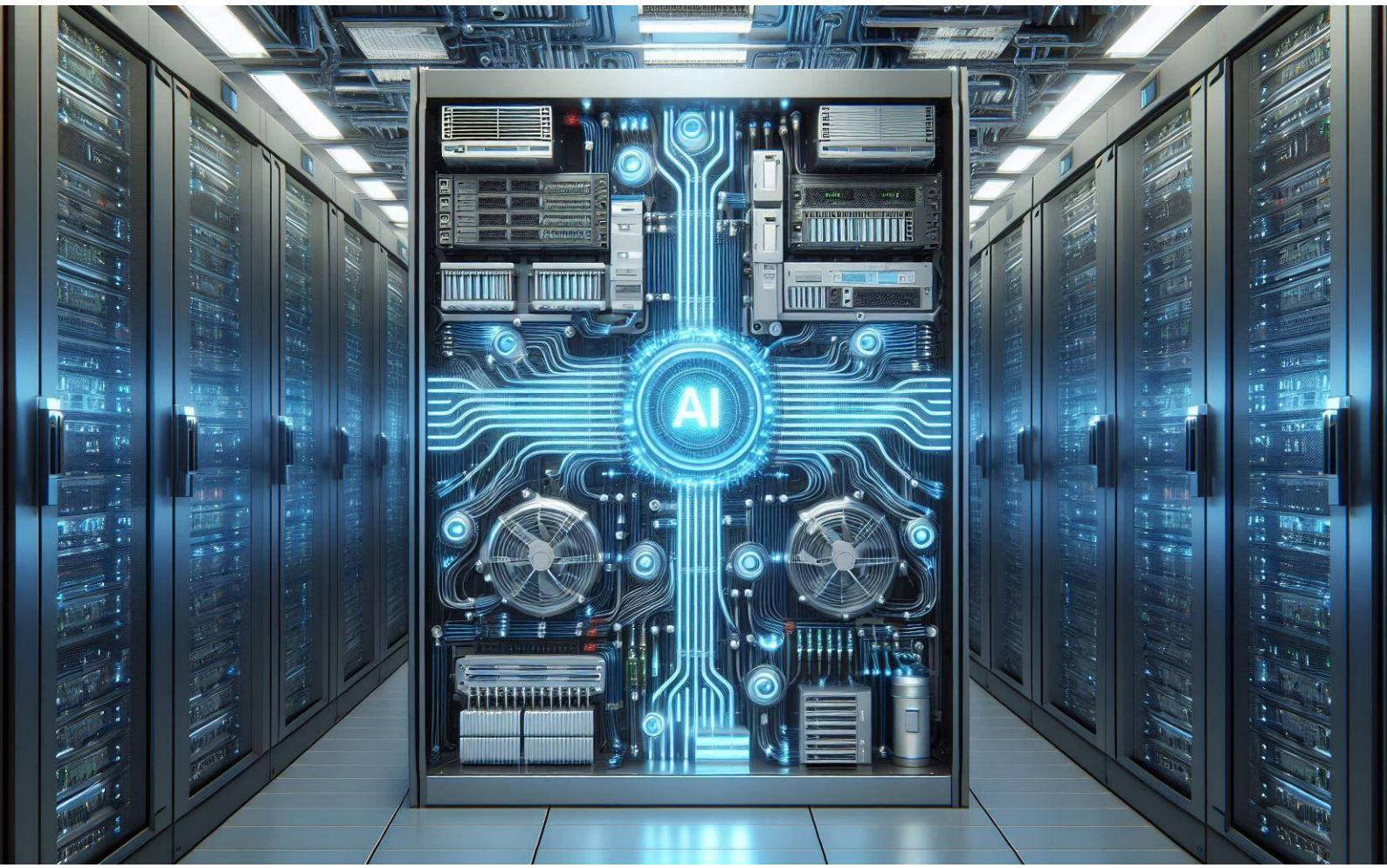

ABOVE
THE
STANDARD
ABRA

The world depends on data; We power and cool it. From a simple swipe, to life-changing medicines. From push notifications to generative AI.

