FROG ENGINEERING

DATACENTER SOLUTIONS

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HOT & COLD
AISLE CONTAINMENT

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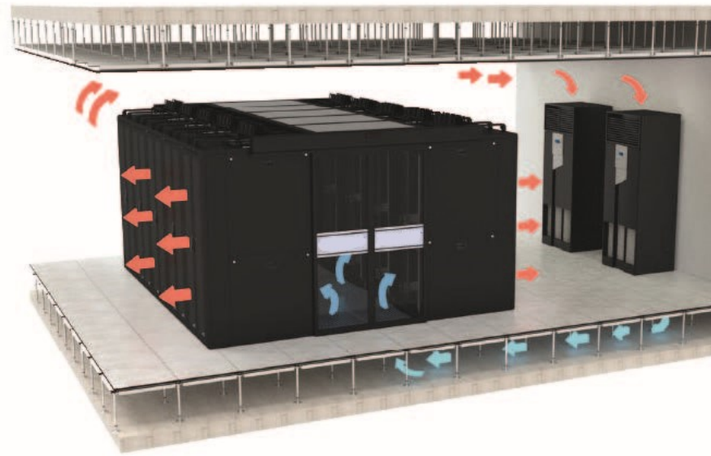
DID YOU KNOW?

A Swedish ISP has a quite interesting portfolio of data centers as data bunkers. The facility above “Pionen” is one of the state-of-art works of the data center world. The Pionen facility is built in a Cold War era nuclear bunker, and features both a standard UPS system for continuous power, and two diesel submarine engines for backup power generation.

High energy costs and increased energy consumption rates forced data center specialists to evaluate hot and cold air hosting strategies. Bot hot and cold air conservation increased the predictability and efficiency of traditional data center cooling systems. This solution system aims that providing maximum separation of hot-cold air, while the efficiency of cooling provides lower cost over time.



COLD AISLE APPLICATION ADVANTAGES

- Easy to apply; it does not require an additional architectural structure to return to the waste air containment and cooling units (drop ceiling, air pressure, etc.).
- Only doors at the edges and a roof cover is required.
- Generally low cost
- Cold air conservation in the current data centers, easily renewable especially where there is obstruction from the top for circulation such as electricity and network distribution, ducts and lighting.
- In case of power failure cold aisle provides greater circulation area. (raised or non-raised floor.

HOT & COLD AISLE CONTAINEMENT

GT-DC Plus Series Rack Cabinets

HOT AISLE APPLICATION ADVANTAGES

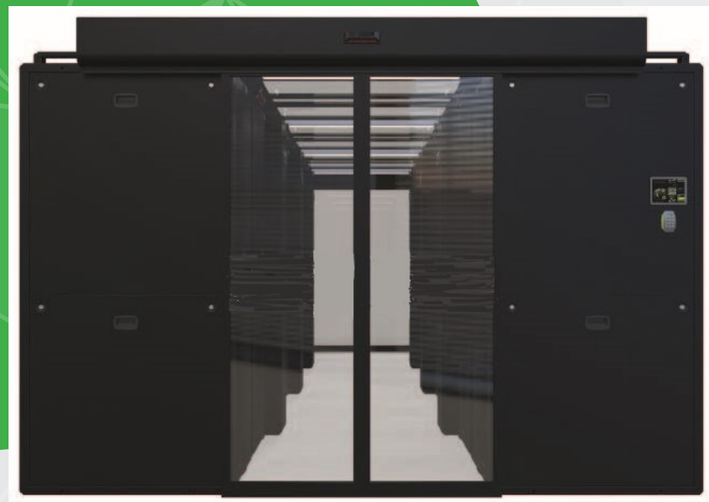
- Outside area is kept cold.
- Leakage from the raised floor openings in the wide area of the corridor enters the cold area.
- Generally more effective
- Hot air conservation will be more tolerant to network cabinets and independent equipment such as storage cabinets that may have to stay outside the enclosure, for those which will stay in the lower temperature range of the computer room.
- In the hot aisle environment, it can perform better by maintaining sufficient air supply and drawing the exhaust air in data center.
- Due to the hot air conservation structure where the fire extingushing system is merged with the ceiling it's installed, it does not take up extra space and provides the necessary clearance needed by the spray heads.

WHAT *we offer* ?

- The highest insulation between hot and cold aisle conservation
- Effective and efficient cooling.
- Easy to configure, expand and customize
- Adaptable for future changes and past applications
- All-in-one compact solution

LIST OF COMPONENTS

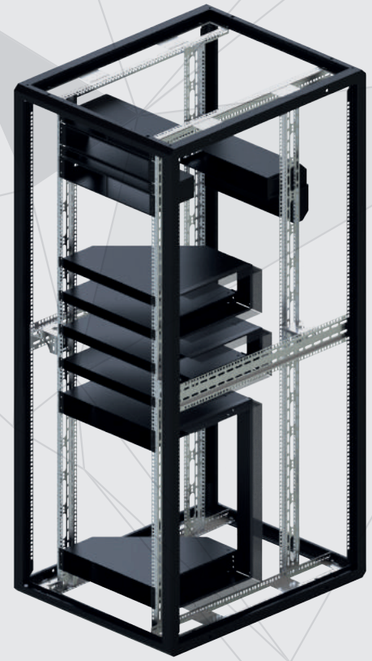
Sequential Cooling



Manual / Automatic
Sliding Doors

Raised Floor

Air Routers

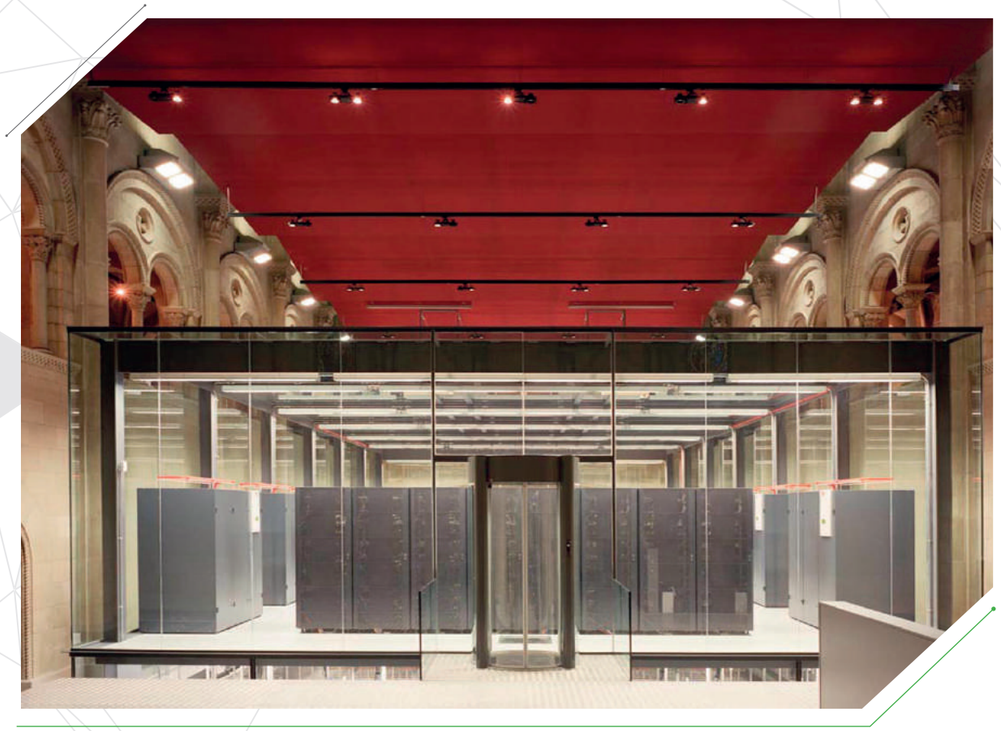


Air Outlet Chimneys

Cable Management

* Data Center applications are given in general terms. Project needs are determined and prepared as a project file. Project file is presented before application.

DID YOU KNOW?



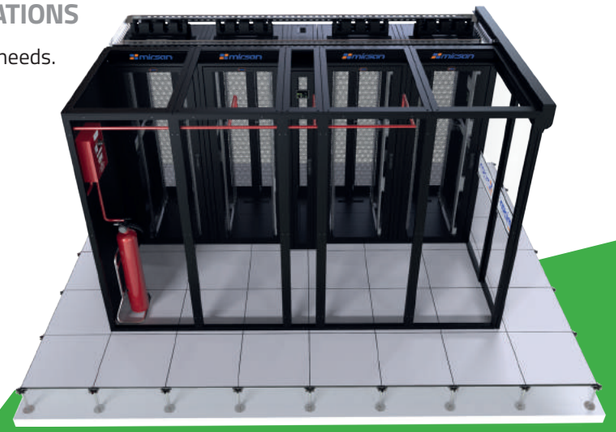
The former Torre Girona Chapel on the campus of the Technical University of Catalonia is the home of the school's super computer called Mare Nostrum. Housed in a glassroom, the super computer sits inside the chapel, which was built in the 1920s. The School needed a facility and quickly converted to a home for the super computer and the chapel was chosen because of it's location on campus. It predates the gren data center movement, but it's location within the religious setting along with the subdued lighting make for an impressive visual experience.

A mini data center can contain only one cabinet up to 40 cabinets and is defined as an independent system designed to be containerized and corridor enclosure solutions.The system contains IT infrastuctures such as power and cooling sytems and contain BT infrastructure. These data centers can support the IT load up to 250 kW and are suited for disaster recovery data centers, branch office operations and endpoint computing purposes.

Due to an important part of SME's didn't make investments in the traditional data center facilities, demand for mini-data center infrastructure is growing across SME's worldwide. Compared to traditional facilities, mini data centers are low cost, flexible and scalable. In addition, there is a high probability that SMEs will prefer to install micro-data centers with the installation of the cabinet infrastructure to reduce costs. Organizations in retail, manufacturing and banking, as well as SMEs, are expected to adopt these data centers to their branches, with smaller and more temporary applications, at lower costs, to increase mobility.

ADVANTAGES OF MINI DATA CENTER APPLICATIONS

- It is a convenient, cost-effective solution ideal for specific needs.
- Mobility is higher when compared to traditional high-volume data center implementations.
- A minimum investment is required, especially in an existing infrastructure.
- Appendability and adaptability make future expansion possible with greater flexibility.
- Mini Data Center is the perfect solution for hard to reach locations, by its easy use and installation.
- Compact solution with one or more cabinets and all-in-one compact.

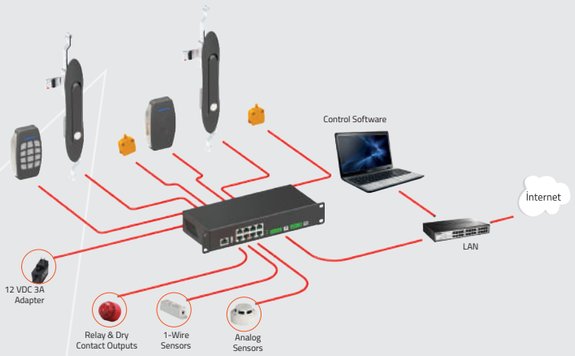


WHAT *we offer?*

Futuristic approach for flexiple options
Cost-effective application
Easy to confgiure, expand and customize
Ultimate security and safety
All-in-one compact solution

LIST OF COMPONENTS

Electronic Locking System



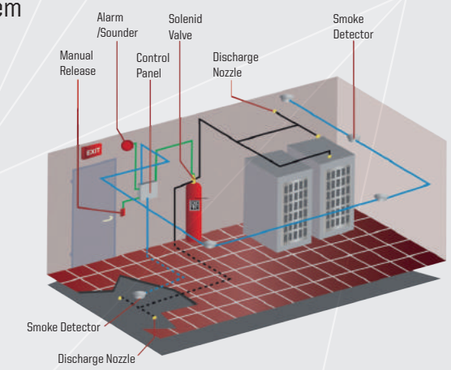
Ambient Cooling Air Conditioner

Ambient Monitoring

UPS

AERESOL
Fire Extingushing System

FM-200 Fire
Extinguishing System



Inrow Cooling
Air Conditioner Cabinet

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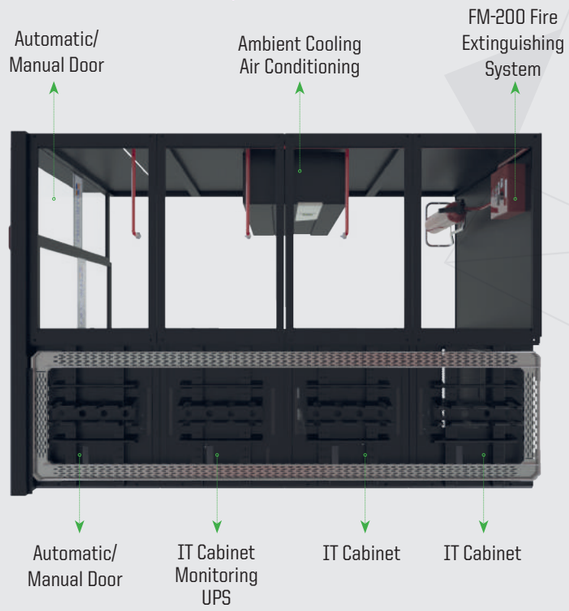
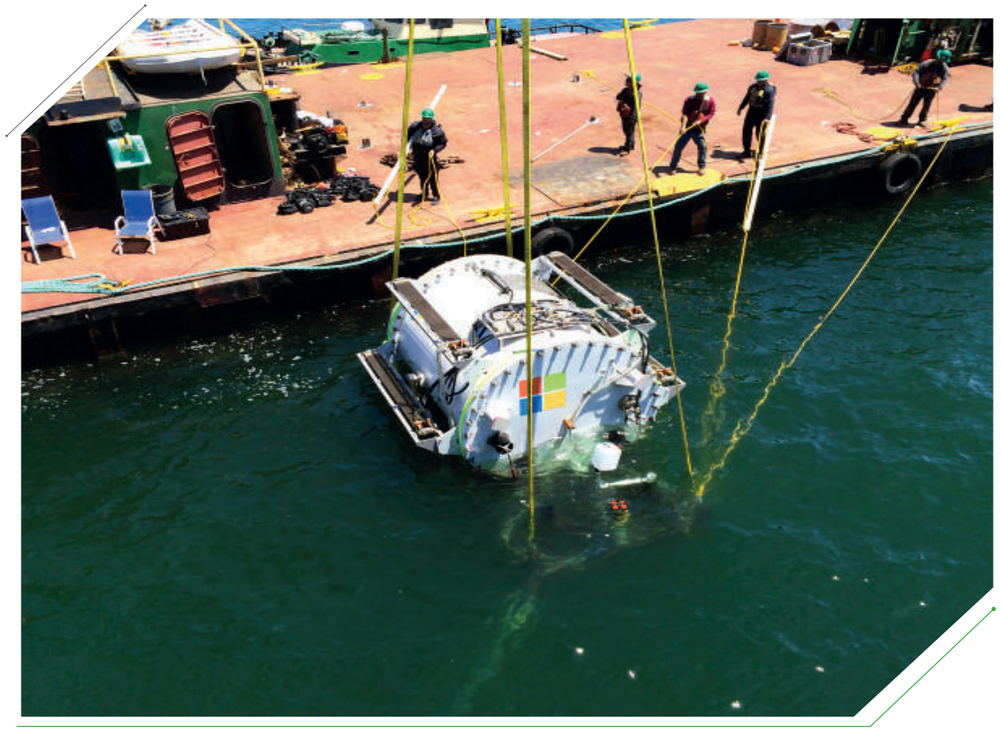
Option 1



Option 2

*Mini Data Center applications can be configured specially on demand.

DID YOU KNOW?



10,000 LEAGUES UNDER THE SEA

A futuristic way of cooling a data center with sea water is to build the facility in the ocean. In 2015, a software company created a portable mini-datacenter prototype and it was sunk 30 meters deep into the California coast for more than 100 days.

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The microdata center is a smaller, modular data center system designed to solve different problem sequences or to take on different workloads that can not be handled by traditional facilities or large modular data centers. Dimensions are ideal for temporary use in remote locations with versatility and plug-and-play features, for temporary distributions, or even in locations with high risk areas for floods or earthquakes.

Micro Data Center Solutions are produced by GT-DC Plus Series Rack Cabinets

MICRO DATA CENTER SOLUTIONS Indoor / Outdoor

ADVANTAGES OF MICRO DATA CENTER APPLICATIONS

- **With the quick distribution advantage** it's suitable for mid/small datacenter applications such as government, education, finance or SMBs. Offers flexibility, short construction periods, and can be expanded at any time without the need for excessive investment.
- **Availability level can be adjusted at any time,** thus the availability level of the system can be adjusted at any stage, including design, installation or operations. The power supply system and cooling system do not need redesign.
- **Datacenter environment and security information can be connected.** The signals for the temperature and humidity of the datacenter, smoke detection, datacenter access, datacenter IP camera, and others can be connected to the standard management system. The system is plug-and-play with no need for redevelopment.
- **Highest security is possible** as the cabinet has its own locking system, it prevents non-professional staff from misusing equipment installed inside the Micro Data Center thus preventing any interruptions of function or crashes.

WHAT we offer?

- Complete data center solution in the shortest time
- No extra cost of investment for existing infrastructure
- Safety and security at once and all
- Easy to deploy, plug & play
- Easier and quicker interference at all locations
- Minimum CAPEX and OPEX costs
- All-in-one compact solution

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Top Air Conditioner

Properties:

- Data center management and protection all around, such as cooling, monitoring, power
- Independent data center
- Eliminates increased cooling and external cooling equipment requirements
- Has independent cooling capacity up to 4 kW
- High level of security, protection and monitoring
- Advanced power management enabled by IP PDUs and UPS systems
- Data center can be installed wherever you want
- Rapid installation within 4-6 weeks from projecting and commissioning
- Low cost
- Up to 50% space savings
- Tested WK2 safe lock system
- Monitoring
- IP PDU
- Power Supply
- Fire detection / extinguishing system (1U)
- Centralized management control system for the entire components
- Protection Class: IP42, IP55 Protection

APPLICATIONS:

- Data center for smaller companies
- Branches of banks
- TV and radio channels
- Hospitals
- Storing personal data for lawyers, doctors etc.
- Insurance companies and other businesses
- Remote installations
- Temporary installation
- Mobile applications

Air Conditioner Unit

PRODUCT CODE	DESCRIPTION	AIR CONDITIONER
Standard Straight Roof W=600		
MR.DCMC26U6010.XX	26U 600x1000 Micro Data Center Cabinet	2 kW
MR.DCMC36U6010.XX	36U 600x1000 Micro Data Center Cabinet	4 kW
MR.DCMC42U6010.XX	42U 600x1000 Micro Data Center Cabinet	4 kW
MR.DCMC26U8010.XX	26U 800x1000 Micro Data Center Cabinet	2 kW
MR.DCMC36U8010.XX	36U 800x1000 Micro Data Center Cabinet	4 kW
MR.DCMC42U8010.XX	42U 800x1000 Micro Data Center Cabinet	4 kW

* Roof Air Conditioner H= 390mm, Side Air Conditioner W= 200mm

XX= Colour Code, 02 is for Light Grey RAL 7035 and 01 is for Black RAL 9005 , is added by the customer in the order

Heat Sensor

Water Sensor

Door Sensor

Smoke Sensor

Air Flow Sensor

Humidity Sensor

Surveillance

Aeresol Fire
Extingushing System

FM-200 Fire
Extinguishing System

Modüler UPS

IP PDU

Air Conditioning

Electronic
Lever Lock

Keypad

Card Reader

*The display on the page is representative of the display, may vary during the order.

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DID YOU KNOW?

The Thai government has traveled nationwide and has been involved in a mobile data center that will investigate lake and river conditions in an airborne emergency such as drought or flooding. Thailand's Ministry of Science and Technology said it was the first facility in Asia to be seen. The mobile facility is equipped with "technology-wise" servers, 30 TB storage capacity, cooling and automatic fire extinguishing systems. In an emergency, the satellite was designed to operate with a broadband connection and a backup generator to run the computers for eight hours. The vehicle is moving along with six SUVs with a mobile aircraft equipped with a Mobile Mission System (MMS), a research boat and a high-resolution camera. This fleet will quickly reach areas that are inundated, detect damage, and provide the best action. With this mobile data center, the intervention period, which was previously 2-3 days, will be lowered to 20 hours.

