cold air                      | ● ● ●            | ● ● ●         |
| Cold corridor setup                                 | ● ● ●            | ● ● ●         |
| Hot corridor setup                                  | ● ● ●            | ● ● ●         |
| Avoidance of hotspots                               | ● ● ●            | ● ● ●         |
| Possibility for energy-efficiency                   | ● ● ●            | ● ● ●         |
| Power per m <sup>2</sup>                            | ● ● ●            | ● ● ●         |
| Cable management on top of cabinet**                | ● ● ●            | ● ● ○         |
| Busbar integration                                  | ● ● ●            | ● ● ○         |
| Transverse wall                                     | ○ ○ ○            | ● ● ●         |
| Adjustable side wall                                | ● ● ○            | ● ● ●         |
| Flexibility in adaptation or replacement of cabinet | ● ○ ○            | ● ● ●         |

\* including supporting cabinets (necessary)

\*\* Minkels-development

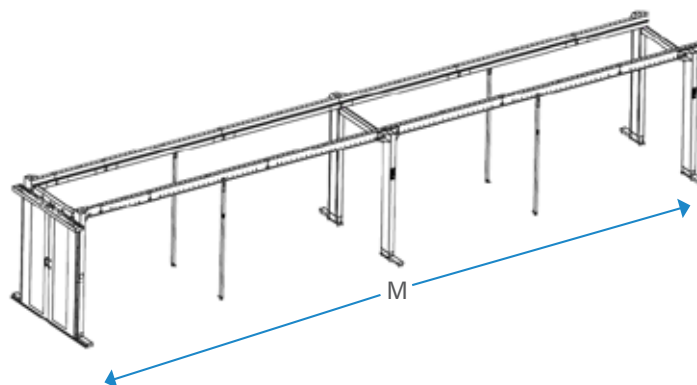
## FREE STANDING

Free Standing Corridor structure  
for a module length (M) of maximum 9.60 metres.

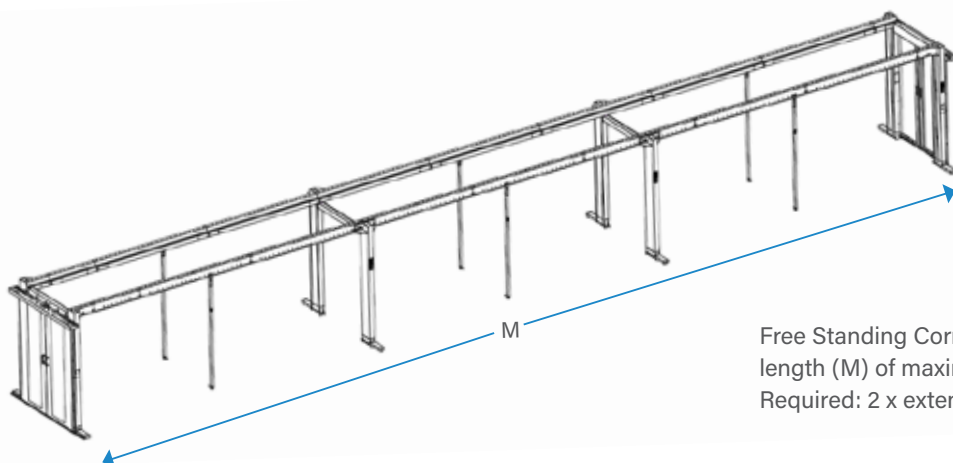


Free Standing Corridor structure for a module  
length (M) of maximum 12.60 metres.  
Required: 1 x extension portal.

Free Standing Corridor structure for a module  
length (M) of maximum 18.60 metres.  
Required: 1 x extension portal + 1 x crossbeam.