Where there's data, there's ABRA. Powering its potential. From pioneering precision cooling, to ABRA's leadership in critical infrastructure.

And the more data created, the more ABRA technology is needed. From supercomputers powering artificial intelligence, to modular data centers enabling fast-track deployment.

We're powering the potential for tomorrow's breakthroughs. ABRA's scale and innovation is accelerating the industry. From empowering what data needs now, to cooling where data goes next. As AI heats up, leading chip makers turn to us to keep them cool. What's next?



A sustainable digital future enabled by ABRA. Join us at the edge of innovation, supercharging data's next move.

Because the best way to predict the future, is to power it.

Introduction

Proper cooling is crucial to the operation of IT equipment, including servers, storage, and networking devices. As more companies undergo digital transformation, they need edge data centers that include robust, reliable compute resources located close to where data is being generated and processed. Edge computing is the concept of having compute and storage capacity close to where users are generating, consuming and manipulating data. Internet of Things (IoT) applications, for example, involve devices and sensors generating significant amounts of data at the network edge that must then be processed. Legal requirements, the need for local data consolidation and, above all, the high network costs, latency and network security lead to an enormous growth in decentralized IT, the edge applications. The latency involved in sending it to a centralized or cloud data center is too long, driving the need for localized processing capabilities. Healthcare, factory floor machine control and "smart city" applications including autonomous vehicles are just a few examples of applications driving demand for edge computing and, hence, edge data centers.

Office Environments and Comfort Cooling

The typical office environment uses room-based cooling systems provided by building heating, ventilation and air conditioning (HVAC) systems or de-centralized mini-split cooling systems. In centralized building HVAC systems, the cool air enters the space through vents in the ceiling or floor, while warm air is funneled back to the cooling system through a separate return duct. In de-centralized cooling systems extensive ductwork is not needed because the air conditioner is located in the cooled space on or near an outside wall. While this setup works fine in general, as any office worker knows, some areas may be warmer or cooler than others, especially with the centralized HVAC systems. That's a function of the way such systems work, having a single thermometer setting the desired temperature for what may be a fairly large area, such as an entire floor or multiple rooms. But the building's configuration, and the direction that different windows face, may mean some areas warm up more so than others. These differences, however, are not usually large enough to make for uncomfortable, comfort cooling temperatures one way or the other. Putting IT equipment into such a space can change that equation; looking at cooling requirements for office buildings versus data centers helps illustrate why. Cooling capacity is calculated based on the heat load the cooling system needs to handle, typically measured in watts (W) or kilowatts (kW). A typical office HVAC system should have cooling capacity to deal with a heat load in the range of 50 to 150 W per square meter. But a single rack of IT equipment may produce a heat load of up to 7500 watt per square meter.

That is likely to have several repercussions:

- Employees may be uncomfortable as the system struggles to maintain a target temperature, especially in the areas closest to where the IT rack sits
- IT equipment such as servers often have thermal protection systems that trigger a shutdown if the temperature rises too high, causing disruptive downtime and raising the potential for lost and corrupted data
- Continually taxing the HVAC system to operate above its rated cooling capacity will drive up operating costs, over the long-term

Another issue with typical office buildings is humidity. Office HVAC systems aren't designed to hold a constant level of humidity. With doors and potentially windows opening and closing all the time, humidity levels can constantly change depending on conditions outside. The HVAC system will only keep humidity in check at a general level, as a function of providing comfortable heating and cooling, not at exact levels. That may not be good enough for IT equipment, which is highly susceptible to changes in humidity. High humidity can cause condensation and water droplets to form on metal surfaces, eventually leading to corrosion. On the other hand, low humidity can cause static discharge from IT equipment, which may result in damage to electronics such as hard drives. Similarly, dust is the enemy of IT gear. That's why purpose-built data centers have air filtration systems that remove dust and other particulates from the air. In an office environment, dust will naturally accumulate on any surface that's not at least occasionally cleaned, including inside servers and other IT equipment. Over time, this accumulation could impede proper functioning of the equipment.