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MOBILE DATA CENTER SOLUTIONS

A mobile data center is a type of data center that is designed and packaged in a small and mobile facility, usually in a standard shipping container. These small-scale data centers can easily be transported and deployed to remote and mobile locations.A mobile data center is also known as a modular data center.

A mobile data center is primarily designed to be quickly deployed and operational at locations requiring mobile computing services, such as:

- Disaster recovery operations
- Military operations
- Media broadcasts

Because of its rapid deployment and all-in-design, it can also be used as a means to complement an existing data center by serv as an additional source of computing resou

A mobile data center typically is housed within a 20- to 40-foot shipping container or a prefabricated purpose-built data center container. A mobile data center contains:

- Multiple server racks
- Storage
- Network/Internet Support
- Power
- Cooling mechanism

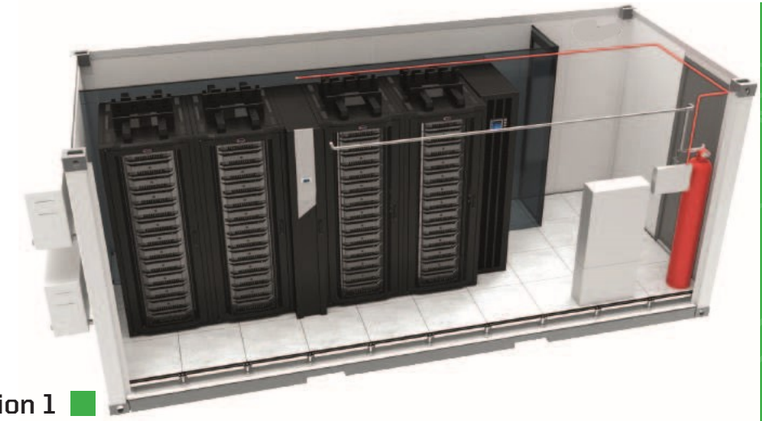
Moreover, mobile data centers have a lesser cost per foot, are energy efficient and have greater density per rack than a standard data center.

WHAT *we offer* ?

- Quick delivery time
- Complete solution from the same supply point
- Safe and secure structure and application
- Easy to deploy, plug & play
- Easier and quicker use at all locations
- Various options for various needs
- Configurable, scalable, flexible

COMPONENTS LIST

- GTDC Plus Series Rack Cabinets Inrow
- Cooling / Air Conditioner Unit Outside
- Condenser Unit
- Monitoring for Cooling Equipment Unit
- Effective power management
- Fire protection
- Electrical Panel
- Standard ISO Shipping Container
- Cable Management
- Room for Administration



Option 1

4 x GT-DC Cabinets (W & D optional)
1 x Inrow Cooling / Air Conditioner Unit 2 x
Modular UPS
1 x Fire Extinguishing Sytem
1 x Electrical Panel
Monitoring Unit
Outside Condenser Unit
Raised Floor

Option 2

4 x GT-DC Cabinets (W & D Optional) 1 x Air
Conditioning Unit
1 x Modular UPS
1 x Fire Extinguishing System
1 x Electrical Panel
Monitoring Unit
Outside Condenser Unit
Raised Floor

Option 3

4 x GT DC Cabinets (W & D Optional)
2 x Inrow Cooler
2 x Modular UPS
1 x Fire Extinguisher System
1 x Electrical Panel
Monitoring Unit
Outside Condenser Units
Raised Floor

Option 4

4 x GT DC Cabinets (W & D Optional)
1 x Air Conditioner Unit
2 x Modular UPS
1 x Fire Extinguisher System
1 x Electrical Panel
Monitoring Unit
Outside Condenser Units
Raised Floor

Option 5

4 x GT DC Cabinets (W & D Optional)
1 x Inrow Cooler
1 x Modular UPS
1 x Fire Extinguisher System
1 x Electrical Panel
Monitoring Unit
Outside Condenser Units
Raised Floor

* All the options above are given as examples by using standard ISO 20' shipping container.
All the components are optional upon request and shall be configured according to the project specifications.

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The sample Data Center Truck includes:

12 x 42U W=600mm D=1200mm GT DC Cabinets 3 x 42U W=300mm Inrow Cooling Units
1 x Fire Extinguisher System
Monitoring Unit
Upper Cable Management
2 m2 Admin Room
Outside Condenser Units
Raised Floor

*The sample Data Center Truck carries an ISO 40' HC shipping container. The components given above are only examples and subject to change according to the configurations desired.

Feel the *creativity*
and ***fill in the*** *racks*

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FROG ENGINEERING

GT-DC SERIES

FREE STANDING CABINETS

STANDARD CABINETS READY TO DISPATCH

* Upper Separators , Laser Cut Logo Header, A and M Separators are not included.

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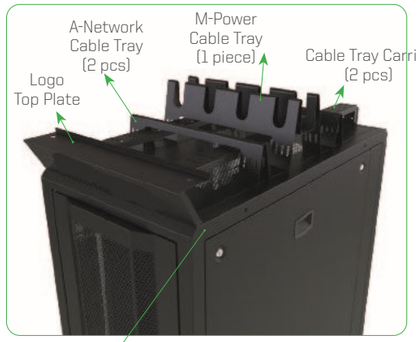
PRODUCT CODE	DESCRIPTION
W= 600 D=1000 / 1100 / 1200	
MR.GTDC.42U6010.XX	42U 19" 600x1000mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.46U6010.XX	46U 19" 600x1000mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.48U6010.XX	48 U 19" 600x1000mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.42U6011.XX	42 U 19" 600x1100mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.46U6011.XX	46 U 19" 600x1100mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.48U6011.XX	48 U 19" 600x1100mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.42U6012.XX	42 U 19" 600x1200mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.46U6012.XX	46 U 19" 600x1200mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.48U6012.XX	48 U 19" 600x1200mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
W= 800 D=1000 / 1100 / 1200	
MR.GTDC.42U8010.XX	42U 19" 800x1000mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.46U8010.XX	46U 19" 800x1000mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.48U8010.XX	48 U 19" 800x1000mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.42U8011.XX	42 U 19" 800x1100mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.46U8011.XX	46 U 19" 800x1100mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.48U8011.XX	48 U 19" 800x1100mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.42U8012.XX	42 U 19" 800x1200mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.46U8012.XX	46 U 19" 800x1200mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included
MR.GTDC.48U8012.XX	48 U 19" 800x1200mm GTDC-Data Center Cabinet, %80 Perforated Front and Rear Door, Multiple Cable Entry Options with Right / Left Side Panels and Top Panel and Pinion Leveling Feet Included

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, is added by the customer in the order.

STANDARD CABINET CONFIGURATIONS

Standard Configuration for Data Center Solutions

Angular, %80 Perforated Front Door

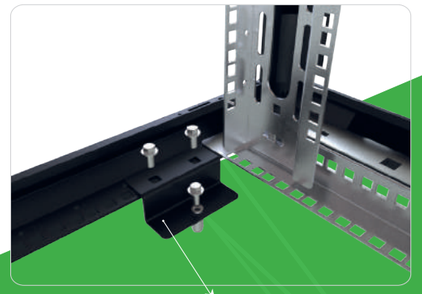


Upper Cover
(W=600) 1x 167mm x 200mm Sliding Rubber Cable Entry
(W=800) 4x 167mm x 200mm Sliding Rubber Cable Entry

Rear PDU Holder and Cable Tray Rear

Rear Door
Double Door, %80 Perforated

Side Doors
Horizontal Double Door
Independent From Each Other



Internal Ground Connection Kit

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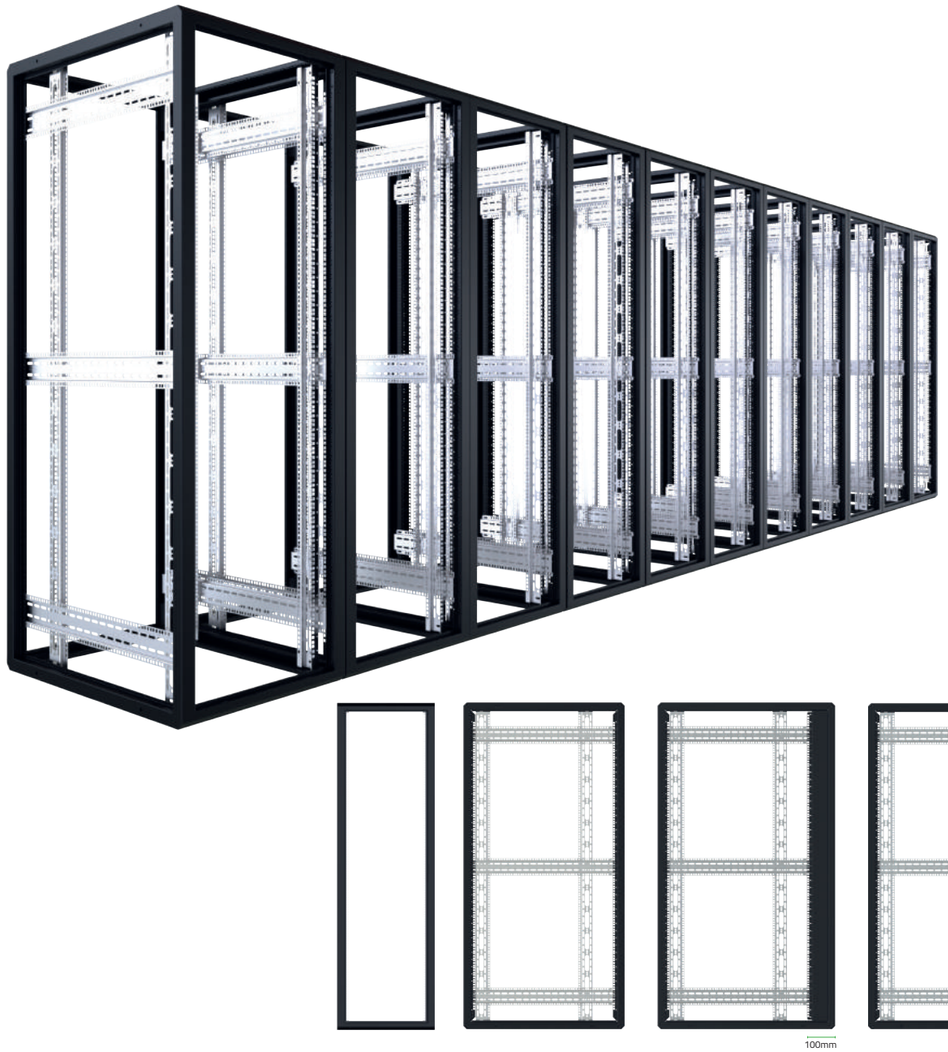
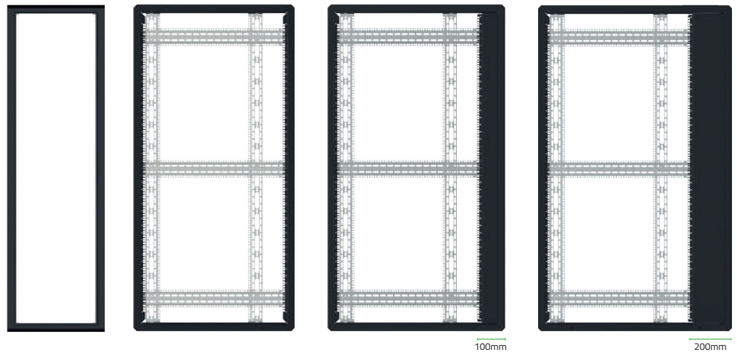
W= 600 MAIN FRAME





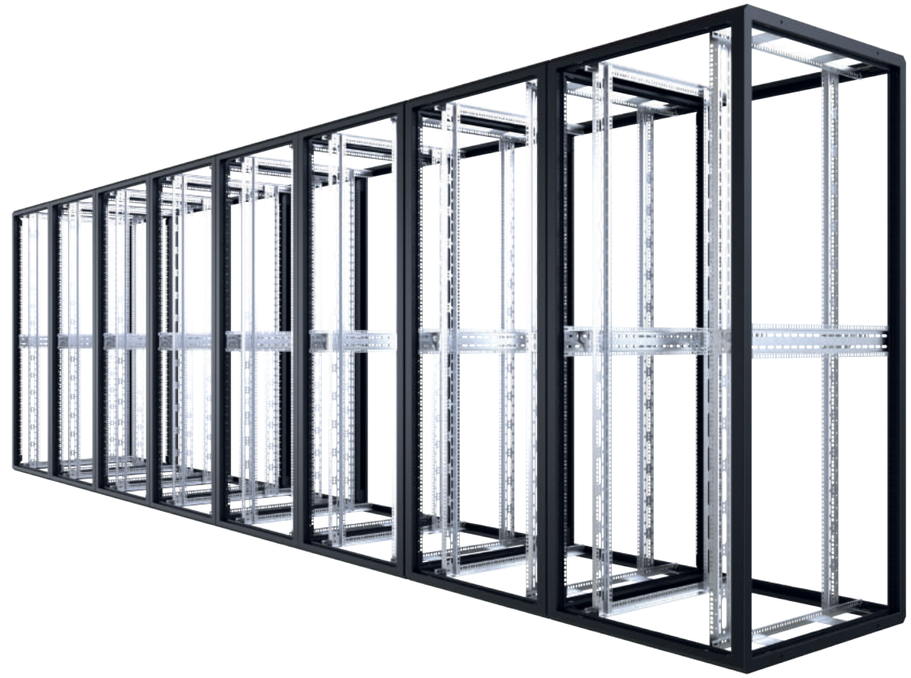
W=600mm D=1000mm D=1100mm D=1200mm

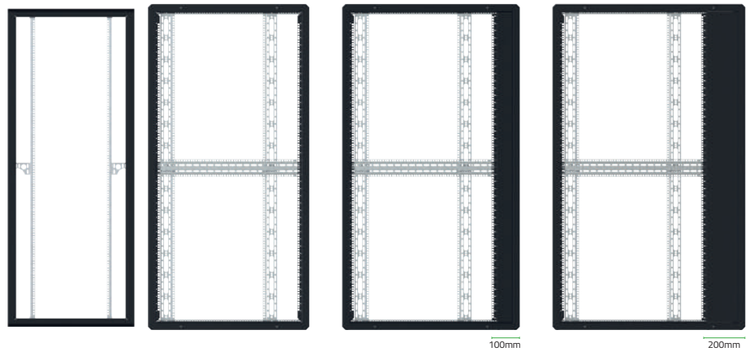
PRODUCT CODE	DESCRIPTION	H SIZE (U)	DIMENSIONS W X D X H (MM)	MAIN FRAME WEIGHT (KG)
MR.GTDC.MF42610.XX	42U 600x1000 Main Frame (4X) Side Rail	42U	600x1000x2020	
MR.GTDC.MF46610.XX	46U 600x1000 Main Frame (4X) Side Rail	46U	600x1000x2200	
MR.GTDC.MF48610.XX	48U 600x1000 Main Frame (4X) Side Rail	48U	600x1000x2288	
MR.GTDC.MF42611.XX	42U 600x1100 Main Frame (4X) Side Rail	42U	600x1100x2020	
MR.GTDC.MF46611.XX	46U 600x1100 Main Frame (4X) Side Rail	46U	600x1100x2200	
MR.GTDC.MF48611.XX	48U 600x1100 Main Frame (4X) Side Rail	48U	600x1100x2288	
MR.GTDC.MF42612.XX	42U 600x1200 Main Frame (4X) Side Rail	42U	600x1200x2020	
MR.GTDC.MF46612.XX	46U 600x1200 Main Frame (4X) Side Rail	46U	600x1200x2200	
MR.GTDC.MF48612.XX	48U 600x1200 Main Frame (4X) Side Rail	48U	600x1200x2288	

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added by the customer in the order.

W= 800 MAIN FRAME

FROG ENGINEERING





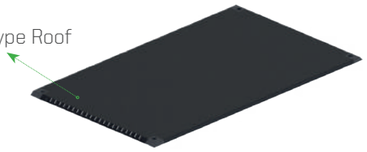
W=800mm D=1000mm D=1100mm D=1200mm

PRODUCT CODE	DESCRIPTION	H SIZE (U)	DIMENSIONS W X D X H (MM)	MAIN FRAME WEIGHT (KG)
MR.GTDC.MF42810.XX	42U 800x1000 Main Frame (4X) Side Rail	42U	800x1000x2020	
MR.GTDC.MF46810.XX	46U 800x1000 Main Frame (4X) Side Rail	46U	800x1000x2200	
MR.GTDC.MF48810.XX	48U 800x1000 Main Frame (4X) Side Rail	48U	800x1000x2288	
MR.GTDC.MF42811.XX	42U 800x1100 Main Frame (4X) Side Rail	42U	800x1100x2020	
MR.GTDC.MF46811.XX	46U 800x1100 Main Frame (4X) Side Rail	46U	800x1100x2200	
MR.GTDC.MF48811.XX	48U 800x1100 Main Frame (4X) Side Rail	48U	800x1100x2288	
MR.GTDC.MF42812.XX	42U 800x1200 Main Frame (4X) Side Rail	42U	800x1200x2020	
MR.GTDC.MF46812.XX	46U 800x1200 Main Frame (4X) Side Rail	46U	800x1200x2200	
MR.GTDC.MF48812.XX	48U 800x1200 Main Frame (4X) Side Rail	48U	800x1200x2288	

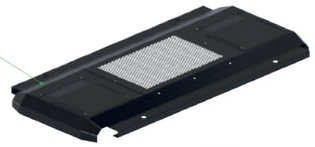
XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added by the customer in the order.