Free Standing Corridor structure for a module  
length (M) of maximum 24.60 metres.  
Required: 2 x extension portals + 2 x crossbeams.





| Free Standing  |    |  |
|--|----|--|
| General  |    |  |
| Aisle width  | mm | 1200 / 1800 <sup>1</sup>   |
| Net aisle width  | mm | 1370 / 1970 <sup>2</sup>   |
| Free height available for use (H)                      | mm | 2220   |
| Overall height (T)                                     | mm | 2385   |
| Module length (M)                                      | mm | 1800 – 26400 in 600 <sup>3</sup> increments                            |
| Colours  |    | RAL 9005   |
| Materials  |    | Sheet steel, powder coating  |
| Operating conditions                                   |    | Max. 5 to 40°C / 20 to 80% RH  |
| Air flow optimisation                                  |    | Yes  |
| Standards  |    | Not applicable   |
| Portal   |    |  |
| Portal type  |    | Double   |
| Portal depth   | mm | 100  |
| Sliding door system                                    |    | Fully compatible with Nexpan Corridor sliding door portfolio           |
| Extension Portal                                       |    |  |
| Usage  | mm | With a module length (M) of > 9600                                     |
| Portal depth   | mm | 100  |
| Distance   | mm | between portal and extension portal is max < 9300                      |
| Assembly method  |    | Fully free-standing. Portals must be screwed into the floor            |
| Lengthwise beams                                       |    |  |
| Segment lengths  | mm | 1000, 1200, 1600, 2400 (400mm length wise beam is included per portal) |
| Maximum length that can be bridged without support (S) | mm | 3700. Distance between vertical supports                               |
| Roof system  |    |  |
|  |    | Fully compatible with Nexpan Corridor portfolio <sup>4</sup>           |
| Crossbeam  |    | If module length (m) >12,6m  |
| Vertical support of lengthwise beams                   |    |  |
| Dimensions   | mm | Height (H) x 50 x50  |
| Adjustment   |    | Continuously adjustable  |
| Adjustment range                                       | mm | 3300 +/- 350 with respect to the assembly position <sup>5</sup>        |
| Attachment to the length wise beam                     |    | Using a knob   |

- 1 Optimum aisle widths between the racks. Non-standard aisle widths can be achieved by placing the racks used at a different position under the length wise beams
- 2 Aisle width between the wall panels (if applicable)
- 3 Module length > 9.6 metres requires an extension portal; module length > 12.6 metres requires an extension portal with crossbeam; module length > 18.6 metres requires 2 extension portals with crossbeams. Please contact Minkels Sales if you require a module that exceeds 26.4 metres in length.
- 4 The complete roofing portfolio of Nexpan Corridor can be applied in the Nexpan Free Standing Corridor concept. The function of the roof rails is however integrated into the length wise beams.
- 5 The position of the vertical supports should be determined using the information given in the user manual and/or installation manual. The vertical supports may only be moved if the maximum width that can be bridged unsupported (3.7m) is not exceeded.

## DOOR SYSTEMS FOR AISLE CONTAINMENT



Minkels offers self-closing sliding doors, with which you can close off your aisle containment in an airtight seal. The self-closing sliding door system is available in two different colours: RAL 9003 (white) / RAL 9005 (black). During the closing of the doors, a soft closing mechanism prevents the doors from unexpectedly

striking against each other. The door panels have been fitted with safety glass panels to ensure the safety of persons and to allow light to enter the containment, as well as to provide the possibility of viewing the walkways from outside the containment.



### Sliding door system

|                      |                |                        |
|----------------------|----------------|------------------------|
| Door type            | Single, double |                        |
| For aisle widths     | mm             | 1200 + 1800            |
| Clear door opening   | mm             | 1000                   |
| Height door opening  | mm             | Height door system -70 |
| Depth of beam        | mm             | 170                    |
| Height of beam       | mm             | 70                     |
| Width door system    | mm             | 1950                   |
| Door closing         |                | Soft close             |
| Door synchronization |                | No                     |
| Opening - outside    |                | Manual                 |
| Opening - inside     |                | Manual                 |