IT Cooling Options for Office Environments

Companies have two general options for overcoming these obstacles and providing proper cooling for IT equipment installed in an office environment:

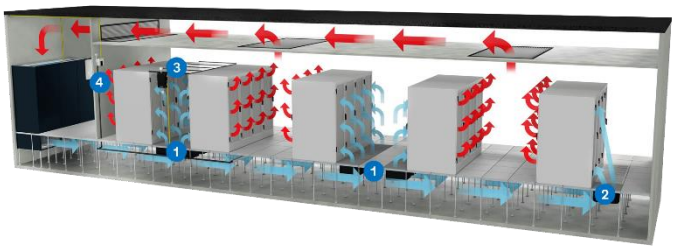
- Dedicated room cooling
- Spot-cooling
- Rack-cooling
- Row-cooling

In either case, a key consideration is the equipment footprint.

Companies typically have limited space to dedicate to IT equipment in the first place, often carving it out of space previously dedicated to another purpose. Air cooling systems for such spaces need to be designed to take up as little floor space as possible.

Dedicated Room Cooling

One option is to take a defined amount of space and turn it into a room dedicated to IT equipment, often called a server room. You can then install a cooling system dedicated to the sole purpose of cooling the IT equipment in that room.



Such a system can address the shortcomings of the building HVAC system, including humidity control and particulate filtration. Multiple options exist, enabling companies to choose one that best fits their exact situation.

For cooling the entire room, the two main options are floor-mounted and ceiling-mounted cooling units. In either case, these are typically split systems provided by DX or chilled water that mounted in the IT facility, which are called In-Room systems.

Spot Cooling

However, in edge facilities especially, it's not always possible or practical to create a dedicated server room and some users need to install the IT equipment directly in the office space. In such cases, spot cooling is a good option, with options falling into two general categories: rack- and row-based cooling.

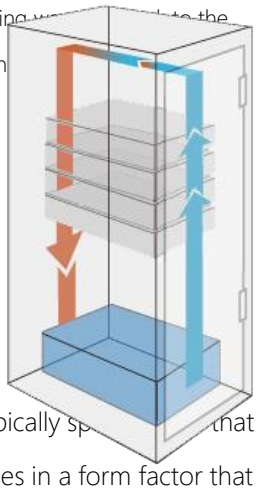
Rack cooling systems can be installed in a perforated door rack or a two-post rack without a door. Such systems also provide some room cooling, making them more suitable for dedicated server rooms or network closets. The systems typically have cooling capacity of about 2-4 kW per rack.

Rack-based Cooling

Rack-based cooling is good for smaller installations of just one or two racks of IT equipment. It involves a cooling system that's integrated directly into the rack and cools only that rack.

The racks can be enclosed, or contained, such that the cool air doesn't get dispersed into the room. This is a good option in office installations because it separates IT cooling from office cooling, so they do not impact each other. IT cooling won't make it uncomfortably cool for people in the office, and the warmer office air won't hinder the effectiveness of the IT cooling system.

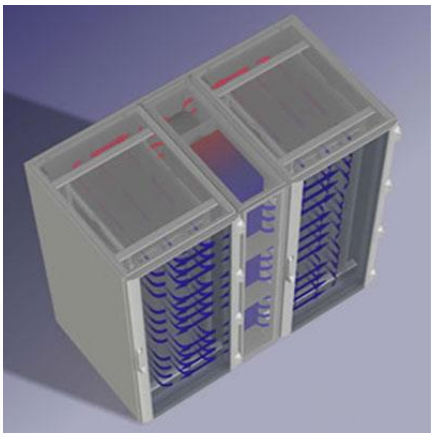
A rack-based system has a self-contained unit that disperses cool air to the IT load, then circulates the resulting w[illegible] to the cooling unit. Enclosed Rack Cooling Does not require dedicated server room. It can be installed in office or in



Row-based Cooling

For applications with more than one rack, another option is row-based cooling. These are typically sp[illegible] that use an outdoor condenser unit and an indoor evaporating unit. The indoor component comes in a form factor that enables it to fit seamlessly into an IT rack, with the ability to cool several racks in the row.