W= 600 ROOF COVER

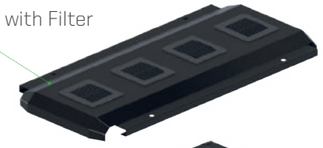
Pagoda Type Roof



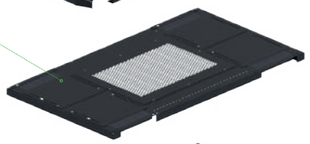
Angular Roof



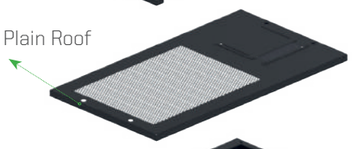
Angular Roof with Filter

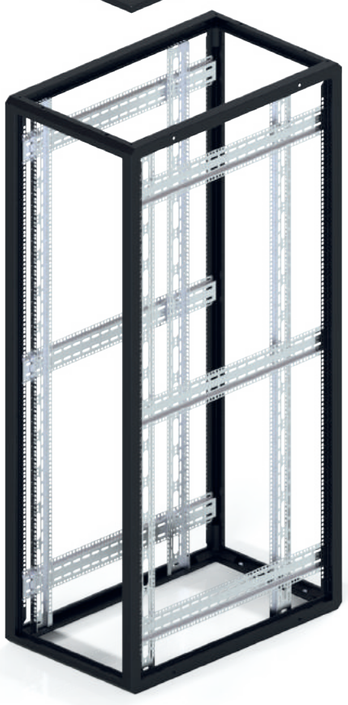


Plain Roof



Standard Plain Roof





Pagoda Roof
Mounted Cabinet

Angular Roof
Mounted Cabinet

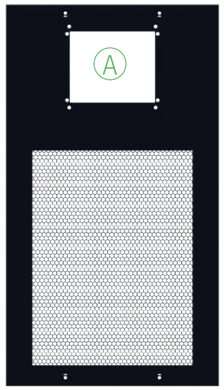
Angular Roof with Filter
Mounted Cabinet

Plain Roof
Mounted Cabinet

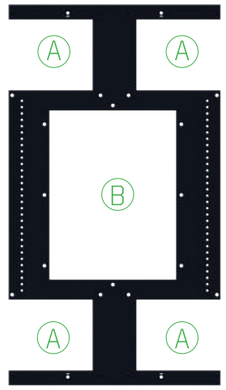
Standard Plain Roof
Mounted Cabinet

W=600 ROOF COVER CABLE CONDUITS

FROG ENGINEERING



Standard Plain Roof

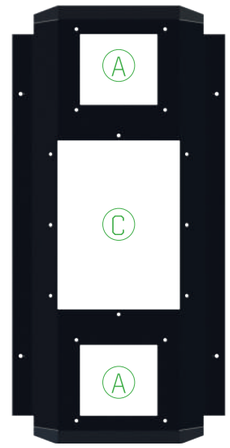


Plain Roof

No Cable Outlet on
Pagoda Hat, Can be
Opened on Demand

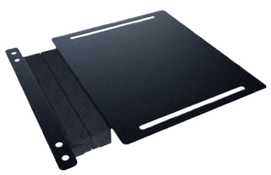
Fan + Filter
Module

Angular Roof with Filter

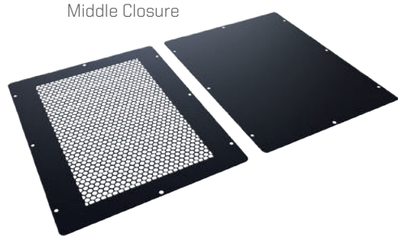


Angular Roof

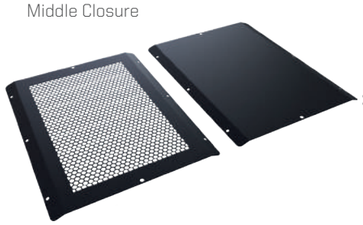
Ⓐ Rubber Cable
Entry Panel



Ⓑ Plain Roof
Perforated or non-Perforated
Middle Closure

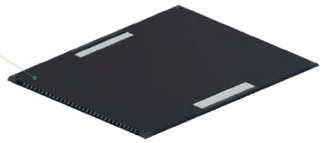


Ⓒ Angular Roof
Perforated or non-Perforated
Middle Closure

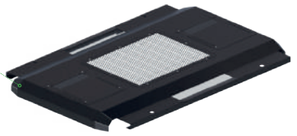


W= 800 ROOF COVER

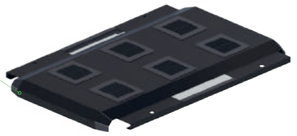
Pagoda Roof Plus



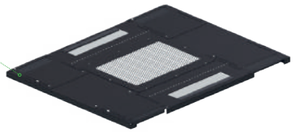
Angular Roof



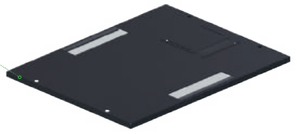
Angular Roof With Filter

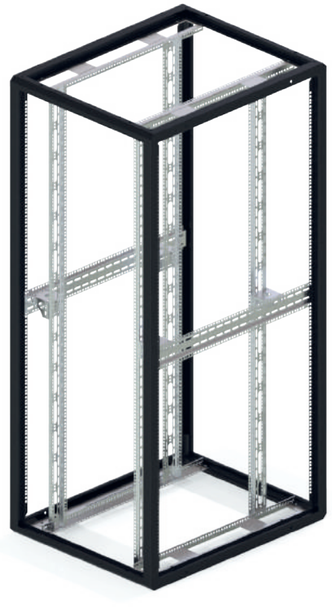


Standard Plain Roof Plus



Standard Plain Roof





Pagoda Plus Mounted Cabinet

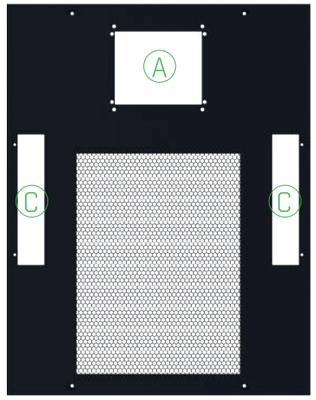
Angular Roof Mounted Cabinet

Angular Roof Plus Mounted Cabinet

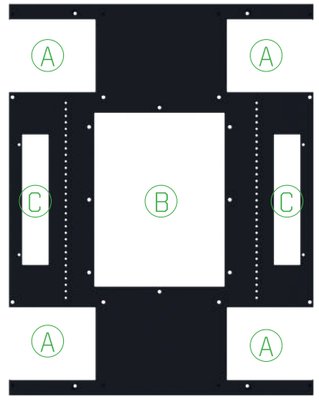
Standard Plain Roof Plus Mounted Cabinet

Standard Plain Roof Mounted Cabinet

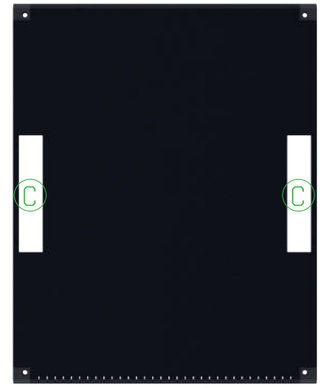
W = 800 ROOF CABLE CONDUITS



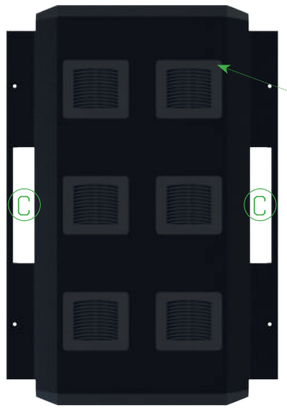
Standard Plain Roof



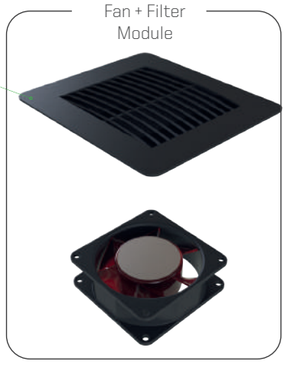
Standard Plain Roof Plus

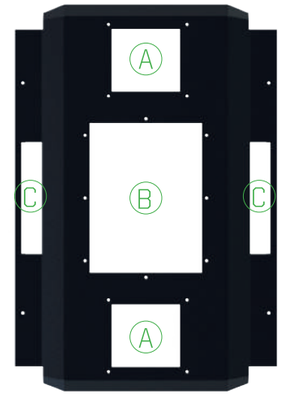


Pagoda Roof



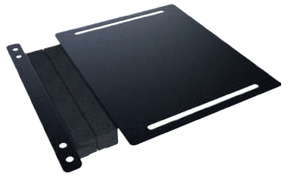
Angular Roof with Filter



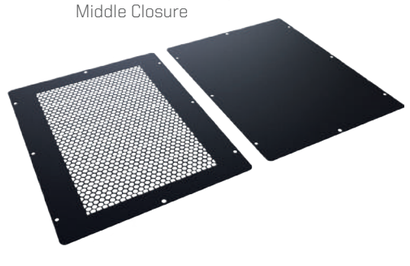


Angular Roof

Ⓐ Rubber Edged Cable Entry



Ⓑ Plain Roof
Perforated and non-perforated
Middle Closure



Ⓒ Brush

W=800 ROOF COVER

PRODUCT CODE	DESCRIPTION	MODEL
Standard Plain Roof W=600t		
MR.DS1K610.XX	Standard 600x1000 Plain Roof with 1 Cable Entry	
MR.DS1K611.XX	Standard 600x1100 Plain Roof with 1 Cable Entry	
MR.DS1K612.XX	Standard 600x1200 Plain Roof with 1 Cable Entry	
Plain Roof W=600		
MR.DS4K610.XX	Data Center 600x1000 Plain Roof with 4 Cable Enrties	
MR.DS4K611.XX	Data Center 600x1100 Plain Roof with 4 Cable Enrties	
MR.DS4K612.XX	Data Center 600x1200 Plain Roof with 4 Cable Enrties	
Angular Roof W=600		
MR.AS1K1610.XX	Data Center 600x1000 Plain Roof with 1 Cable Enrty	
MR.AS1K611.XX	Data Center 600x1100 Plain Roof with 1 Cable Enrty	
MR.AS1K612.XX	Data Center 600x1200 Plain Roof with 1 Cable Enrty	
Angular Roof with Filter W=600		
MR.ASF610.XX	Data Center 600x1000 Angular Roof (Fan and Filter attachable)	
MR.ASF611.XX	Data Center 600x1100 Angular Roof (Fan and Filter attachable)	
MR.ASF612.XX	Data Center 600x1200 Angular Roof (Fan and Filter attachable)	
Pagoda Roof W=600		
MR.PS610.XX	Standard 600x1000 Pagoda Roof	
MR.PS611.XX	Standard 600x1100 Pagoda Roof	
MR.PS612.XX	Standard 600x1200 Pagoda Roof	

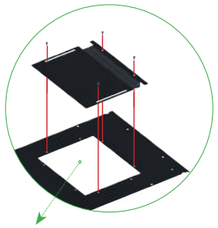
XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order.

PRODUCT CODE	DESCRIPTION	MODEL
Standard Plain Roof W=800		
MR.DS1K810.XX	Standard 800x1000 Plain Roof with 1 Cable Entry	
MR.DS1K811.XX	Standard 800x1100 Plain Roof with 1 Cable Entry	
MR.DS1K812.XX	Standard 800x1200 Plain Roof with 1 Cable Entry	
Data Center Plain Roof W=800		
MR.DS4K810.XX	Data Center 800x1000 Plain Roof with 4 Cable Enrties	
MR.DS4K811.XX	Data Center 800x1100 Plain Roof with 4 Cable Enrties	
MR.DS4K812.XX	Data Center 800x1200 Plain Roof with 4 Cable Enrties	
Angular Roof W=800		
MR.AS3K810.XX	Data Center 800x1000 Plain Roof with 3 Cable Enrties	
MR.AS3K811.XX	Data Center 800x1100 Plain Roof with 3 Cable Enrties	
MR.AS3K812.XX	Data Center 800x1200 Plain Roof with 3 Cable Enrties	
Angular Roof with Filter W=800		
MR.ASF2K810.XX	Data Center 800x1000 Angular Roof with Filter and 2 Cable Entries	
MR.ASF2K811.XX	Data Center 800x1100 Angular Roof with Filter and 2 Cable Entries	
MR.ASF2K812.XX	Data Center 800x1200 Angular Roof with Filter and 2 Cable Entries	
Pagoda Roof W=800		
MR.PS2K810.XX	Standard 800x1000 Pagoda Roof 2 Cable Entries	
MR.PS2K811.XX	Standard 800x1100 Pagoda Roof 2 Cable Entries	
MR.PS2K812.XX	Standard 800x1200 Pagoda Roof 2 Cable Entries	

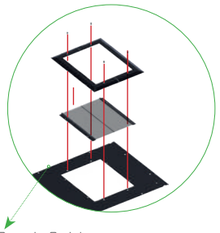
XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order.

W= 600 & W= 800 BOTTOM PLATE

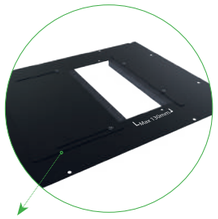
Single Sliding Cable Entry



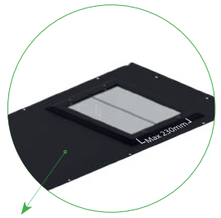
Sliding Rubber Edged Cable Entry



Brush Cable Entry



130mm Extensile Sliding Cable Entry

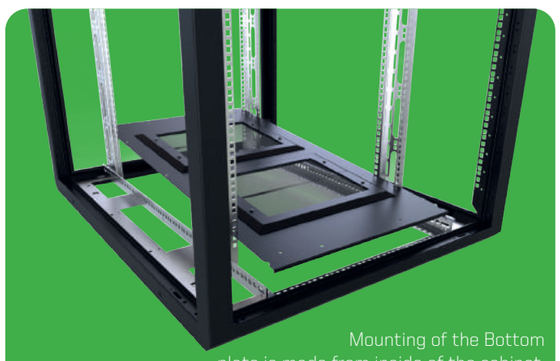


130mm Extensile Sliding Cable Entry

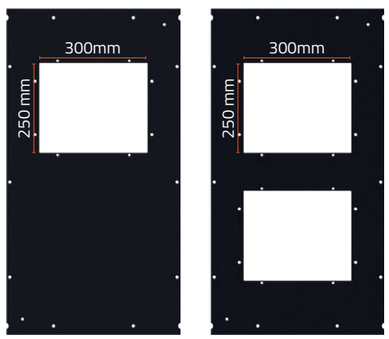
Double Sliding Cable Entry

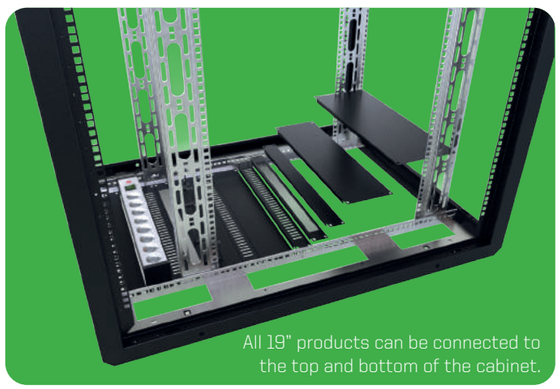
Single Brush Cable Entry

Double Brush Cable Entry

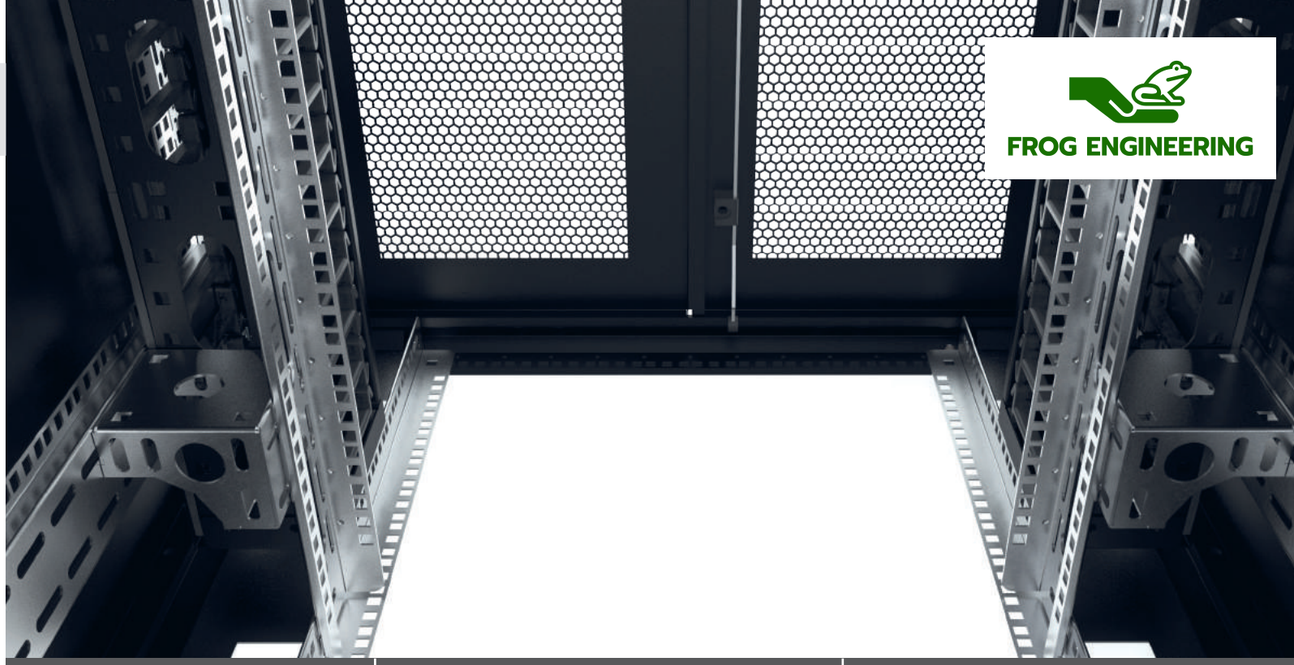


Mounting of the Bottom plate is made from inside of the cabinet.





All 19" products can be connected to the top and bottom of the cabinet.



FROG ENGINEERING

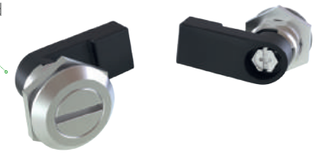
PRODUCT CODE	DESCRIPTION	MODEL
Mounting Plate with Single Sliding Cable Entry		
MR.AK1K60S.XX	W=600 D=600 Bottom Plate with 1 Cable Entry	
MR.AK1K80S.XX	W=600 and 800, D=800 Bottom Plate with 1Cable Entry	
MR.AK1K100S.XX	W=600 and 800, D=1000 Bottom Plate with 1 Cable Entry	
MR.AK1K110S.XX	W=600 and 800, D=1100 Bottom Plate with 1 Cable Entry	
MR.AK1K120S.XX	W=600 and 800, D=1200 Bottom Plate with 1 Cable Entry	
Mounting Plate with Double Sliding Cable Entries		
MR.AK2K100CS.XX	W=600 and 800, D=1000 BottomPlate with 2 Cable Entries	
MR.AK2K110CS.XX	W=600 and 800, D=1100 Bottom Plate with 2 Cable Entries	
MR.AK2K120CS.XX	W=600 and 800, D=1200 Bottom Plate with 2 Cable Entries	
Mounting Plate with Brush and Single Sliding Cable Entries		
MR.AKF1K60.XX	W=600 and 800, D=600 Bottom Plate with Brush and Cable Entry	
MR.AKF1K80.XX	W=600 and 800, D=800 Bottom Plate with Brush and Cable Entry	
MR.AKF1K100.XX	W=600 and 800, D=1000 Bottom Plate with Brush and Cable Entry	
MR.AKF1K110.XX	W=600 and 800, D=1100 BottomPlate with Brush and Cable Entry	
MR.AKF1K120.XX	W=600 and 800, D=1200 BottomPlate with Brush and Cable Entry	
Mounting Plate with Brush and Double Cable Entries		
MR.AKF2K100.XX	W=600 and 800, D=1000 Bottom Plate, Brush and 2 Cable Entries	
MR.AKF2K110.XX	W=600 and 800, D=1100 Bottom Plate, Brush and 2 Cable Entries	
MR.AKF2K120.XX	W=600 and 800, D=1200 Bottom Plate, Brush and 2 Cable Entries	

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order.