### Options

|                        |   |   |
|------------------------|---|---|
| Self closing           | Door synchronisation incl. automatic closing of doors |   |
| Electronic door system |   | Door synchronisation incl. motorized opening and closing of doors |

### Security options

|                                   |                   |  |
|-----------------------------------|-------------------|--|
| Door position indicator           | Magnetic contacts |  |
| Electronic lock*                  |                   | Electronic locking of the sliding door system  |
| Power consumption Electronic lock | 17 W              |  |
| Operation - inside                |                   | Push button<br>Motion sensor   |
| Operation - outside               |                   | Push button (Standard)<br>Key Switch<br>Motion sensor<br>Key Pad<br>RFID - Card reader |

### Electronic door system\*

|                     |  |                         |
|---------------------|--|-------------------------|
| Standardization     | NEN-EN 16005   |                         |
| Clear door opening  | mm   | 1000 mm                 |
| Height door opening | mm   | Height door system -100 |
| Depth of beam       | mm   | 200                     |
| Height of beam      | mm   | 100                     |
| Width door system   | mm   | 2100                    |
| Electrical supply   | 230V - 50Hz/60Hz   |                         |
| Power consumption   | 180 W  |                         |
| Power connection    | SCHUKO, C13, Cee-form, BS, No cable - Standard 5 m cable length  |                         |
| Safety              | Electrical sliding system is equipped with anti-oppression system<br>In the event of a power failure, the doors can be opened manually (fail-safe) |                         |

\*Portal necessary

# ROOF SYSTEMS FOR AISLE CONTAINMENT

For your Nexpan Corridor a choice can be made between a high transparency roof and Drop Away Panels.

## HIGH TRANSPARENCY ROOF

Your Nexpan Corridor can be fitted with a high transparency roof. These roof panels provide a high light permeability/light transmission, up to 83%. The roof panels are installed onto rails, separate from the server cabinets.

## DROP AWAY PANELS FM APPROVED

Drop Away Panels ensure the seamless integration of aisle containment solutions with sprinkler or water mist systems. In the case of a fire in the data center, the plastic Drop Away Panels automatically soften and fall down so that they do not form an obstruction when sprinklers are activated. The system is specifically designed for use with sprinkler installations which activate at 57.2 degrees Celsius and upwards.



### HIGH TRANSPARENCY

### DROP AWAY PANELS

ROOF SYSTEM



WORKING PRINCIPLE



## Roof rail system

|                      |    |                                |
|----------------------|----|--------------------------------|
| Rail lengths         | mm | 250 / 500 / 1000 / 1500 / 2000 |
| Rails interconnected |    | Yes                            |
| Height adjustment    | mm | 10                             |
| Sealing              |    | Finished with air tight seal   |

## Roof system - options

### Integration panel - sensors

|                    |                              |
|--------------------|------------------------------|
| Supporting sensors | Minkels Varicontrol-S        |
| Mounting sensors   | Toolless                     |
| Cable entries      | mm 2x ø13,5 - rubber grommet |

### Integration panel - Fire extinguisher\*

|                 |                            |
|-----------------|----------------------------|
| Pipe throughput | mm 1x ø35 - rubber grommet |
|-----------------|----------------------------|



\*Only i.c.w. high transparency roof system

#### Roof system - 'High Transparency'

|                     |    |                                   |
|---------------------|----|-----------------------------------|
| Aisle width         | mm | 1200 / 1800                       |
| Start panel - range | mm | Flexible start/end panel, 100-175 |
| Available pitch     | mm | 600 & 700 mm                      |
| Transparency        |    | 83%                               |
| Panel material      |    | Double layered safety glass       |
| Roof panel fixation |    | square key lock                   |

##### 1200 mm aisle width

|                  |    |                                  |
|------------------|----|----------------------------------|
| Segments         |    | 1                                |
| weight / segment | kg | 600 --> 7,6 kg<br>700 --> 9,2 kg |

|            |    |      |
|------------|----|------|
| Roof width | mm | 1350 |
|------------|----|------|