Row systems can also be contained, similar to enclosed rack systems so that the IT cooling air is circulated only inside of the racks and not discharged into the room. This configuration is ideal for users that don't have a dedicated server room but need to have more than two racks installed in an office space.
Here again, an open version with perforated rack doors is available as well and is used mainly in dedicated server rooms.



Row-based systems disperse cool air through the front of server rows and send warm air out the back, typically to an outdoor condenser unit where it is cooled again. They can be configured as fully contained systems or with perforated doors for room cooling.

One of the benefits of row-based cooling is it's installed close to the IT equipment, which allows for short air paths and quick system reactions to changing heat loads. The system continuously adjusts its cooling capacity and airflow to match the actual server load at any given time. This helps to keep operating costs low by giving the IT equipment only the cooling capacity it needs. Some systems can monitor temperatures of up to 10 different racks and adjust their cooling performance to make sure each rack is getting enough cold air. Such a capability makes these systems a good fit for applications with varying levels of server density.

Heat Rejection Options

As the cooling system cools the room, it removes the heat from that space, and this heat has to go somewhere. There are several options available for how the heat can be rejected, and each application may require different heat rejection types, like the popular methods of air, water, and refrigerant. This may dictate which cooling system is the best match for a given space.

One simple way of heat rejection is through the existing duct system in a building. This is a viable option for smaller rack-based cooling systems that generally produce a relatively small amount of warm air if a building duct system is available and suitable for it. Unfortunately, in many situations this is not the case.

Row- and room-based systems require a different approach since their cooling capacities are bigger, and consequently, they also remove more heat from the room. The existing building duct system would not have the capacity to absorb all this rejected heat. Therefore, these systems always consist of an indoor and outdoor unit connected with two pipes. Depending on heat rejection type, there can be either refrigerant or water flowing in these pipes between indoor and outdoor units.

Direct expansion (DX) systems use refrigerant to transport the heat removed by the indoor unit into the outdoor unit called the condenser, where it is rejected into the ambient air. A DX System is a practice used most commonly with home air conditioning systems.

Chilled water systems use water to transport the heat removed by the indoor unit. The chilled water type of indoor unit is connected to an outdoor chiller plant. The Chiller plant removes the heat from the water, cools it, and sends it back into the indoor unit, which uses it to cool the room. Chilled water systems are typically used in applications with higher heat loads because a single chilled water row-based indoor unit can provide from 30 to 60kW of cooling capacity. In practice, most companies would not build a chiller plant for small sites since it's quite expensive. Therefore, for smaller locations, DX systems are typically preferred.

Uncontrolled Environments

Aside from office environments, many companies need to install edge data centers on factory floors, in manufacturing facilities, and in warehouses that have widely varying environmental characteristics.

Any warehouse faces challenges in maintaining a constant temperature since they aren't usually well-insulated. Depending on geographic region, that can lead to excessive heat or cold inside the facility. Facilities located in regions with changing seasons will see wide fluctuations in terms of temperature from hot to cold and back again. Humidity is likewise an issue for all the same reasons, especially in facilities with no ambient air control system in place.

Uncontrolled environments are also likely to be far dustier than offices, and less likely to have any particulate filtration system in place. Dust combined with high humidity can be quite harmful to IT equipment, as the humidity will make particles stick to IT equipment and potentially clog up the filters meant to protect gear such as servers and data storage systems.