Double Side Panel Application

Single Side Panel Application

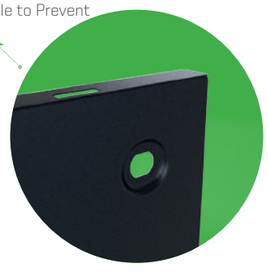
Screw-Headed Lock System



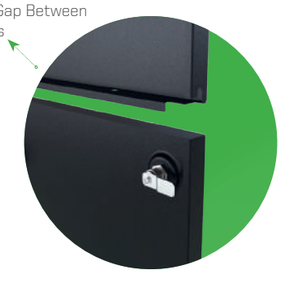
Key Lock System

Handle

Mold Lock Hole to Prevent Lock Height



Prevents Gap Between The Panels



GT-DC Series
DATA CENTER & NETWORK SOLUTIONS
W= 600 & W=800 SIDE PANEL

FROG ENGINEERING

D=1000 Single Panel Version

D=1000 Double Panel Option

(The side covers can be opened independently from each other and panel connection line is airproof)

D=1100 & D=1200 Single Panel Version

Additional Side Panel

D=1100 & D=1200 Double Side Panel Vesion

Additional Side Panel

600x1000
Double Side Panel Application

600x1100
Double Side Panel Application

600x1200
Double Side Panel Application

600x1000
Single Side Panel Application

600x1100
Single Side Panel Application

600x1200
Single Side Panel Application

800x1000
Double Side Panel Application

800x1100
Double Side Panel Application

800x1200
Double Side Panel Application

800x1000
Single Side Panel Application

800x1100
Single Side Panel Application

800x1200
Single Side Panel Application

GT-DC Series
DATA CENTER & NETWORK SOLUTIONS
W= 600 & W=800 SIDE PANEL

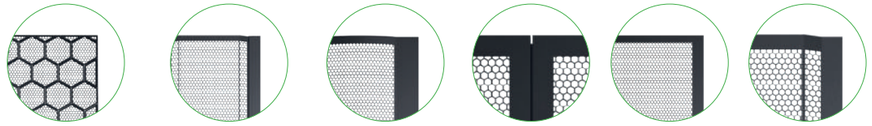
FROG ENGINEERING

PRODUCT CODE	DESCRIPTION	H SIZE (U)	MODELS
Top & Bottom Double Side Panels D=1000			
MR.DC.AUYK4210.XX	Data Center 42U D=1000 Top & Bottom Lockable Side Panel	42U	
MR.DC.AUYK4610.XX	Data Center 46U D=1000 Top & Bottom Lockable Side Panel	46U	
MR.DC.AUYK4810.XX	Data Center 48U D=1000 Top & Bottom Lockable Side Panel	48U	
Top & Bottom Double Side Panels D=1100			
MR.DC.AUYK4211.XX	Data Center 42U D= 1100 Top & Bottom Lockable Side Panel	42U	
MR.DC.AUYK4611.XX	Data Center 46U D= 1100 Top & Bottom Lockable Side Panel	46U	
MR.DC.AUYK4811.XX	Data Center 48U D= 1100 Top & Bottom Lockable Side Panel	48U	
Top & Bottom Double Side Panels D=1200			
MR.DC.AUYK4212.XX	Data Center 42U D= 1200 Top & Bottom Lockable Side Panel		
MR.DC.AUYK4612.XX	Data Center 46U D= 1200 Top & Bottom Lockable Side Panel		
MR.DC.AUYK4812.XX	Data Center 48U D= 1200 Top & Bottom Lockable Side Panel		

Top & Bottom Single Side Panel D=1000			
MR.DC.TYK4210.XX	Data Center 42U D= 1000 Lockable Single Side Panel	42U	
MR.DC.TYK4610.XX	Data Center 46U D= 1000 Lockable Single Side Panel	46U	
MR.DC.TYK4810.XX	Data Center 48U D= 1000 Lockable Single Side Panel	48U	
Top & Bottom Single Side Panel D=1100			
MR.DC.TYK4211.XX	Data Center 42U D= 1100 Lockable Single Side Panel	42U	
MR.DC.TYK4611.XX	Data Center 46 D= 1100 Lockable Single Side Panel	46U	
MR.DC.TYK4811.XX	Data Center 48 D= 1100 Lockable Single Side Panel	48U	
Top & Bottom Single Side Panel D=1200			
MR.DC.TYK4212.XX	Data Center 42U D= 1200 Lockable Single Side Panel	42U	
MR.DC.TYK4612.XX	Data Center 46U D= 1200 Lockable Single Side Panel	46U	
MR.DC.TYK4812.XX	Data Center 48U D= 1200 Lockable Single Side Panel	48U	

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

FROG ENGINEERING



Honeycomb (Optional and Reflects on Price)

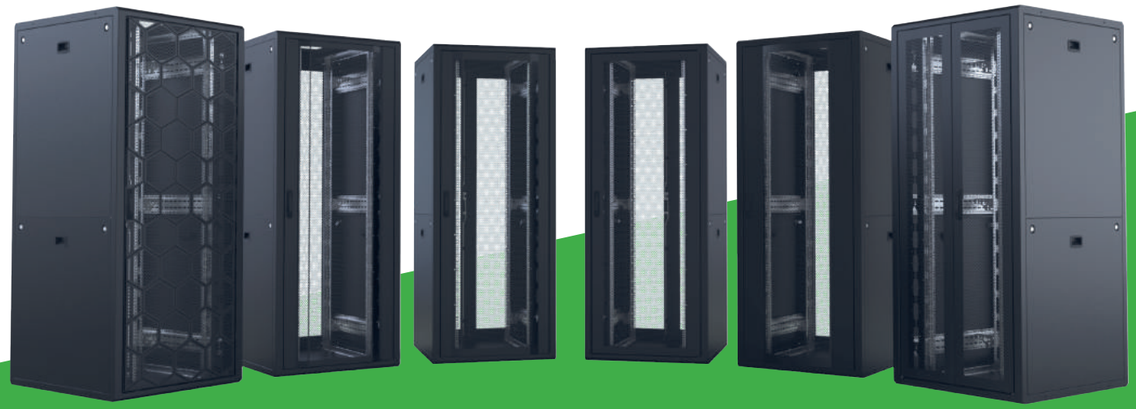
Aluminum Side Framed

Convex

Double Door

Straight

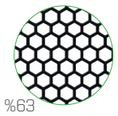
Angular



GT-DC Series
DATA CENTER & NETWORK SOLUTIONS
W= 600 & W= 800 FRONT DOOR

FROG ENGINEERING

%63
%80



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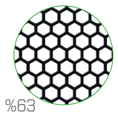
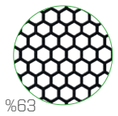
%80

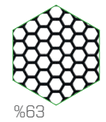


%63
%80

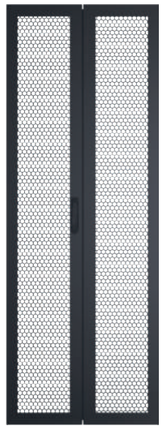


%63
%80

%63
%80

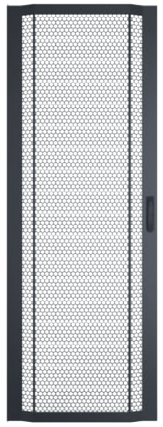


%63
%80



Straight, Perforated Double Door

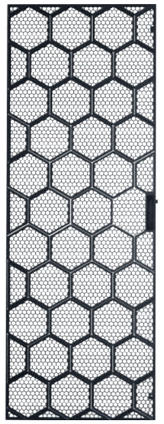
Convex, Perforated Door



Angular, Perforated Door

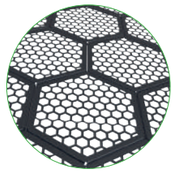
Straight, Perforated Door

Aluminum Side Framed, Perforated Door



Special Hexagonal Perforated Door

Bar Lock Mechanism

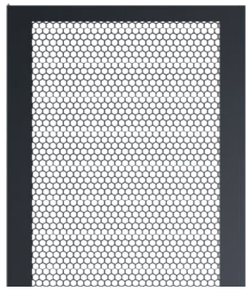


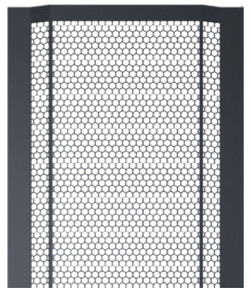
180° Openable Leaf Hinge

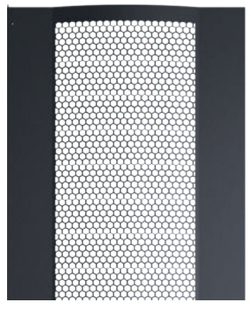
180° Openable Leaf Hinge

135° Spring Loaded Hinge

PRODUCT CODE	DESCRIPTION	H SIZE (U)	MODEL
Straight Front Door %63 and %80 Perforated W=600			
MR.PDK642.GTP.XX	42U 600 GT Plus Straight Perforated Front Door	42U	
MR.PDK646.GTP.XX	46U 600 GT Plus Straight Perforated Front Door	46U	
MR.PDK648.GTP.XX	48U 600 GT Plus Straight Perforated Front Door	48U	
Straight Front Door %63 and %80 Perforated W=800			
MR.PDK842.GTP.XX	42U 800 GT Plus Straight Perforated Front Door	42U	
MR.PDK846.GTP.XX	46U 800 GT Plus Straight Perforated Front Door	46U	
MR.PDK848.GTP.XX	48U 800 GT Plus Straight Perforated Front Door	48U	
Angular Front Door %63 and %80 Perforated W=600			
MR.PAK642.GTP.XX	42U 600 GT Plus Angular Perforated Front Door	42U	
MR.PAK646.GTP.XX	46U 600 GT Plus Angular Perforated Front Door	46U	
MR.PAK648.GTP.XX	48U 600 GT Plus Angular Perforated Front Door	48U	
Angular Front Door %63 and %80 Perforated W=800			
MR.PAK842.GTP.XX	42U 800 GT Plus Angular Perforated Front Door	42U	
MR.PAK846.GTP.XX	46U 800 GT Plus Angular Perforated Front Door	46U	
MR.PAK848.GTP.XX	48U 800 GT Plus Angular Perforated Front Door	48U	
Convex Front Door %63 and %80 Perforated W=600			
MR.PBK642.GTP.XX	42U 600 GT Plus Convex Perforated Front Door	42U	
MR.PBK646.GTP.XX	46U 600 GT Plus Convex Perforated Front Door	46U	
MR.PBK648.GTP.XX	48U 600 GT Plus Convex Perforated Front Door	48U	
Convex Front Door %63 and %80 Perforated W=800			
MR.PBK842.GTP.XX	42U 800 GT Plus Convex Perforated Front Door	42U	
MR.PBK846.GTP.XX	46U 800 GT Plus Convex Perforated Front Door	46U	
MR.PBK848.GTP.XX	48U 800 GT Plus Convex Perforated Front Door	48U	





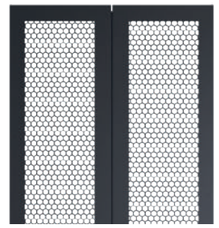


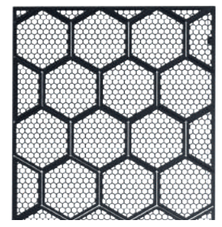
XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

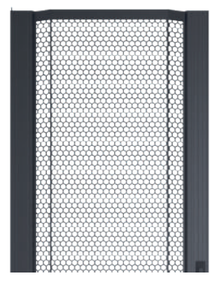
* Please specify the perforation rate at the time of order, 63% or 80% perforated.

GT-DC Series
DATA CENTER & NETWORK SOLUTIONS
W= 600 & W= 800 FRONT DOOR

PRODUCT CODE	DESCRIPTION	H SIZE (U)	MODEL
Double Doors %63 and %80 Perforated W=600			
MR.GTP.PAKM642.XX	42U 600 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	42U	
MR.GTP.PAKM646.XX	46U 600 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	46U	
MR.GTP.PAKM648.XX	48U 600 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	48U	
Double Doors %63 and %80 Perforated W=800			
MR.GTP.PAKM842.XX	42U 800 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	42U	
MR.GTP.PAKM846.XX	46U 800 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	46U	
MR.GTP.PAKM848.XX	48U 800 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	48U	
Special Hexagonal Honeycomb Front Door %63 and %80 Perforated W:600			
MR.GTP.PPK642.XX	42U 600 GT Plus Special Hexagonal Honeycomb, Perforated Front Door	42U	
MR.GTP.PPK646.XX	46U 600 GT Plus Special Hexagonal Honeycomb, Perforated Front Door	46U	
MR.GTP.PPK648.XX	48U 600 GT Plus Special Hexagonal Honeycomb, Perforated Front Door	48U	
Special Hexagonal Honeycomb Front Door %63 and %80 Perforated W:800			
MR.GTP.PPK842.XX	42U 800 GT Plus Special Hexagonal Honeycomb, Perforated Front Door	42U	
MR.GTP.PPK846.XX	46U 800 GT Plus Special Hexagonal Honeycomb, Perforated Front Door	46U	
MR.GTP.PPK848.XX	48U 800 GT Plus Special Hexagonal Honeycomb, Perforated Front Door	48U	
Aluminum Framed Front Doors %63 and %80 Perforated W:600			
MR.GTP.PACK642.XX	42U 600 GT Plus Aluminum Side Framed Perforated Front Door	42U	
MR.GTP.PACK646.XX	46U 600 GT Plus Aluminum Side Framed Perforated Front Door	46U	
MR.GTP.PACK648.XX	48U 600 GT Plus Aluminum Side Framed Perforated Front Door	48U	
Aluminum Framed Front Doors %63 and %80 Perforated W:800			
MR.GTP.PACK842.XX	42U 800 GT Plus Aluminum Side Framed Perforated Front Door	42U	
MR.GTP.PACK846.XX	46U 800 GT Plus Aluminum Side Framed Perforated Front Door	46U	
MR.GTP.PACK848.XX	48U 800 GT Plus Aluminum Side Framed Perforated Front Door	48U	

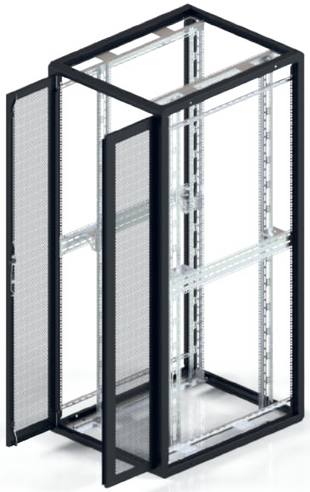






XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

*Please specify the perforation rate at the time of order, 63% or 80% perforated.



%63 %80

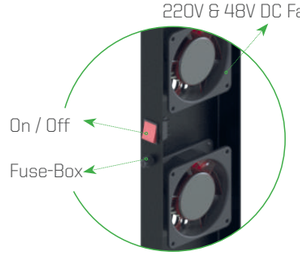
Straight,
Perforated Double
Door

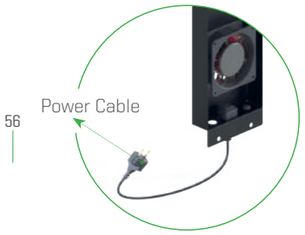
%63 %80

Straight,
Perforated Door

Top Fan Module

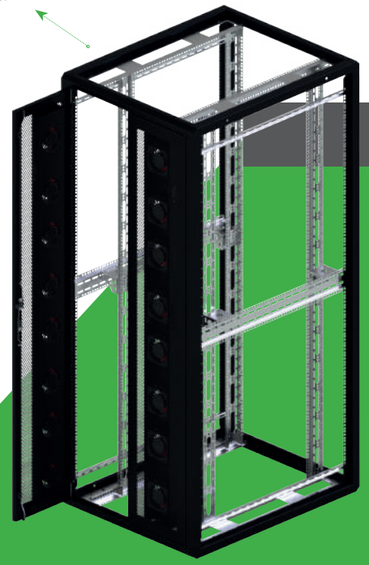
Top Fan Application





Vertical Fan

Rear Door Vertical Fan Application
Can be applied to W=600 & W= 800
cabinets.



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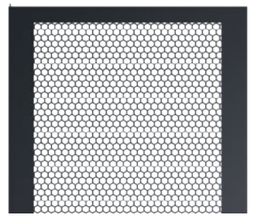
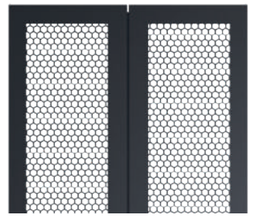
GT-DC Series
DATA CENTER & NETWORK SOLUTIONS
W= 600 & W= 800 REAR DOOR

FROG ENGINEERING

PRODUCT CODE	DESCRIPTION	H SIZE (U)	MODEL
Straight Rear Doors %63 and %80 Perforated W=600			
MR.GTP.PDK642.60.XX	42U 600 GT Plus Straight Perforated Front Door	42U	
MR.GTP.PDK646.60.XX	46U 600 GT Plus Straight Perforated Front Door	46U	
MR.GTP.PDK648.60.XX	48U 600 GT Plus Straight Perforated Front Door	48U	
Straight Rear Doors %63 and %80 Perforated W=800			
MR.GTP.PDK842.80.XX	42U 800 GT Plus Straight Perforated Front Door	42U	
MR.GTP.PDK846.80.XX	46U 800 GT Plus Straight Perforated Front Door	46U	
MR.GTP.PDK848.80.XX	48U 800 GT Plus Straight Perforated Front Door	48U	
Rear Double Door %63 and %80 Perforated W=600			
MR.GTP.PAKM642.60.XX	42U 600 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	42U	
MR.GTP.PAKM646.60.XX	46U 600 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	46U	
MR.GTP.PAKM648.60.XX	48U 600 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	48U	
Rear Double Door %63 and %80 Perforated W=800			
MR.GTP.PAKM842.80.XX	42U 800 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	42U	
MR.GTP.PAKM846.80.XX	46U 800 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	46U	
MR.GTP.PAKM848.80.XX	48U 800 GT Plus Rear Cover Lock and Hinge Side Perforated Cover	48U	





XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

*Please specify the perforation rate at the time of order, 63% or 80% perforated.

PRODUCT CODE	DESCRIPTION	H SIZE (U)	MODEL
Vertical Fan			
MR.DFM42U6AT.XX	42U 6 Fan + Analog Thermostat Vertical Fan Module	42U	
MR.DFM42U8AT.XX	42U 8 Fan + Analog Thermostat Vertical Fan Module	42U	
MR.DFM46U6AT.XX	46U 6 Fan + Analog Thermostat Vertical Fan Module	46U	
MR.DFM46U8AT.XX	46U 8 Fan + Analog Thermostat Vertical Fan Module	46U	
MR.DFM48U6AT.XX	48U 6 Fan + Analog Thermostat Vertical Fan Module	48U	
MR.DFM48U8AT.XX	48U 8 Fan + Analog Thermostat Vertical Fan Module	48U	

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

Feel the *detail*
and ***fill in the*** *racks*

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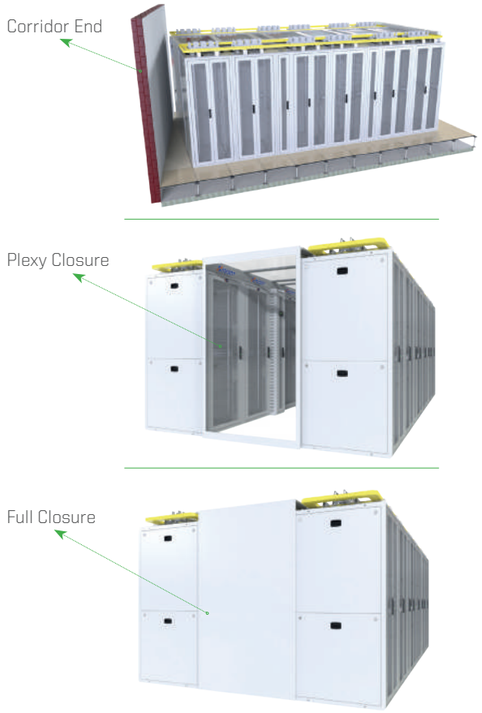
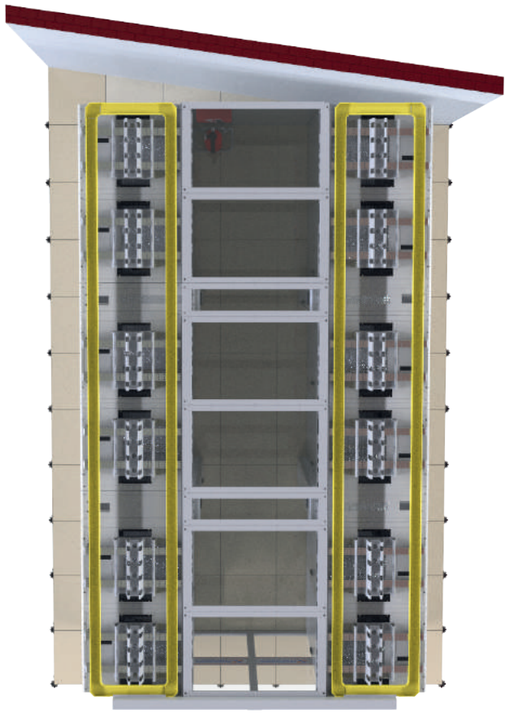
FROG ENGINEERING

DATA CENTER
COMPONENTS

CORRIDOR END CLOSURE PANEL

Corridor end **closure panel** may be preferred and intended to use when there is a curved wall at the end of the corridor and it is needed to be completely closed or plexy to prevent air escape.