##### 1800 mm aisle width

|                  |    |                                    |
|------------------|----|------------------------------------|
| Segments         |    | 2                                  |
| weight / segment | kg | 600 --> 10,4 kg<br>700 --> 12,6 kg |

|            |    |      |
|------------|----|------|
| Roof width | mm | 1950 |
|------------|----|------|



#### BENEFITS OF THE DROP AWAY PANELS

- Lightweight material: the panels do not cause any danger to people and equipment.
- The panels are suitable for Nexpan Corridor, and can also be used for retrofit.
- No height restriction: suitable for 2000 & 2200 mm high corridors.
- Drop Away Panels are available in standard width of 1200 mm.
- Extra safety-feature: the grounding of the metal framework construction.
- FM Approved

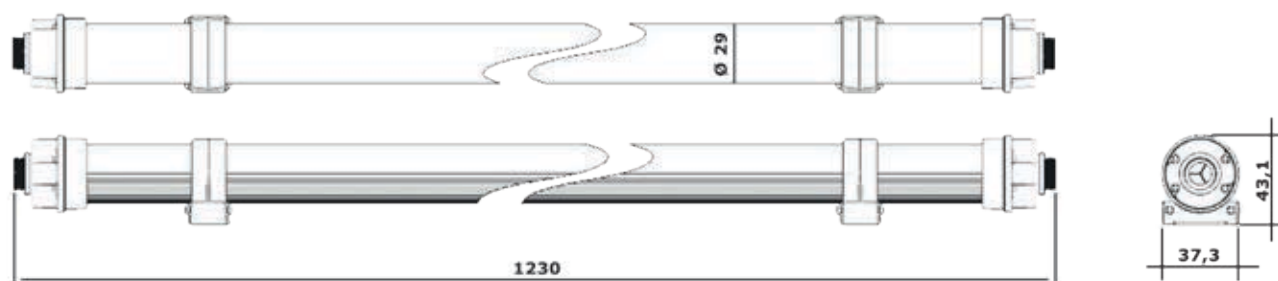
#### Roof system - 'Drop Away Panels'

|  |      |   |
|--|------|---|
| Aisle width                              | mm   | 1200 / 1800   |
| Start panel - range                      | mm   | Flexible start/end panel 100-175                        |
| Available pitch                          | mm   | 700   |
| Roof panel material *                    |      | PVC - vinyl   |
| Drop Away Panel weight                   | kg   | 0,16 kg   |
| Roof panel fixation                      |      | square key lock   |
| Optimal static differential air pressure | Pa   | < 10  |
| Airleakage, at 10 Pa                     | m3/h | 29  |
| Max. static differential air pressure    | Pa   | 45  |
| 1200 mm aisle width<br>Segments          |      | 1 panel with 2 Drop Away Panels                         |
| weight / panel                           | kg   | 3,0   |
| Roof width                               | mm   | 1350  |
| Transparency **                          |      | 81 %  |
| 1800 mm aisle width<br>Segments          |      | 1 panel with 3 Drop Away Panels                         |
| weight / panel                           | kg   | 4,5   |
| Roof width                               | mm   | 1950  |
| Transparency **                          |      | 83,5 %  |
| Mounting method                          |      | Fixation on independent roof rails                      |
| Certified                                |      | UL Ceiling Panels for use Beneath Sprinklers BLME.R4036 |
| Approval                                 |      | FM Approval Class Number: 4651                          |

\* Our drop away panels should only be dusted or cleaned with a pH-neutral solution

\*\* Transparency in % depending on total length Nexpan Corridor by the use of the filling panels

## LED LIGHTING FOR AISLE CONTAINMENT



Energy-efficient LED Tubes deliver improved visibility in data centers, providing a safer and healthier working environment. Safety certification to the highest level, IEC 62471:2006, offers the user a guarantee of exceptional eye protection. These LED Tubes are optimised for the Nexpan Corridors.