Cooling Options

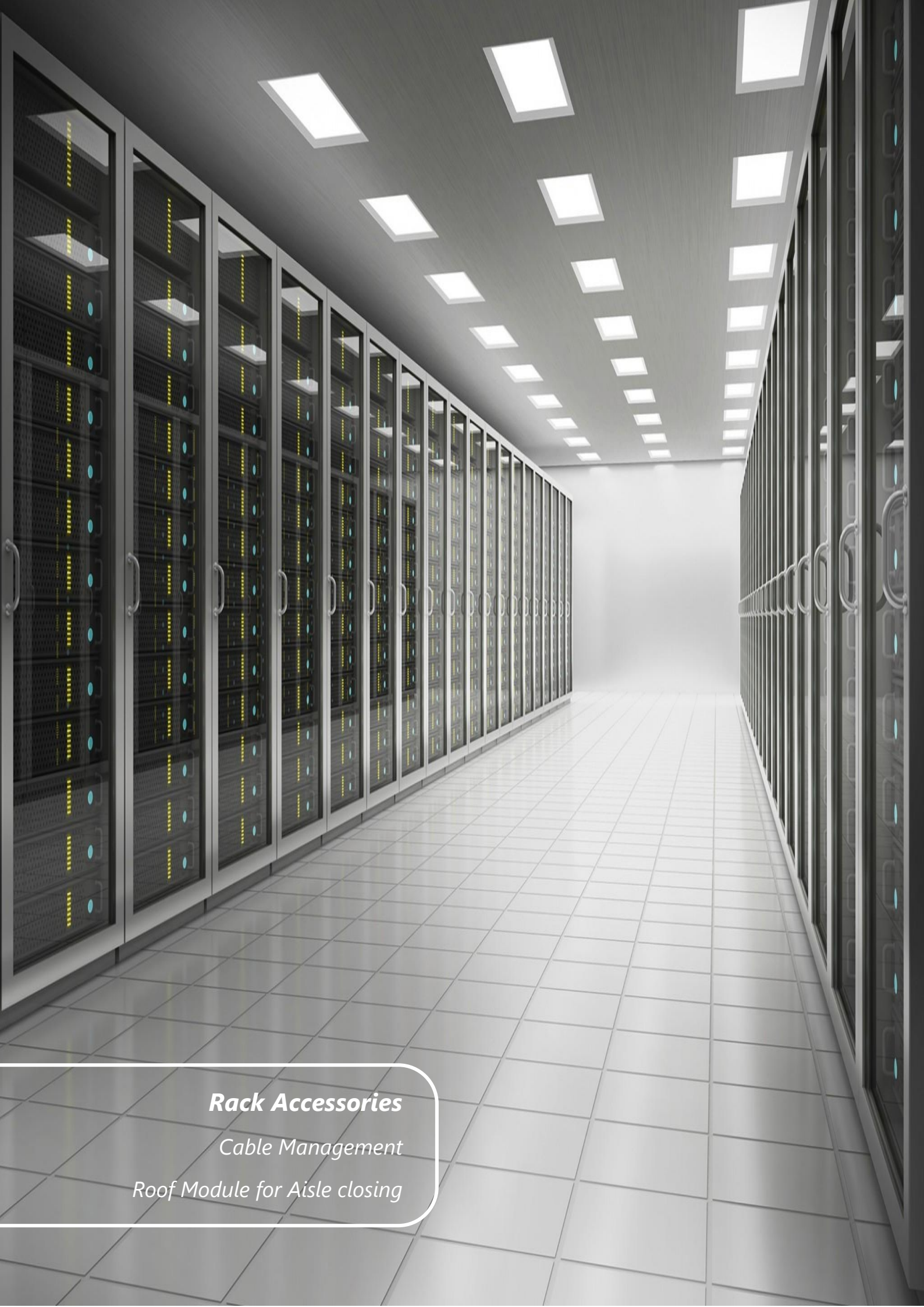
Theoretically, all the same cooling systems that apply in an office environment can also be used in uncontrolled environments, but most customers favor an approach that involves a sealed rack, which means rack- or row-based cooling.

The reason is simple: such self-contained systems essentially seal off the IT equipment from the outside air. That protects the equipment from dust and humidity, while enabling the company to tightly control the temperature of the racks.

The key is to look for a system with a high Ingress Protection (IP) rating as defined in the International Electrotechnical Commission (IEC) 60529 specification, which covers mechanical and electrical enclosures intended to protect against intrusion, dust and water. An IP54 rating, for example, means an enclosure offers strong protection against dirt, dust, oil, and splashing water, all enemies of IT equipment.