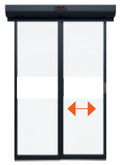
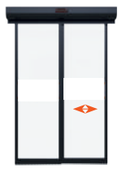
MANUAL and AUTOMATIC SLIDING DOORS

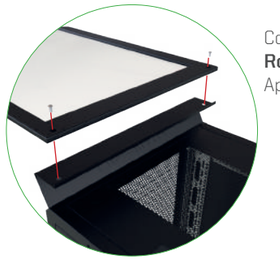
Double Wings Opening Automatic, Photocell and Remote Controlled Door

Single Wing Opening, Handled Manual Door

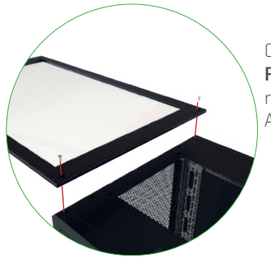
Single Wing Opening Automatic, Photocell and Remote Controlled Door

Double Wings Handled Manual Door

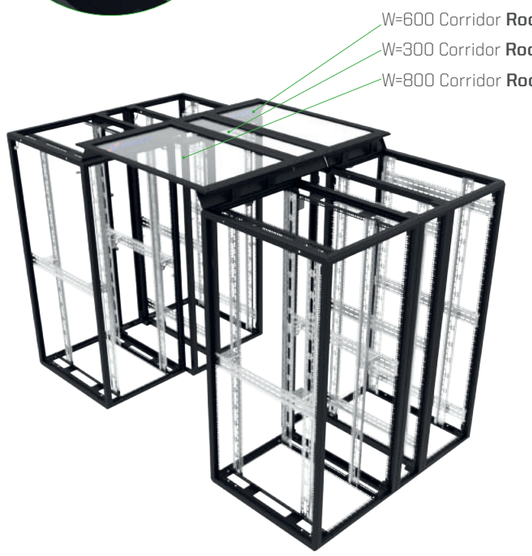
PRODUCT CODE	DESCRIPTION	MODEL
Manual, Single Opening Corridor Doors		
MR.MKTAC.42U12	42U Corridor Door Single Opening, W1200mm Safe Glass, Manual Extension (manual)	
MR.MKTAC.46U12	46U Corridor Door Single Opening, W1200mm Safe Glass, Manual Extension (manual)	
MR.MKTAC.48U12	48U Corridor Door Single Opening, W1200mm Safe Glass, Manual Extension (manual)	
Manual, Double Opening Corridor Doors		
MR.MKCAC.42U12	42U Corridor Door, Double Opening, W1200mm Safe Glass, Manual Extension (manual)	
MR.MKCAC.46U12	46U Corridor Door, Double Opening, W1200mm Safe Glass, Manual Extension (manual)	
MR.MKCAC.48U12	48U Corridor Door, Double Opening, W1200mm Safe Glass, Manual Extension (manual)	
Automatic, Single Opening Corridor Doors		
MR.OKTAC.42U12	42U Corridor Door System (micro-controlled, object-sensitive, photocell, keypad, single opening, motorized internal and external button-controlled automatic opening, W1200 safety glass (automatic)	
MR.OKTAC.46U12	46U Corridor Door System (micro-controlled, object-sensitive, photocell, keypad, single opening, motorized internal and external button-controlled automatic opening, W1200 safety glass (automatic)	
MR.OKTAC.48U12	48U Corridor Door System (micro-controlled, object-sensitive, photocell, keypad, single opening, motorized internal and external button-controlled automatic opening, W1200 safety glass (automatic)	
Automatic, Double Opening Corridor Doors		
MR.OKCAC.42U12	42U Corridor Door System (micro-controlled, object-sensitive, photocell, keypad, double opening, motorized internal and external buttoncontrolled automatic opening, W1200 safety glass (automatic)	
MR.OKCAC.46U12	46U Corridor Door System (micro-controlled, object-sensitive, photocell, keypad, double opening, motorized internal and external buttoncontrolled automatic opening, W1200 safety glass (automatic)	
MR.OKCAC.48U12	48U Corridor Door System (micro-controlled, object-sensitive, photocell, keypad, double opening, motorized internal and external buttoncontrolled automatic opening, W1200 safety glass (automatic)	



Corridor
Roof Closure Panel Header
Application



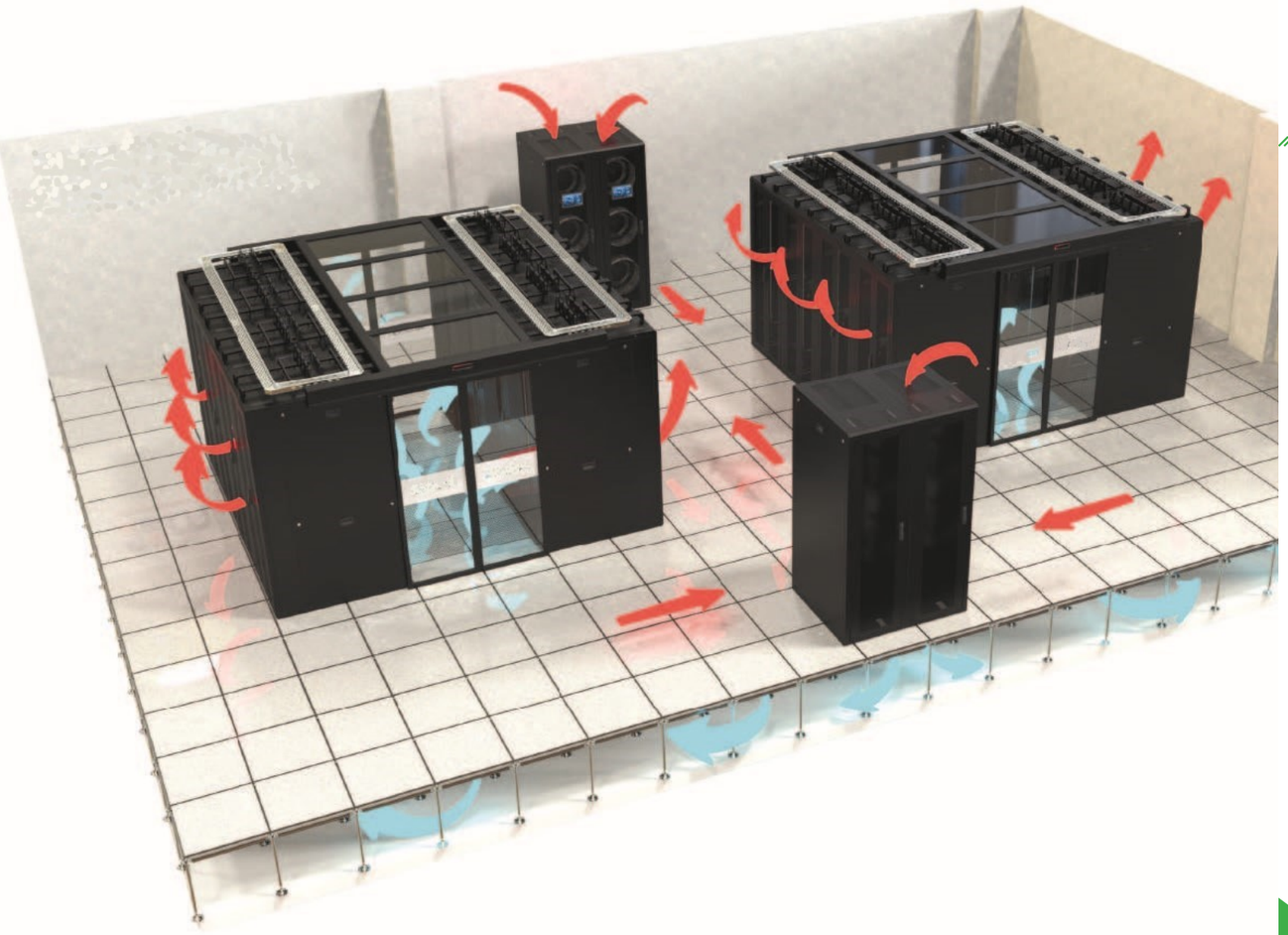
Corridor
Roof closure panel
non-**Header**
Application



Corridor **Roof Enclosure Panel**
Polycarbonate Plexiglass & Tempered Glass

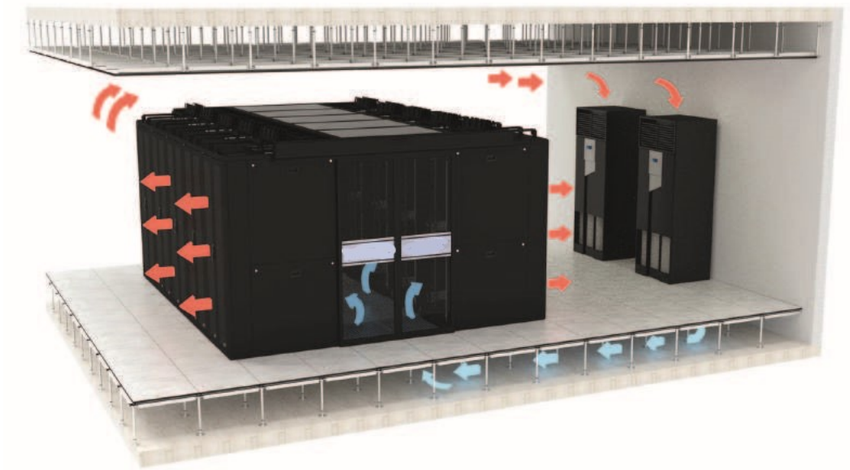
PRODUCT CODE	DESCRIPTION	W SIZE	D SIZE
MR.DC.USTK.3012P.XX	Data Center Top Cover Polycarbonate with Metal Frame 300x1200mm	300mm	1200mm
MR.DC.USTK.6012P.XX	Data Center Top Cover Polycarbonate with Metal Frame 600x1200mm	600mm	1200mm
MR.DC.USTK.8012P.XX	Data Center Top Cover Polycarbonate with Metal Frame 800x1200mm	800mm	1200mm
MR.DC.USTK.3012C.XX	Data Center Top Cover Glass Metal Framed, 300x1200mm	300mm	1200mm
MR.DC.USTK.6012C.XX	Data Center Top Cover Glass Metal Framed, 600x1200mm	600mm	1200mm
MR.DC.USTK.8012C.XX	Data Center Top Cover Glass Metal Framed, 800x1200mm	800mm	1200mm

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.



GT-DC Series
DATA CENTER & NETWORK SOLUTIONS
AMBIENT COOLING SYSTEM

FROG ENGINEERING



Flexible Applications

- Consists of flexible assembly and easy separable components
- Copper pipe connections available at the factory and installation plates for the cooler and outdoor units are available
- Different air supply options; up blowing, down blowing, front and bottom blowing
- Cooling configurations; air-cooled, water-cooled, evaporator water-cooled, glycol-cooled and dual systems
- Rich options; ec fan, electronic expansion valve, high efficiency filter and special humidifier
- Customized solutions; high or low temperature environmental solutions, low noise solutions, high altitude solutions, high air requirements or high ESD solutions, long pipe connection or high drop solutions
- Small footprint, 100% frontal maintenance

Applications

- Small and medium sized IT rooms
- Equipment / hardware rooms, UPS rooms
- Telecommunication rooms
- Laboratory, test and storage rooms
- Computer rooms of businesses

Green and Energy-Saving

- High energy saving; Compatible with all aspects of the cooling system
- High precision heat rate; it is in the microthermal range to ensure greater air capacity design and heat rate accuracy

High Resistance

- To ensure that the unit has a high EER and long life, an effective and durable compressor is available.
- In order to be durable at a high level, materials of high quality brands with high industry awareness are used.
- A number of challenging tests have been applied to confirm the operability of products in difficult conditions.

Designed to work 7x24

- precision controlled air conditioners are designed to operate with high stability and durability without stopping 365 days x 24 hours. The unit is
- designed to operate in harsh weather conditions up to -40 ° C when equipped with a low temperature Kit
- Stepless external fan regulating system is available. The unit can adapt to any demanding outdoor environment.
- The thermostatic expansion valve ensures that the system reacts quickly under changing operating conditions.

AMBIENT COOLING SYSTEM

In-Row (Sequential) Air Conditioning System for High Temperature Density Cabinets, Server Chambers and Data Centers

Precision and Measurable Cooling

Sequential precision controlled air conditioning directly cools the high temperature air from the servers, shortens the air flow line and prevents the energy from being wasted by direct mixing of hot and cold air.Real-time tracking of the heat source loads perfectly aligns the data center's high heat density problems by regulating the coolant output and the airflow as required, keeping the cooling capacity and the amount of air required to the current and predictable levels.

Unit Configuration of Series

- Intelligent control system
- Multiple temperature sensor sets
- Supports network control of different units
- Practical installation and maintenance
- 3 types of cooling option
- 4 types of air source outlet scenarios
- Configuration of DX unit components
- Chilled water configuration of the compressor

Sequential Precision Controlled Air Conditioning Characteristics

- More accurate and uninterrupted air distribution
- Real-time follow-up of heat load
- Flexible and adaptable to field applications
- Dynamic coordinated output
- Sensitive air quantity control
- Non-gradual speed regulated compressor
- Electronic expansion valve

FROG ENGINEERING

In-Row (Sequential) Air Conditioning System for High Temperature Density Cabinets, Server Rooms and Data Centers

Rich Flexible Matching Options

Flexible Enlargement Capacity
Each FlexAir unit has a separate control system that supports floor operation mode or stand-alone operation mode. Your work can be moved and re-installed and run in the event of change.

Modular Structural Design
Compressed floor area provides easier service and transport.
FlexAir is modularly designed in mechanical frame. The unit can be divided into several subunits.
It can be easily transported even where the carrying capacity is limited. All components can be accessed from the front, with the possibility to intervene on both sides and in the rear.

6 Variety of Frame Sizes
The full capacity of FlexAir is produced in 6 different frame sizes, which are compatible for up and down blowing. The depth of the unit is 850mm, the height is 1960mm and the width is between 850mm and 2810mm.

Wide Range of Cooling Capacity
FlexAir cooling capacity is 25kW to 150kW and can be expanded to 200kW to exceed the capacity requirements of mega data centers.

EFFECTIVE, SUSTAINABLE and SYSTEM COMPATIBLE DESIGN

High Strength Test Approval
Each FlexAir product is tested and approved for operational feasibility.

High Quality Components
The FlexAir product is made up of quality components. Compressors, fans, valves, control system, heating and humidity system units consist of durable and long-lasting, industry-accepted brands.

Advanced and Durable Intelligent Control System
FlexAir's powerful control system provides efficiency, energy saving and durability.

- Group operation mode
- Remote monitoring and access possibility through common protocol
- Status and alarm indication in diagrams
- Historical records of the operating times and maintenance hours of the main components
- Password protection at different levels
- Automatic start after power failure

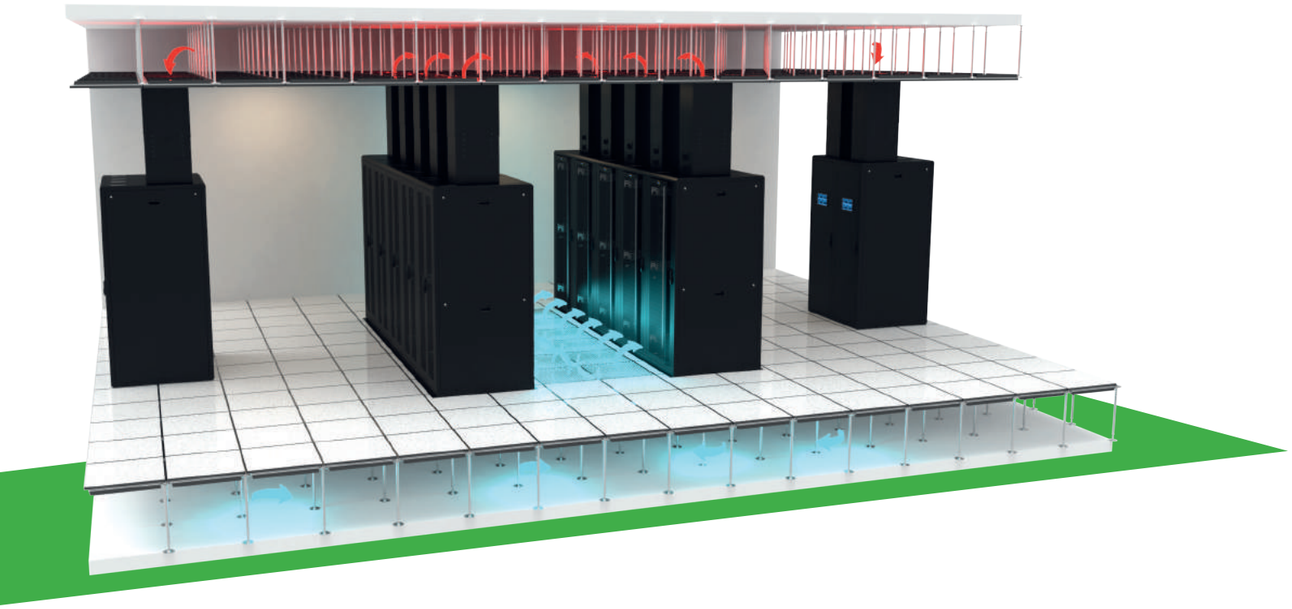
- **High Efficiency Fan**
  The Rear Radial fan provides less energy consumption, less maintenance, better air distribution and more efficient cooling than the front fan. The optional active EC fan allows for greater air flow and lower energy consumption.
- **High Efficiency Scrolling Compressor**
  Copeland brand high quality scrolling compressor; durability, low noise level and longer operating life.
- **Highly Effective Moisturizer**
  The intelligent moisture control system can automatically evacuate the mosture, suitable for the waters in different qualities.
- **Electronic Expansion Valve (EGV)**
  The large flow capacity and precise control characteristic of the EGV allows for a more stable starting and lower ambient temperature, better cooling, and up to 30% energy savings (optional).
- **High Efficiency Heating System**
  Aluminum type heater with high heat intensity minimize structure, fast warm-up, high durability, low surface temperature and long working life; operates in three different heating positions and keeps the temperature level at exactly the desired value.

7 Different Cooling Configurations
FlexAir is available in 7 different cooling configurations; air cooled, water cooled, evaporator cooled aqueous, glycol cooled, dual water cooled and double evaporator cooled aqueous systems. The FlexAir series is recommended by us for precisely controlled cooling systems, so that the two of them can back up each other and have resistance to failure.

Adapted Modular Structure
FlexAir consists of high-quality modular equipment that can be adjusted to meet your data center's design needs.

- Fan Assembly
- Moisture Composition
- Adjustment Mechanism
- IHeating Mechanism
- Cooling Mechanism

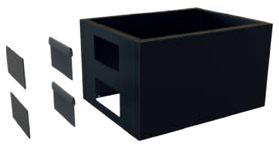
VERTICAL ACTIVE AND PASSIVE CHIMNEY SYSTEM A/C CABINETS



Vertical Chimney System
It is a modular system for low cost, easy to install, GTDC cabinets, which catches the hot air inside and recycles it to the surrounding cooling systems.

Vertical Chimney
- Adjustable height.
- It also includes temperature, humidity, smoke sensors and mounting points for earthing.
- There is a joining system for the protection of the alignment. It is recommended to use with 1200mm deep cabinets, suitable for GT-DC series.

Upper Cable Attachment (Optional)
- Integrated large brush cable traverses and halls prevent them from occupying the U space and steer them to upper partitions.
- Freehand cable arrangements can be arranged through the cable extension box and these cables can be kept away from the airflow path in the chimney.



* In cases where chimney is selected, middle and rear cable passages are not used.

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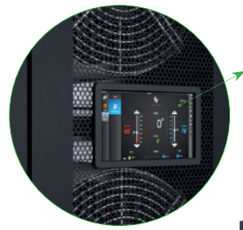
AIR CONDITIONING CABINETS

FROG ENGINEERING

In the same Design as Server Cabinets for Visual Integration, Air Conditioner Integrated Cabinets

W=600

W=300



Intelligent Control, Precision Microprocessor Control System, Wide Display Screen, Different Level Password Protectors, and Many Applications for Expert Fault Finding. Equipped with standard RS485 Communication Interface and supports Remote Monitoring

Rear Radial Fan Offers Less Energy Consumption, Less Maintenance, Better Air Distribution and More Effective Cooling Compared to Front Fans. On-Demand Active EC Fan Combines Broader Flow Distance and Lower Energy Consumption.