The LED Tubes are exceptionally easy to install. With highly adjustable suspension points a Corridor can be fitted out with LED lighting in no time. And once fitted the LED Tube continues to offer outstanding flexibility. The option to rotate the tubes means that the illumination can be directed towards specific items of equipment. The high light intensity and energy efficiency

of the LED Tubes makes them just the thing for Nexpan Corridors. These LED Tubes provide greatly improved visibility. The LED Tubes can easily be expanded using extension cables: these are then concealed with neat cover caps so that the unit forms an attractive whole. Each LED Tube can be fitted with a motion sensor, allowing the lamps to switch off automatically if no movement has been detected for a specified period, a functionality that further underlines the energy-efficiency of this lighting solution for data centers.





## MAIN FEATURES

- **Energy efficiency** – LEDs (Light Emitting Diodes) are small, solid lamps, highly energy-efficient and with an extremely long service life.
- **Safety guarantee** - Official IEC 62471:2006 certification means that this product complies with the most stringent safety requirements in the area of eye protection.
- **Powerful illumination** – 335 lux, delivering optimal working conditions in accordance with standard EN12464-1.
- **Simple installation** - Installing a LED Tube is simplicity itself thanks to the clever magnetic attachment system.
- **Flexibility** - Suitable for a wide range of rack formats and Corridor layouts, with options to rotate the installation position.
- **Integrated lighting** - The recesses for the LEDs, the connection cables and the small cover caps to conceal the cables give these units the appearance of a unified whole.

### LED lighting - Nexpan Corridor

|  |    |  |
|--|----|--|
| Length   | mm | 1200   |
| Height   | mm | 43,1   |
| Width  | mm | 37,3   |
| Diameter                                       | mm | 37   |
| LED tube diameter                              | mm | 29   |
| Lamp material                                  |    | Polycarbonate<br>PC-ABS  |
| Mounting clamp material                        |    | Anodised aluminium   |
| Weight of LED tube                             |    | 505 g  |
| Variants                                       |    | With PIR sensor<br>Without PIR sensor  |
| Lux  |    | Average 335 Lux  |
| Energy class                                   |    | A+   |
| Colour temperature in Kelvin                   |    | 5000°K   |
| Colour rendering (CRI)                         |    | 80   |
| Dimmable                                       |    | No   |
| Angle of illumination                          |    | 130°   |
| Adjustable angle of illumination               |    | Yes, with rotating LED Tube  |
| Operating conditions for LED tube              |    | Max. -20°C - 40°C  |
| Storage temperature                            |    | Max. -40°C - 60°C  |
| IP value of fitting                            |    | IP21   |
| Impact resistance of fitting                   |    | IK08   |
| Expected life time of LED lamp                 |    | 35,000 hours   |
| Input voltage                                  |    | 230 VAC/single phase/50 Hz   |
| Current consumption in Watts                   |    | 20 W   |
| Circuit board (PCB)                            |    | FR 4   |
| Connectable LED Tubes                          |    | Yes, using 10cm Male/Female LED Tube connector power cable + cover   |
| Maximal length of serially connected LED Tubes |    | 50 metres in series from a single power supply   |
| Location of LED Tubes in Corridors             |    | Left and right side of corridor. Each side is fed separately   |
| Connection                                     |    | C14/LED Tube connector – standard 4.0m cable length  |
| Installation method                            |    | Attachment to joists using flexible, sliding N50 magnets   |
| Corridor roof configuration                    |    | Compatible with Nexpan roof structure  |
| Quality mark                                   |    | CE   |
| In accordance with Directives                  |    | Directive 2004/108/CE<br>Directive 2006/95/CE<br>Directive RoHS 2011/65/EU<br>Directive WEEE 2012/19/EU<br>Directive 2012/874/EU |
| Standards                                      |    | EN62471<br>EN12464-1   |



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