PRODUCT CODE	DESCRIPTION	WIDTH (W)	DEPTH (D)	HEIGHT(H)
W=300 Air Conditioning Cabinets				
MR.DC.KK42310.XX	Data Center 42U, W=300, D=1000mm Empty A/C Cabinet	300mm	1000mm	42U
MR.DC.KK42311.XX	Data Center 42U, W=300, D=1100mm Empty A/C Cabinet	300mm	1100mm	42U
MR.DC.KK42312.XX	Data Center 42U, W=300, D=1200mm Empty A/C Cabinet	300mm	1200mm	42U
MR.DC.KK46310.XX	Data Center 46U, W=300, D=1000mm Empty A/C Cabinet	300mm	1000mm	46U
MR.DC.KK46311.XX	Data Center 46U, W=300, D=1100mm Empty A/C Cabinet	300mm	1100mm	46U
MR.DC.KK46312.XX	Data Center 46U, W=300, D=1200mm Empty A/C Cabinet	300mm	1200mm	46U
MR.DC.KK48310.XX	Data Center 48U, W=300, D=1000mm Empty A/C Cabinet	300mm	1000mm	48U
MR.DC.KK48311.XX	Data Center 48U, W=300, D=1100mm Empty A/C Cabinet	300mm	1100mm	48U
MR.DC.KK48312.XX	Data Center 48U, W=300, D=1200mm Empty A/C Cabinet	300mm	1200mm	48U
W=600 Air Conditioning Cabinets				
MR.DC.KK42610.XX	Data Center 42U, W=600, D=1000mm Empty A/C Cabinet	600mm	1000mm	42U
MR.DC.KK42611.XX	Data Center 42U, W=600, D=1100mm Empty A/C Cabinet	600mm	1100mm	42U
MR.DC.KK42612.XX	Data Center 42U, W=600, D=1200mm Empty A/C Cabinet	600mm	1200mm	42U
MR.DC.KK46610.XX	Data Center 46U, W=600, D=1000mm Empty A/C Cabinet	600mm	1000mm	46U
MR.DC.KK46611.XX	Data Center 46U, W=600, D=1100mm Empty A/C Cabinet	600mm	1100mm	46U
MR.DC.KK46612.XX	Data Center 46U, W=600, D=1200mm Empty A/C Cabinet	600mm	1200mm	46U
MRDC.KK48610.XX	Data Center 48U, W=600, D=1000mm Empty A/C Cabinet	600mm	1000mm	48U
MR.DC.KK48611.XX	Data Center 48U, W=600, D=1100mm Empty A/C Cabinet	600mm	1100mm	48U
MR.DC.KK48612.XX	Data Center 48U, W=600, D=1200mm Empty A/C Cabinet	600mm	1200mm	48U

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

SmartPack Central Management Software
You can distribute power with a high-tech intelligent PDU that can be equipped with ambient monitoring sensors with a userfriendly interface for monitoring and managing the power consumption of your Data Center Cabinets. You can professionally monitor your entire energy infrastructure with the optional SmartPack central management software, which is optionally available.

Large Product Family
The Smart PDU family enables power distribution and monitoring for your data center cabinets. Our customer-focused, hightech intelligent PDU systems are able to perform reliable measurements with stable measurement values up to 650C ambient temperature, +/- 1% measurement accuracy, control module with high resolution large LCD display with "Hot Swap" circuit breaker and environmental monitoring sensor hub connectivity. In addition to IP, the MODBUS PDU alternative offers an economical alternative solution to meet different demands on the market.

PRODUCT FAMILY	TOTAL POWER	SOCKET HEAD POWER	FUSE-BOX POWER	SOCKET ON/OFF	IP	MOD BUS
MR.91	✓		✓		✓	✓
MR.92	✓		✓	✓	✓	✓
MR.93	✓	✓	✓		✓	✓
MR.94	✓	✓	✓	✓	✓	✓

+/-1%
High energy measurement accuracy +/- 1 &

MountingAdvantage
Flexible mounting options for all types of rack cabinets

Complete Energy Monitoring and Single Phase, 3 Phase Options
PDU-based monitoring of V, A, kW, kVA, kVAR, kWh, f, power factor parameters

ModBus Option
Low cost ModBus option

Heat Resistance
Ability to work up to 65oC temperature and to read measured values steadily

Special Production C13 / C19 Combinations
Special production possibilities with different C13, C19 socket options.

Dimensions
Thin section (profile) construction
Differential design with 56 cm depth and 56 cm width

Relay Output Option
Relay output PDU provides remote control on active devices.

LCD Display
320x240 pixel color LCD display with all kinds of parameters and alarm display, information feature

Sensor Options
Temperature, humidity, water detection, smoke and door sensor connection options. Each cabinet can connect up to 4 temperature and humidity sensors

Colour Options
Black, blue and red PDU options

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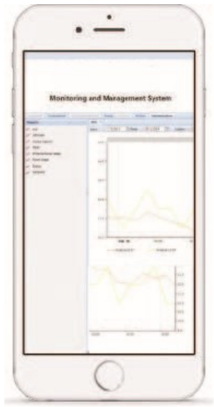
GT-DC Series
DATA CENTER & NETWORK SOLUTIONS
SMART PDU

FROG ENGINEERING

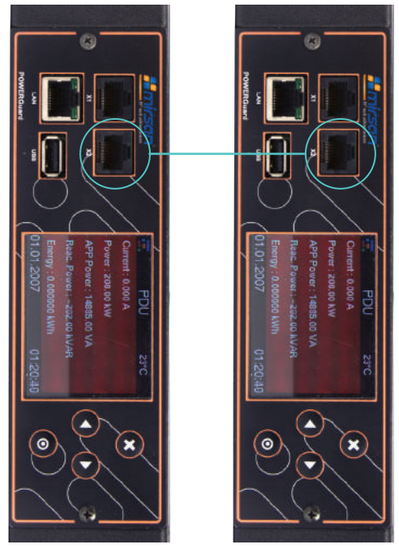
Circuit Breakers (Hydraulic - Magnetic)
Circuit breaker function which is sensitive due to hydraulicmagnetic circuit breakers and is not affected by temperature changes

Mobile Device Compatibility
Web interface support compatible with mobile devices and monitoring all data via web interface.



Hot Swap
Control unit that can be easily changed in case of faults. Servicing without disconnecting the smart socket

Cascade 8 PDU
Ability to work with up to 8 PDUs on a single IP to manage the system to reduce network traffic and use less IP



Lockable C13 Outlets
Ensure that the C13 outlets are stable on the PDU with external locking equipment

MONITORING AND MANAGEMENT SYSTEMS

Central Management Software allows you to easily access your desired media and energy data via a single web interface while providing integrated monitoring and management of your computing infrastructures.

Environment Management Workflow

- Monitoring
- Alarm
- Management
- Reporting and Analysis

- Cabinet and room temperature, humidity, water leakage, smoke, air flow, movement, door access, light intensity, etc. monitoring of critical environment values

- Defined and critical values are transmitted by means of email, SMS, voice call, audible warning etc... incase of alarm

- Managing the information infrastructure with predefined tasks in the event of an alarm

SYS 6001

- Modular Structure
- 124 Sensor
- 992 Dry Contact Input
- 496 Relay Output
- 3rd party device integration

- On-Demand Software
- Advanced Alarm System
- Management of Different Devices
- Data Monitoring, Backward Reporting
- SNMP Support

SYS 3001

- 1 internal temperature and humidity sensor
- 16 external sensor inputs
- 16 Dry Contact Inputs
- 4 Relay Output
- 4 analogue and/or water detection cable input

- Advanced alarm system
- Management of different devices
- Data monitoring, backswept reporting
- SNMP support

SYS 2001

- Built-in LCD graphic display
- 1 internal temperature and
- humidity sensor
- 4 external sensor inputs
- 4 Dry Contact Inputs
- 2 Relay Output
- 1 Analogue and/or water detection cable input

SYS Sensors

- Temperature and Humidity
- Water and Smoke Detection
- Air flow
- On / Off Door Detection
- IP Camera
- Energy Monitoring

ENERGY MANAGEMENT SYSTEMS

FROG ENGINEERING

Central Management Software allows you to easily access your desired media and energy data via a single web interface while providing integrated monitoring and management of your computing infrastructures.

Power Management

The Central Management Software can inform the following critical and similar parameters by monitoring the energy consumption of the information infrastructures in data centers and remote stations in an instant and retrospective manner.

- Energy Efficiency Values (PUE)
- Energy consumption
- Carbon Footprint
- Cost of Energy
- UPS Load Value

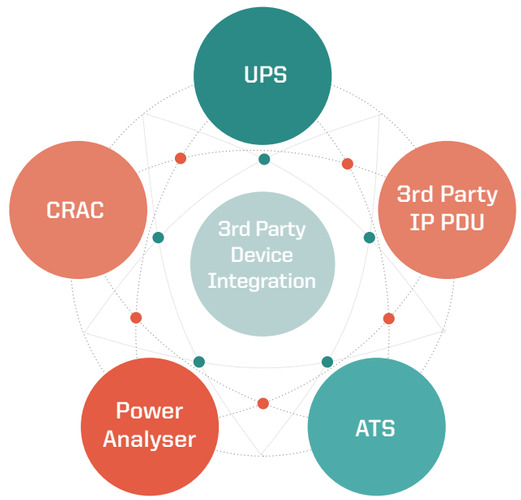
3rd Party Device Energy Monitoring

RS-232, RS-485, Modbus, SNMP etc. Monitoring of 3rd Party devices over protocols

- UPS
- AC Systems / CRAC
- Generator
- 3rd party Smart PDU
- UPS Load Values
- Energy analyzer
- ATS
- Rectifier etc.

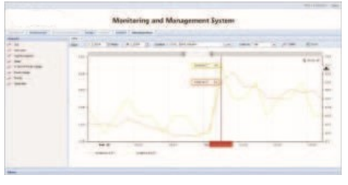
Energy IP PDU units

The Energy IP PDU product range is a high-tech product developed entirely within Mirsan, to help you address issues such as energy efficiency in data centers.



Central Management Software

It is a highly secure and up-to-date software solution that enables centralized monitoring of data infrastructures in data centers, multiple branch offices and remote stations, and efficient energy management. Powerful 3rd party device integration and project-specific solutions and integrated control of information infrastructures ensure the detailed reporting of relevant data and the permanence of operation continuity.



Environmental Monitoring Reports

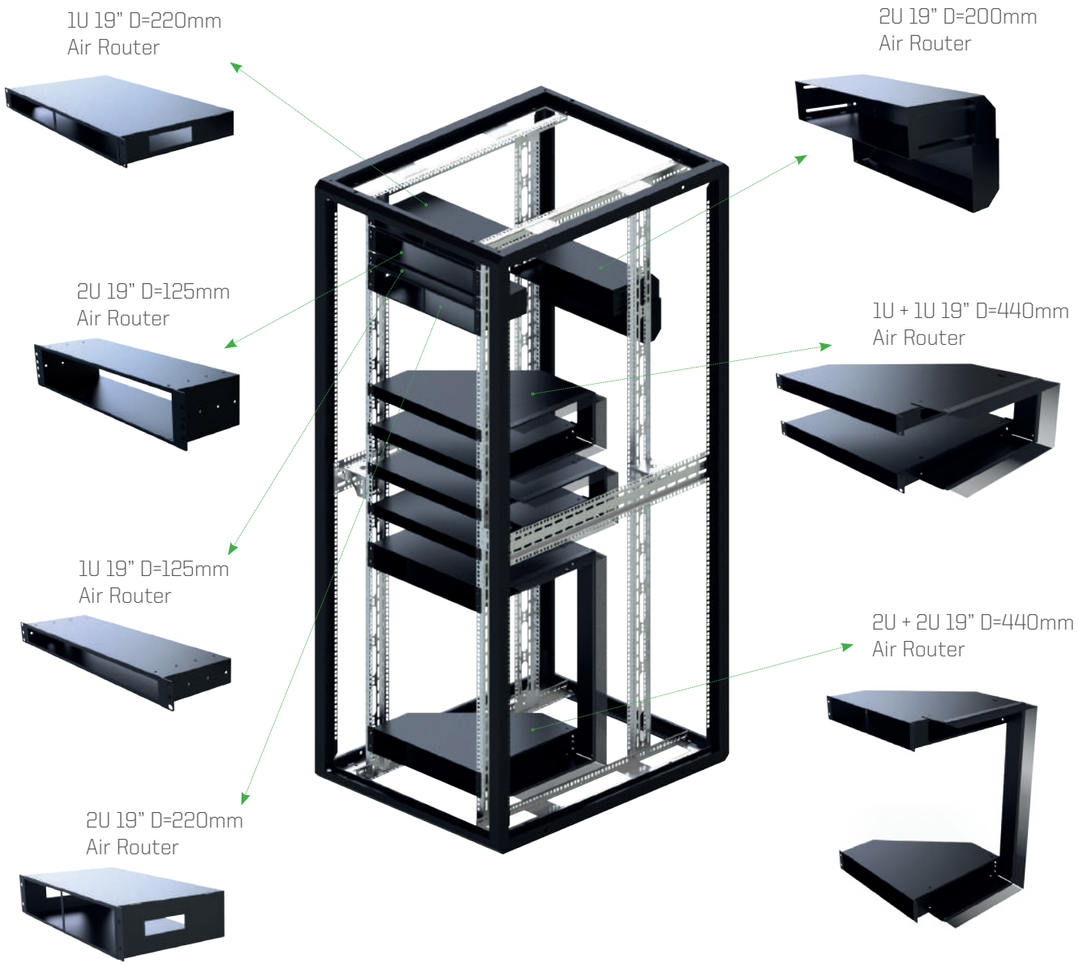
Efficient Energy Use (PUE) Reports
Carbon Emission Reports
Energy Consumption Reports
Energy Cost Reports
Cooling Capacity Reports
Energy Trend Reports

Graphical and Numerical Reports

Temperature, humidity, air flow, air quality, energy etc. detailed reports
Water leak, smoke, shaking, movement etc. alarm reports
Remote station reports
Link failure reports

AIR ROUTERS

Can be designed according to all brand and models



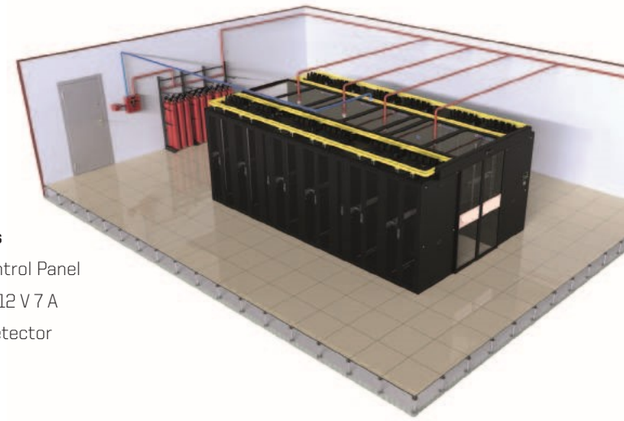
PRODUCT CODE	DESCRIPTION	DEPTH (D)	HEIGHT (H)
MR.HY2201U.XX	1U 19" D=220mm Air Router	220mm	44.45mm
MR.HY2202U.XX	2U 19" D=220mm Air Router	220mm	88.9mm
MR.HY125K-MR-SP1UBF.XX	1U 19" D=125mm Air Router	125mm	44.45mm
MR.HY125K-MR-SP2UBF.XX	2U 19" D=125mm Air Router	125mm	88.9mm
MR.HY2002U.XX	2U 19" D=220mm Air Router	220mm	88.9mm
MR.HY4401U+1U.XX	1U + 1U 19" D=440mm Air Router	440mm	44.45mm + 44.45mm
MR.HY4402U+2U.XX	2U + 2U19" D=440mm Air Router	440mm	88.9mm + 88.9mm

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

FM 200 AUTOMATIC FIRE EXTINGUISHING SYSTEM

FROG ENGINEERING

- Smoke Detector
- Discharge Nozzle
- Alarm / Sounder
- Manual Release
- Solenid Valve
- Smoke Detector
- Control Panel
- Discharge Nozzle



Mechanical Parts

- FM-200 Cylinder
  40 Liter Valve included Manual Actuator
- 24 Vdc. Selonoid Valve
- Wall Mounting Clamp
- Discharge Hose and Adapter
- 360 degree nozzle
- FM-200 Warning Labels
- FM-200 gas UL / FM
- AKRONEX TPED CERTIFICATE

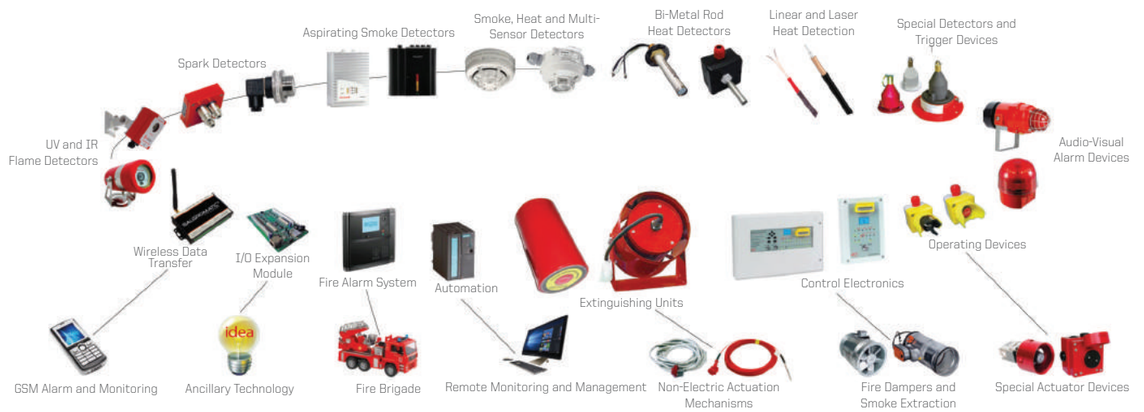
Electronic Parts

- Extinguishing Control Panel
- Dry Type Battery 12 V 7 A
- Optical Smoke Detector
- Detector Socket
- Stop button
- Flasher Siren
- Electronic Siren
- Pipe Mounting Material, Cable Assembly Material
- Installation Worker, Training, Control, and Commissioning
  CE, ISO, VDS. EN-54, LPCB CERTIFICATE

AERESOL AUTOMATIC FIRE EXTINGUISHING SYSTEM

Aerosol fire extinguisher generators, manual, fully automatic, semi-automatic, electrical or pyrotechnic cables. Regardless of your brand of existing fire detection systems, they can be addressed or traditionally triggered and activated in an adaptive manner. After activation, the solid potassium carbonate molecules migrate into the fire as a fog in 0.5 micron particles. It forms more radical compounds with chemical elenemts that perform the combustion reaction. During extinguishment, the oxygen level in the environment will not drop below 17%.

- Re-filling - Calibration - No cost of testing, 10 years shelf life.
- No complete sealing condition, no labor costs.
- No pipe installation, no installation work.
- During the extinguishment it does not damage the goods, does not leave residue, harmless to human beings in the environment.
- Certificates are valid all the time when contained in the facility
- There is no risk or threat to the area.



3102
Electronic Arm Metal Lock

307
Standard Application Arm Lock

MR-109KLT
Lock

Electronic Keypad Lock

Smart Card Reader Lock

Electronic Keypad Lock With Batteries

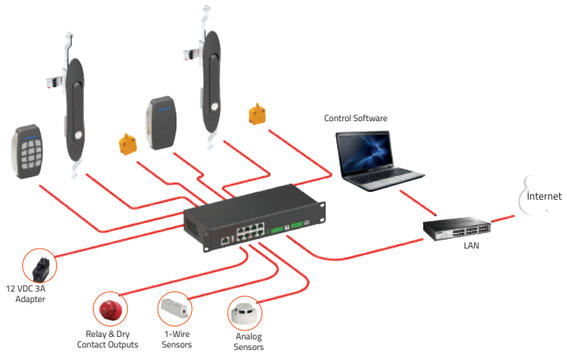
2100-U152
Keypad Electronic Arm Lock

3104
Illuminated ElectronicArm Lock

3106
WK2 Electronic Arm Lock

AIK
Access Interface Keypad → **3414**

The access interfaces are user interface devices, allowing access by reading a RFID card on the side by entering a password.
Access interfaces are visually and audibly informed to the user as to whether or not the visual warning LEDs and the buzzer input test are accepted.



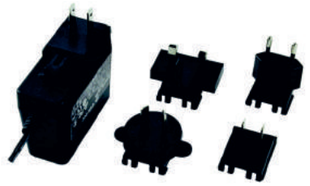
AIP
Access Interface Card Reader → **3415**

These interfaces are used with monitoring and access control units. (MCU-3401, ACU Plus-3403 and ACU-3402

RFID Card: 13.56Mhz MIFARE-Standard ISO 14443A
it is also added

Printed: (34002639) / Unprinted: (34002640)

ACCESSORIES



AC-DC Power Supply 12 Volts DC 3 Amps (34002625)

- Universal voltage input
- Continuous power up to 36 W
- Variable AC blades for global use
- Used with monitoring and access control units

AC-DC Power Supply 12 Volts DC 1 Amps (34030041)

- Universal voltage input
- Continuous power up to 12 W
- Used with standalone access interfaces

Electronic arm lock connection cable 4 meters

(34030006)

- Used to link the lever locks to standalone access interfaces and access control units
- The same connector is plugged on both ends of the cable

Electronic larm lock connection cable 0.4 meter

(34030039)

- Used to link the lever locks to standalone access interfaces
- The same connector is plugged on both ends of the cable

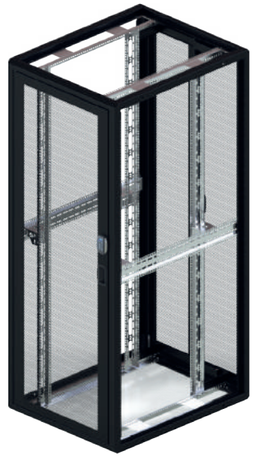
ACU-AI connection cable 4 metre

(34030040)

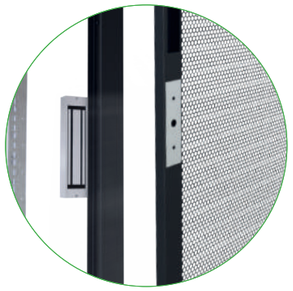
- Used to connect access interfaces (AIK-3414 and AIP-3415) to monitoring and access control units

Keypad Password Lock

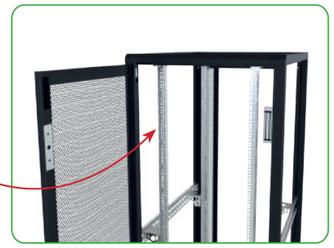
Card Reader
Password Lock

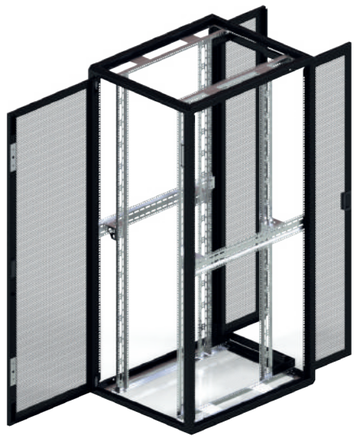


Metal Cover
Application

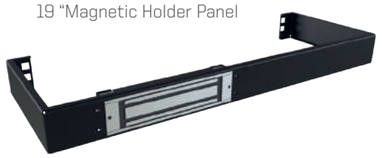


Magnetic Front Door Application

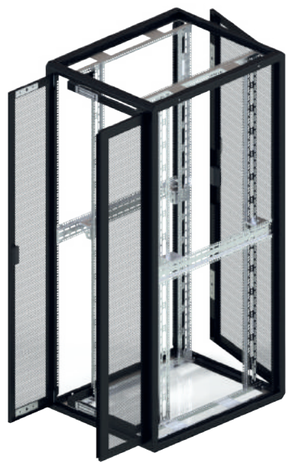




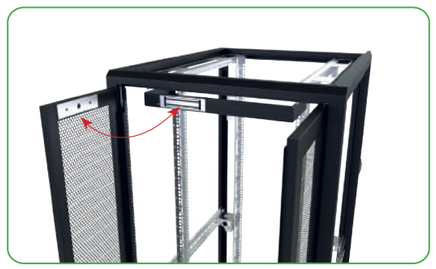
19 "Magnetic Holder Panel



Magnetic Holders



Magnetic Rear Door Application



PRODUCT CODE	DESCRIPTION	MODEL
Electronic Keypad & Card Readers		
MR.3414-AIK	Keypad Module, Cabinet and Automatic Door Integrated Alk Access Interface Keypad (These interfaces are used with monitoring and access control units)	
MR.3415-AIP	Card Reader Module, Cabinet and Automatic Door Integrated AIP Access Interface Card Reader (These interfaces are used with monitoring and access control units)	
MR.3416S-AIK	Keypad Module, Cabinet and Automatic Door can be Integrated S-AIK Standalone Access Interface Keypad	
MR.3417-S-AIP	Card Reader Module, Cabinet and Automatic Door Integrated S-AIP Standalone Access Interface Card Reader	
MR.D122E	Electronic Keypad + Lock System (Without Mechanism)	
MR.D122EM	Electronic Keypad + Lock System (Mechanized)	
MR.2100U-U151-00	Electronic Combination Arm Assembly Mounted Magnetic Core + Keypad	
MR.2100U-U152-00	Electronic Combination Arm Complex Mounted Magnetic Core + Keypad + 1 Magnetic Core	
Magnetic Lock System		
MR-BRU250M	250 kg Pulling Capacity Magnetic Lock System	
MR-BRU500M	500 kg Pulling Capacity Magnetic Lock System	
Electronic Arm Locks		
MR.3101KLT	Electronic Zamak Arm Lock System (Without Mechanism)	
MR.3102KLT	Electronic Zamak Arm Lock System (Mechanized)	
MR.3103KLT	Electronic Polyamide Arm Lock System (Without Mechanism)	
MR.3104KLT	Electronic Polyamide Arm Lock System (Mechanized)	
MR.3105KLT	Electronic Zamak Arm Lock System (Wk2 with High Security without Mechanism)	
MR.3106KLT	Electronic Time Arm Lock System (Wk2 with Mechanically High Security)	
Electronic Arm Lock		
MR.108KLT	Zamak Arm Lock System Log (Without Mechanism)	
MR.109KLT	Zamak Arm Lock System Logical (Mechanized)	
MR.306KLT	Polyamide Arm Lock System (Without Mechanism)	
MR.307KLT	(Polyamide Arm Lock System (Mechanized)	

XX=Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

GT-DC Series

DATA CENTER & NETWORK SOLUTIONS

IP & ANALOG LCD CONSOLE and KVM

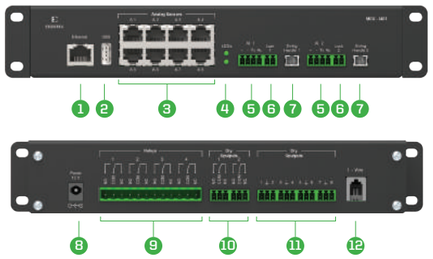
19 “1U rack consoles provide easy access and management of PCs and servers with integrated KVM switch options. These solutions are designed for accessing and managing your servers in a data center / system room over a brand independent platform during the local usage phase.

- 17 “LED / LCD Display Option in 1U 19 “ Construction
- 1Utelescopic railed case
- Integrated Monitor / Klee / Touchpad / Ergonomic design
- IP / Analog Product option
- Multiple Platform Support: Windows 2000 / XP / Vista Linux
- 1/8/16 Port Option
- USB / PS / 2 Product Design
- Compatibility with all Server Manufacturers
- Plug and Play Construction
- Automatic Part Scanning
- Password Protection Feature
- Front Screen Display
- The angle to open the monitor is 120 degrees.
- Locked front panel

FROG ENGINEERING

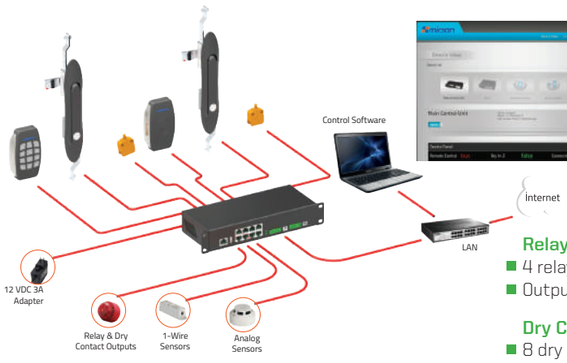
MAIN CONTROL UNITS (MCU)

It is an intelligent device that can be used for monitoring environmental changes such as temperature, humidity, smoke, water pressure. When the sensor values exceed the specified threshold values, the system warns the user via e-mail. It is suitable for data centers, co-location centers, Web hosting facilities, telecom cabins or any unmanned area to be monitored.



1. Ethernet Port 10/100
2. USB 2.0
3. 8 x Analog Sensor
4. LED
5. 2 x Access Interface
6. 2 x Lockouts
7. 2 x Electronic Arm Locks (3101, 3102, 3103, 3104)
8. Power Input (12VDC 3A))
9. 4 x Relay Outputs (10A)
10. 2 x Dry Contact Outputs (2A)
11. 8 x Dry Contact Inputs
12. 1 - Wire Sensor Port

- Monitors and manages environmental conditions and security conditions over IP
- Monitoring and configuration via management software
- Can generate alarms with customizable input parameters
- Two access interfaces (3414 or 3415) can be connected
- When any monitored environmental conditions exceed the user-specified limits, the warnings are transmitted to the user using email.
- User Database
- A large range of sensors
- The cabinet provides physical access control



Management Software
- Edit sensor thresholds, set automatic operations and alarm rules
- Monitor current sensor values and alarm conditions
- Configure network settings (IP address, subnet mask, default gateway, (DNS, etc.), and user management settings Add and remove users
- View and delete event records

Relay Outputs
- 4 relay outputs to control external connected devices
- Outputs can be used as NO (Normally Open) or NC (Normally Closed)

Dry Contact Inputs
- 8 dry contact inputs for monitoring environmental changes
- Inputs can be used as sensor inputs

Analog Sensors
- 8 analogue sensor inputs for monitoring environmental changes
- All Mesan analog sensors can be connected

Arm Locks
- Lever lockout controls physical access to cabin
- Electronic locks with group codes 3101, 3102, 3103 and 3104 can be connected

Dry Contact Outputs
- 2 dry contact outputs to control external connected devices
- Outputs can be used as NO (Normally Open) or NC (Normally Closed)

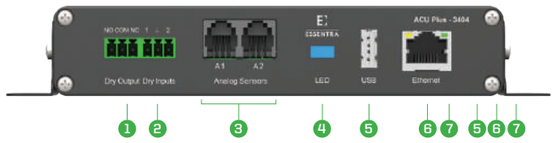
Wire Sensors
- 1 piece of wire sensor such as DS18B20 and DS1190 can be connected to monitor environmental changes

Access Interfaces
- Access to the card is provided by entering the password
- 3414-AIK and 3415-AIP devices can be connected

Lockouts
- Lockouts control physical access to cabinets
- Various electronic locks can be connected

ACCESS CONTROL UNIT (ACU PLUS)

It is an intelligent device that can be used for monitoring environmental changes such as temperature, humidity, smoke, water pressure. It checks the electronic locks and monitors the door status. It is suitable for data centers, co-location centers, Web hosting facilities, telecom cabins or any unmanned area to be monitored.



1. Dry Contact Output (2A)
2. 4 x Dry Contact Input
3. 2 x Analog Ssensor
4. LED
5. USB 2.0
6. Ethernet Port 10/100
7. Spower Input (12VDC 3A)
8. 2 x Access Interface
9. 2 x Lockouts
10. 2 x Electronic Arm Locks (3101, 3102, 3103, 3104)

- Monitors and manages environmental conditions and security conditions over IP
- Monitoring and configuration via management software
- There are two sensor inputs to detect the position of the door.
- Can generate alarms with customizable input parameters
- When any monitored environmental conditions exceed the user-specified limits, the warnings are transmitted to the user using e-mail.
- Two access interfaces (3414 or 3415) can be connected
- Contains User Database
- A large range of sensors
- Provides physical access control to the cabinets

Management Software
- Edit sensor thresholds, set automatic operations and alarm rules
- Monitor current sensor values and alarm conditions
- Configure network settings (IP address, subnet mask, default gateway, (DNS, etc.), and user management settings
- Add and remove users
- View and delete event records

Dry Cotnact Outout
- Dry contact output to control external connected devices
- Outputs can be used as NO (Normally Open) or NC (Normally Closed).

Dry Contact Input
- 4 dry contacts input for monitoring environmental changes
- Inputs can be used as sensor inputs

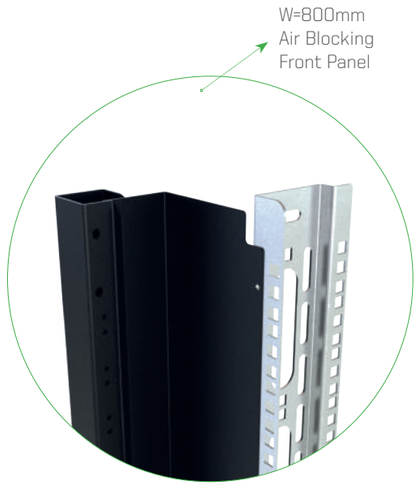
Analog Sensors
- 2 analogue sensor inputs for monitoring environmental changes
- All Mesan analog sensors can be connected

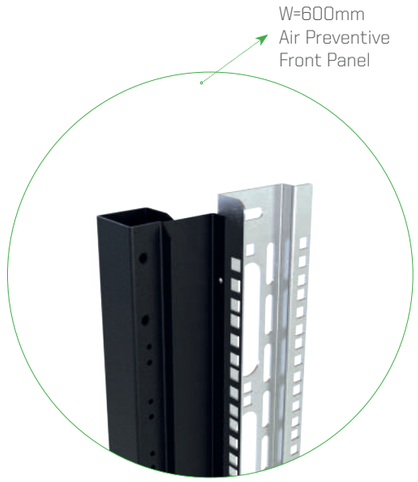
Arm Locks
- Lever lockout controls physical access to cabin
- Electronic locks with group codes 3101, 3102, 3103 and 3104 can be connected

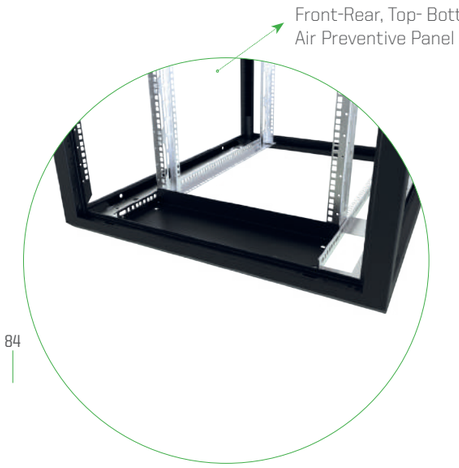
Lockouts
- Lockouts control physical access to cabinets
- Various electronic locks can be connected

Access Interfaces
- Access is provided by entering the password or a card
- 3414-AIK and 3415-AIP devices can be connected

VERTICAL AIR BLOCKING PANELS







DATA CENTER & NETWORK SOLUTIONS VERTICAL AIR PREVENTIVE PANELS

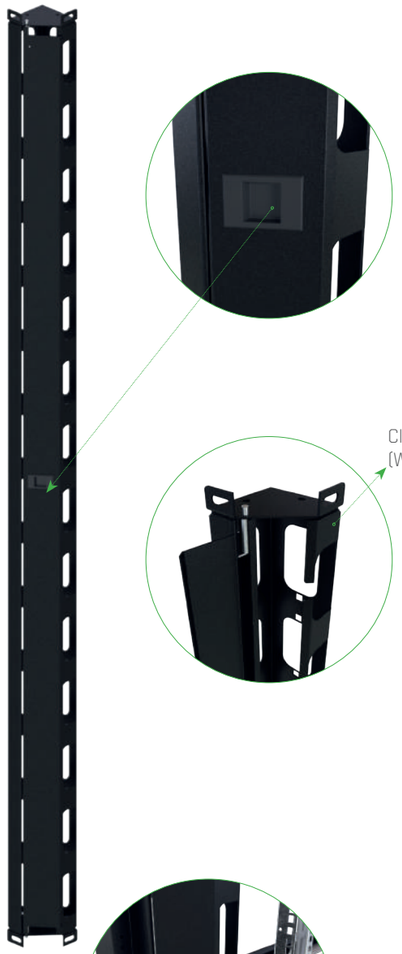
FROG ENGINEERING

PRODUCT CODE	DESCRIPTION	H SIZE (U)	MODEL
Closed Air Block Panels			
MR.DC.KHE42U60.XX	42U Closed Air Blocking Panel W600mm 1 set for cabinet = 2 pieces	42U	
MR.DC.KHE46U60.XX	46U Closed Air Blocking Panel W600mm 1 set for cabinet = 2 pieces	46U	
MR.DC.KHE48U60.XX	48U Closed Air Blocking Panel W600mm 1 set for cabinet = 2 pieces	48U	
MR.DC.KHE42U80.XX	42U Kapalı Closed Air Blocking Panel W800mm 1 set for cabinet=2 pieces	42U	
MR.DC.KHE46U80.XX	46U Kapalı Closed Air Blocking Panel W800mm 1 set for cabinet = 2 pieces	46U	
MR.DC.KHE48U80.XX	48U Kapalı Closed Air Blocking Panel W800mm 1 set for cabinet = 2 pieces	48U	
Brushed Air Block Panel			
MR.DC.FHE42U60.XX	42U Brushed Air Blocking Panel W600mm 1 set for cabinet = 2 pieces	42U	
MR.DC.FHE46U60.XX	46U Brushed Air Blocking Panel W600mm 1 set for cabinet = 2 pieces	46U	
MR.DC.FHE48U60.XX	48U Brushed Air Blocking Panel W600mm 1 set for cabinet = 2 pieces	48U	
MR.DC.FHE42U80.XX	42U Brushed Air Blocking Panel W800mm 1 set for cabinet = 2 pieces	42U	
MR.DC.FHE46U80.XX	46U Brushed Air Blocking Panel W800mm 1 set for cabinet = 2 pieces	46U	
MR.DC.FHE48U80.XX	48U Brushed Air Blocking Panel W800mm 1 set for cabinet = 2 pieces	48U	
Blank Air Block Panels			
MR.DC.BHE42U60.XX	42U Blanks Air Block Panels W600mm 1 set for cabinet = 2 pieces	42U	
MR.DC.BHE46U60.XX	46U Blanks Air Block Panels W600mm 1 set for cabinet = 2 pieces	46U	
MR.DC.BHE48U60.XX	48U Blanks Air Block Panels W600mm 1 set for cabinet = 2 pieces	48U	
MR.DC.BHE42U80.XX	42U Blanks Air Block Panels W800mm 1 set for cabinet = 2 pieces	42U	
MR.DC.BHE46U80.XX	46U Blanks Air Block Panels W800mm 1 set for cabinet = 2 pieces	46U	
MR.DC.BHE48U80.XX	48U Blanks Air Block Panels W800mm 1 set for cabinet = 2 pieces	48U	
19" Vertical Air Block Panels			
MR.DC.19HE42U60.XX	42U Vertical 19" Air Blocking Panel W600mm 1 set for cabinet = 2 pieces	42U	
MR.DC.19HE46U60.XX	46U Vertical 19" Air Blocking Panel W600mm 1 set for cabinet = 2 pieces	46U	
MR.DC.19HE48U60.XX	48U Vertical 19" Air Blocking Panel W600mm 1 set for cabinet = 2 pieces	48U	
MR.DC.19HE42U80.XX	42U Vertical 19" Air Blocking Panel W800mm 1 set for cabinet = 2 pieces	42U	
MR.DC.19HE46U80.XX	46U Vertical 19" Air Blocking Panel W800mm 1 set for cabinet = 2 pieces	46U	
MR.DC.19HE48U80.XX	48U Vertical 19" Air Blocking Panel W800mm 1 set for cabinet = 2 pieces	48U	

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

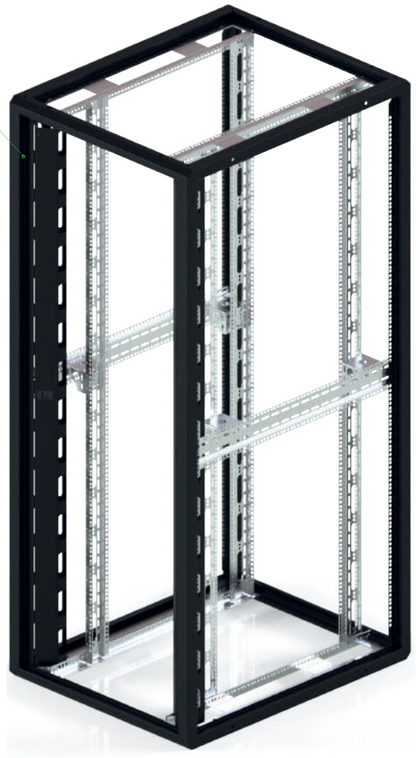
CLASSIC-CAPPED ORGANIZER

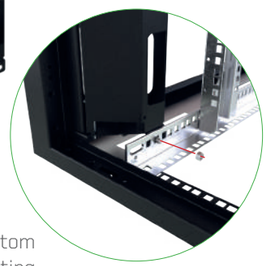
Classic Cover
Vertical Organizer



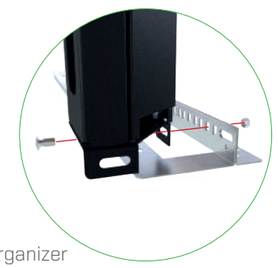
Classic Cover Organizer
(When Open)

Applied Classic Vertical
Organizer





Organizer Bottom
Part Mounting



Organizer
Mounting Detail

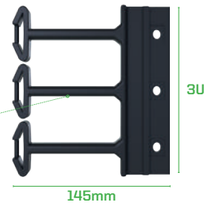
Organizer Top
Mounting

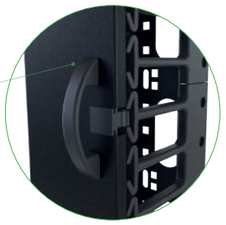
PRODUCT CODE	DESCRIPTION	H SIZE (U)	MODEL
MR.ODK.42U.XX	42U Dikey Cable Organizer 1 Set = 2 Pieces (Right / Left)	42U	
MR.ODK.46U.XX	46U Dikey Cable Organizer 1 Set = 2 Pieces (Right / Left)	46U	
MR.ODK.48U.XX	48U Dikey Cable Organizer 1 Set = 2 Pieces (Right / Left)	48U	

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

FINGER-TYPE CAPPED ORGANIZER

PVC 3U Finger Type
Cable Regulator Hook





Applied Finger Type
Organizer Cover

Organizer Cover
Closed State

Organizer Cover
Open State

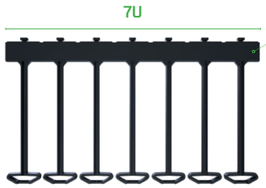
PRODUCT CODE	DESCRIPTION	H SIZE (U)	MODEL
MR.KP.ORG42U110.GTDC.XX	42U Vertical Cable Organizer PVC Finger-Type 1 Set = 2 Pieces (Left/Right)	42U	
MR.KP.ORG46U110.GTDC.XX	46U Vertical Cable Organizer PVC Finger-Type 1 Set = 2 Pieces (Left/Right)	46U	
MR.KP.ORG48U110.GTDC.XX	48U Vertical Cable Organizer PVC Finger-Type 1 Set = 2 Pieces (Left/Right)	48U	

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

Applied Classic Cover Organizer

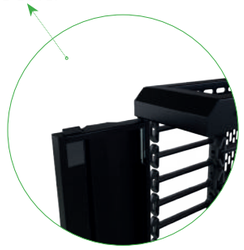
W=150mm Cabinet External Vertical Cable Hosting

W=300mm Cabinet External Vertical Cable Hosting

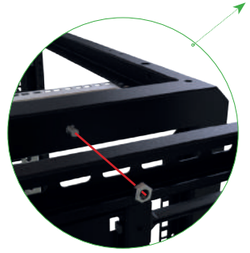


Multiple, unlimited connections

Front and Rear Openable Cover



External Vertical Cable Host Port



GT-DC Series
DATA CENTER & NETWORK SOLUTIONS
VERTICAL CABLE HOSTING UNITS

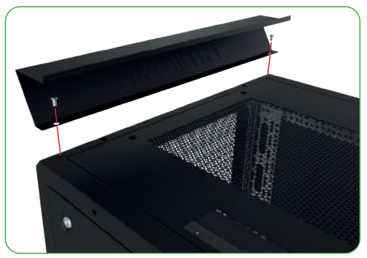
FROG ENGINEERING

PRODUCT CODE	DESCRIPTION	H SIZE (U)
W=150 D=1000 Vertical Cable Hosting Unit		
MR.DKB.UNT42U10.150.XX	42U W=150mm D=1000mm Convex Cable Housings 1 set = 2 units	42U
MR.DKB.UNT46U10.150.XX	46U W=150mm D=1000mm Convex Cable Housings 1 set = 2 units	46U
MR.DKB.UNT48U10.150.XX	48U W=150mm D=1000mm Convex Cable Housings 1 set = 2 units	48U
W=150 D=1100 Vertical Cable Hosting Unit		
MR.DKB.UNT42U11.150.XX	42U W=150mm D=1100mm Convex Cable Housings 1 set = 2 units	42U
MR.DKB.UNT46U11.150.XX	46U W=150mm D=1100mm Convex Cable Housings 1 set = 2 units	46U
MR.DKB.UNT48U11.150.XX	48U W=150mm D=1100mm Convex Cable Housings 1 set = 2 units	48U
W=150 D=1200 Vertical Cable Hosting Unit		
MR.DKB.UNT42U12.150.XX	42U W=150mm D=1200mm Convex Cable Housings 1 set = 2 units	42U
MR.DKB.UNT46U12.150.XX	46U W=150mm D=1200mm Convex Cable Housings 1 set = 2 units	46U
MR.DKB.UNT48U12.150.XX	48U W=150mm D=1200mm Convex Cable Housings 1 set = 2 units	48U
W=300 D=1000 Vertical Cable Hosting Unit		
MR.DKB.UNT42U10.300.XX	42U W=300mm D=1000mm Convex Cable Housings 1 set = 2 units	42U
MR.DKB.UNT46U10.300.XX	46U W=300mm D=1000mm Convex Cable Housings 1 set = 2 units	46U
MR.DKB.UNT48U10.300.XX	48U W=300mm D=1000mm Convex Cable Housings 1 set = 2 units	48U
W=300 D=1100 Vertical Cable Hosting Unit		
MR.DKB.UNT42U11.300.XX	42U W=300mm D=1100mm Convex Cable Housings 1 set = 2 units	42U
MR.DKB.UNT46U11.300.XX	46U W=300mm D=1100mm Convex Cable Housings 1 set = 2 units	46U
MR.DKB.UNT48U11.300.XX	48U W=300mm D=1100mm Convex Cable Housings 1 set = 2 units	48U
W=300 D=1200 Vertical Cable Hosting Unit		
MR.DKB.UNT42U12.300.XX	42U W=300mm D=1200mm Convex Cable Housings 1 set = 2 units	42U
MR.DKB.UNT46U12.300.XX	46U W=300mm D=1200mm Convex Cable Housings 1 set = 2 units	46U
MR.DKB.UNT48U12.300.XX	48U W=300mm D=1200mm Convex Cable Housings 1 set = 2 units	48U
W=150 D=275 Vertical Cable Hosting Unit		
MR.DKB.UNT42U.150.XX	42U W=150mm D=275mm Convex Cable Housings 1 set = 2 units	42U
MR.DKB.UNT46U.150.XX	46U W=150mm D=275mm Convex Cable Housings 1 set = 2 units	46U
MR.DKB.UNT48U.150.XX	48U W=150mm D=275mm Convex Cable Housings 1 set = 2 units	48U
W=300 D=275 Vertical Cable Hosting Unit		
MR.DKB.UNT42U.300.XX	42U W=300mm D=275mm Convex Cable Housings 1 set = 2 units	42U
MR.DKB.UNT46U.300.XX	46U W=300mm D=275mm Convex Cable Housings 1 set = 2 units	46U
MR.DKB.UNT48U.300.XX	48U W=300mm D=275mm Convex Cable Housings 1 set = 2 units	48U

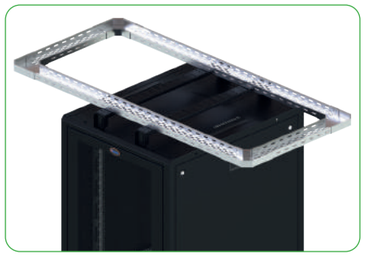
XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

MODEL

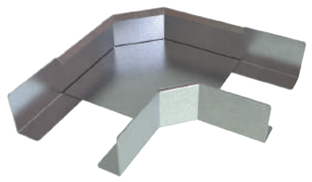
ROOF CABLE MANAGEMENT



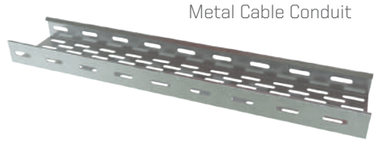
Zone Box



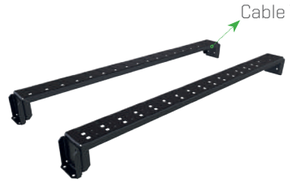
Metal Cornered Twist Cable Tray



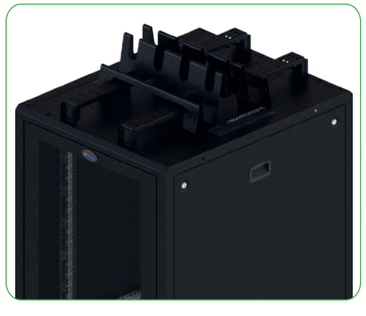
Metal Cable Conduit

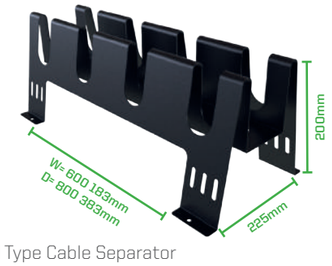


Cable Tray Carrier

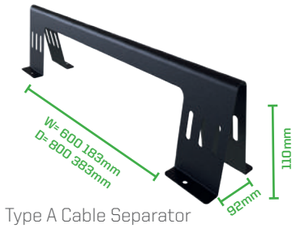


Cable Top Connection Kit





M Type Cable Separator



Type A Cable Separator

FROG ENGINEERING

PRODUCT CODE	DESCRIPTION
Cabinet Top Cable Separator	
MR.DC.KSA60.XX	W=600mm Cabinet Top Cable Separator Type A
MR.DC.KSM60.XX	W=600mm Cabinet Top Cable Separator Type M
MR.DC.KSA80.XX	W=800mm Cabinet Top Cable Separator Type A
MR.DC.KSM80.XX	W=800mm Cabinet Top Cable Separator Type M
Zonebox	
MR.DC.ZONEBOX2U.XX	2U 19" D=240mm Zonebox Cable Routing and External 19 "Port
MR.DC.ZONEBOX3U.XX	3U 19" D=240mm Zonebox Cable Routing and External 19 "Port
MR.DC.ZONEBOX4U.XX	4U 19" D=240mm Zonebox Cable Routing and External 19 "Port
Cable Tray	
MR.KTAV.5010G	50 x100 Cable Tray .....mm
MR.KTAV.5020G	50 x 200 Cable Tray .....mm
MR.KTAV.5030G	50 x 300 Cable Tray .....mm
MR.KTAV.5040G	50 x 400 Cable Tray .....mm
MR.KTKS.100G	W=100mm Corner Twist Cable Tray
MR.KTKS.200G	W=200mm Corner Twist Cable Tray
MR.KTKS.300G	W=300mm Corner Twist Cable Tray
MR.KTKS.400G	W=400mm Corner Twist Cable Tray

*** Please specify the length in the in line with the your needs during the order.**

Cablofil	
MR.KFIL.100G	D=1000 Roof Cable Tray Carrier
MR.KFIL.110G	D=1100 Roof Cable Tray Carrier
MR.KFIL.120G	D=1200 Roof Cable Tray Carrier

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.

U Type
Mid-Cable Tray

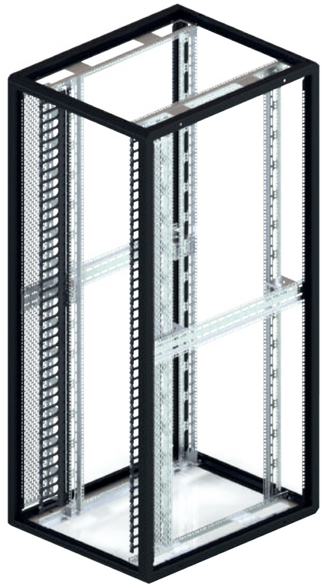
U Type
Cable Tray

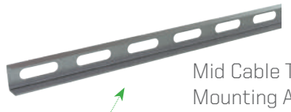
T Type
Cable Tray

L Type
Cable Tray

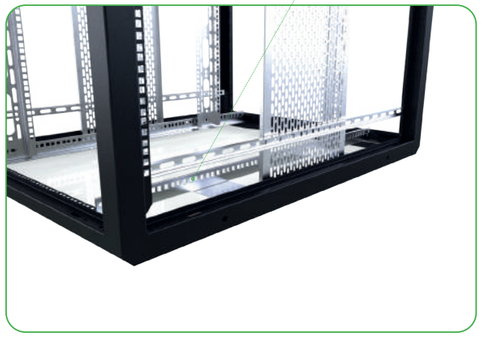
L Type
Cable Tray

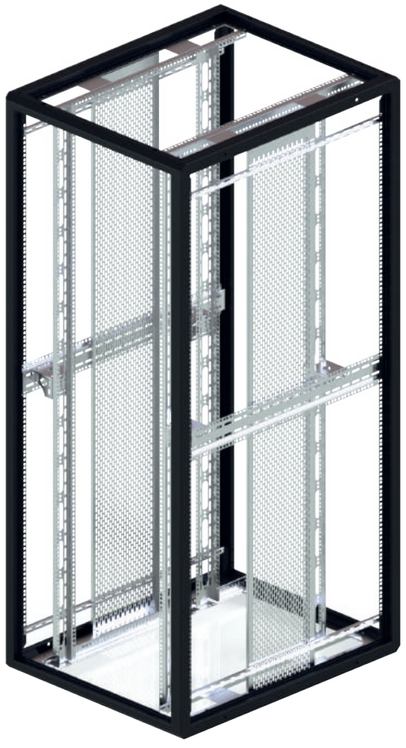
PDU
Holder





Mid Cable Tray
Mounting Apparatus





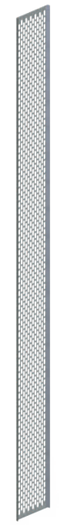
Mid Cable Tray Apllied to
Left-Right Sides

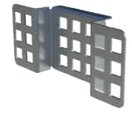
GT-DC Series
DATA CENTER & NETWORK SOLUTIONS
CABLE TRAYS

FROG ENGINEERING

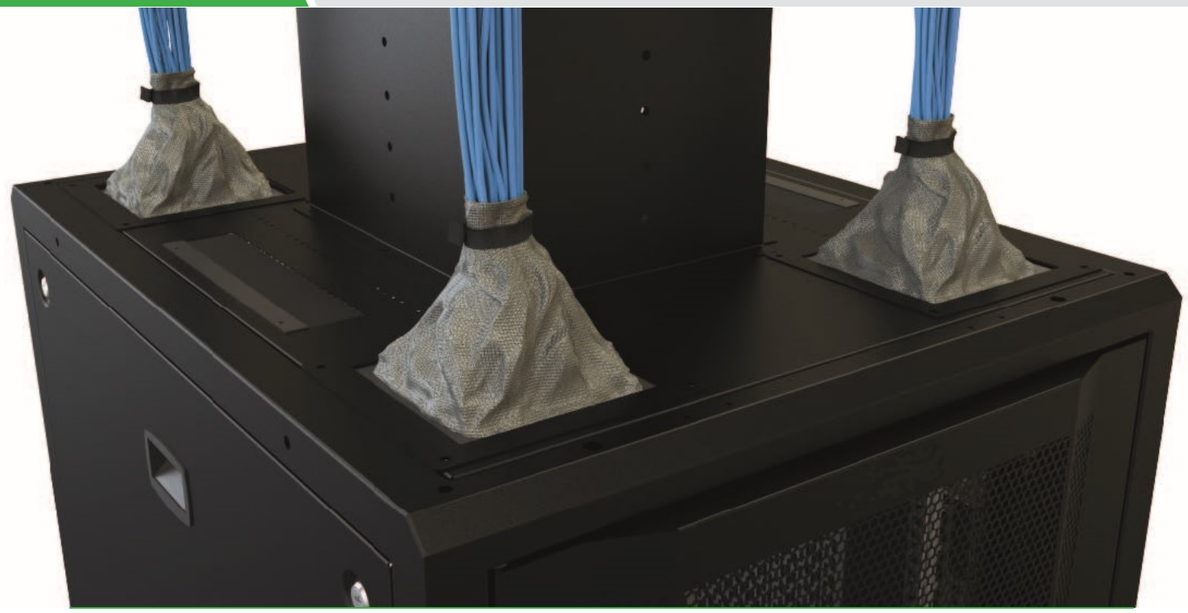
PRODUCT CODE	DESCRIPTION	H SIZE (U)	MODEL
"U" Type Cable Channel			
MR.KNL42U100.ZN	W=100mm 42U Cable Tray (U) Type Galvanized	42U	
MR.KNL46U100.ZN	W=100mm 46U Cable Tray (U) Type Galvanized	46U	
MR.KNL48U100.ZN	W=100mm 48U Cable Tray (U) Type Galvanized	48U	
"U" Type Cable Channel			
MR.KNL42U150.ZN	W=150mm 42U Cable Tray (U) Type Galvanized	42U	
MR.KNL46U150.ZN	W=150mm 46U Cable Tray (U) Type Galvanized	46U	
MR.KNL48U150.ZN	W=150mm 48U Cable Tray (U) Type Galvanized	48U	
"U" Type Mid Cable Channel			
MR.KNL42U200.ZN	W=200mm 42U Cable Tray (U) Type Galvanized (for middle-sides)	42U	
MR.KNL46U200.ZN	W=200mm 46U Cable Tray (U) Type Galvanized (for middle-sides)	46U	
MR.KNL48U200.ZN	W=200mm 48U Cable Tray (U) Type Galvanized (for middle-sides)	48U	
MR.KNL42U300.ZN	W=300mm 42U Cable Tray (U) Type Galvanized (for middle-sides)	42U	
MR.KNL46U300.ZN	W=300mm 46U Cable Tray (U) Type Galvanized (for middle-sides)	46U	
MR.KNL48U300.ZN	W=300mm 48U Cable Tray (U) Type Galvanized (for middle-sides)	48U	
"T" Type Cable Channel with Organizer			
MR.KNL.TP42U150.ZN	W=150mm 42U (T) Type PVC 3U Finger Organizer Cable Tray Galvanized	42U	
MR.KNL.TP46U150.ZN	W=150mm 46U (T) Type PVC 3U Finger Organizer Cable Tray Galvanized	46U	
MR.KNL.TP48U150.ZN	W=150mm 48U (T) Type PVC 3U Finger Organizer Cable Tray Galvanized	48U	
"L" Type Cable Channel			
MR.KNL.L42U150+95.ZN	W=150+95mm 42U (L) Type Cable Tray Galvanized	42U	
MR.KNL.L46U150+95.ZN	W=150+95mm 46U (L) Type Cable Tray Galvanized	46U	
MR.KNL.L48U150+95.ZN	W=150+95mm 48U (L) Type Cable Tray Galvanized	48U	
PDU & Cable Channel			
MR.KNL.UP42U150+95.ZN	W=150+95mm 42U (UP) Type PVC 3U Finger Organizer Cable Tray Galvanized	42U	
MR.KNL.UP46U150+95.ZN	W=150+95mm 46U (UP) Type PVC 3U Finger Organizer Cable Tray Galvanized	46U	
MR.KNL.UP48U150+95.ZN	W=150+95mm 48U (UP) Type PVC 3U Finger Organizer Cable Tray Galvanized	48U	
PDU & Cable Channel			
MR.PDU.KT110.ZN	D=1100 PDU and Channel Holder for Cabinets 1 Set = 3 pieces		
MR.PDU.KT120.ZN	D=1200 PDU and Channel Holder for Cabinets 1 Set = 3 pieces		

XX= Colour Code, 02 for Light Grey RAL 7035 and 01 for Black RAL 9005, added in the order by customer.





CABLE CONDUITS



When the cables pass through the upper passages of the cabinet, they are used to close the top openings of the cabin. Airtight fabric is used to reduce heat loss the most, to increase cooling in network equipment and to reduce energy costs.

PRODUCT CODE	DESCRIPTION
MR.KC.170.200	170x200 Cable Grip

PVC BRUSHED CABLE TRANSITION

PRODUCT CODE	DESCRIPTION
MR.KEL.BES24	RECTANGULAR PVC BRUSHED CABLE TRANSITION (32X112mm)
MR.KEL.BES16	RECTANGULAR PVC BRUSHED CABLE TRANSITION (32X85mm)
MR.BES.S50	ROUND PVC BRUSHED CABLE TRANSITION (50mm)

FROG ENGINEERING