With such an enclosure, the IT equipment is isolated from the environment in which it's installed. Combined with a rack- or row-based cooling system, companies can tightly control the temperature of the IT equipment while also protecting it from its potentially harsh surroundings.

Such a setup can also be highly efficient since IT equipment can withstand far higher temperatures than what is comfortable for humans. For example, the latest guidance from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) says 87 percent of server models are safe to operate at 35 degrees Celsius (95 degree Fahrenheit). Operating the IT cooling system at or near that level would save significant sums on cooling costs versus using a temperature closer to the comfort level for humans.



Rack Accessories

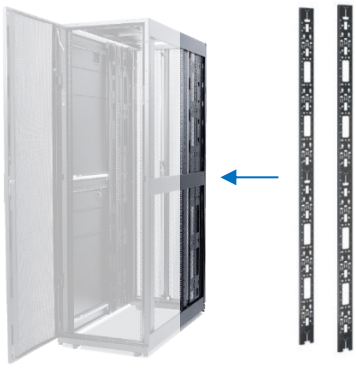
Cable Management

Roof Module for Aisle closing

Cable Management

Vertical Cable Management

Every ASR enclosure contains zero-U accessory channels in the rear of the rack. Use these to toollessly mount vertical rack PDUs and vertical cable organizers.



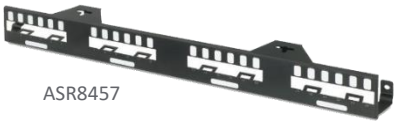
Model	Description
ASR1	Vertical 0U accessory channel, 42U, 2 pack
ASR2	Vertical 0U accessory channel, 48U, 2 pack
ASR3	Vertical 0U accessory channel, 52U, 2 pack

ASR8443A

ASR7721

Model	Description	Features
ASR8442	Vertical cable organizer, eight cable rings, 0U	Supports 35 to 55 CAT 6/CAT 6A data cables Mounts toollessly on the vertical 0U accessory channel
ASR8443A	Vertical fiber organizer	Installs toollessly Takes up one bay of channel Fiber spool only kit available (ASR8444)
ASR8457	Data distribution 0U SX panel	Installs toollessly Takes up one bay of channel Toollessly mounts up to four DDC cable heads, 24 ports for rack-to-rack connections
ASR7710	Cable containment brackets with rack PDU mounting	Low-profile vertical cable management Supports 60 to 90 CAT 6/CAT 6A data cables Mounts toollessly on the vertical 0U accessory channel
ASR7711	Zero-U accessory bracket	Mounts rack PDUs in rear-facing orientation Supports third-party accessories in numerous mounting configurations Mounts 1U or 2U patch panels or other networking accessories
ASR8621	Hook-and-loop cable managers, 10 pack	Secures and bundles cables with hook-and-loop ties Mounts toollessly on the vertical 0U accessory channel
ASR7721, 22, 23	Low-profile vertical cable managers, zero U	Supports up to 38 CAT 6A or 251 fiber cables Mounts toollessly on the vertical 0U accessory channel

ASR8444



ASR8457

ASR7711

ASR8621

Model	Description
ASR7580A	High-capacity vertical cable manager for Rack 30 in. wide enclosures (ASR3x5x) supports 190 to 250 CAT 6A/CAT 6 data cables per section and 190 CAT 6A per channel section.
ASR7581A	Hinged covers for ASR7580A vertical cable managers.

ASR7710

ASR8442

Finger-type Horizontal Cable Managers

Cable managers for patching and crossover applications featuring smooth radius plastic fingers that protect the cable from kinking and binding. Hinged, snap-on covers provide a clean look and retain large cable bundles. These cable managers include hardware for double-sided configurations with two units.

Model	Description
ASR8602A	1U horizontal cable manager with 4 in. (101 mm) fingers and snap-on cover
ASR8600A	2U horizontal cable manager with 4 in. (101 mm) fingers and snap-on cover
ASR8612	1U horizontal cable manager with 6 in. (152 mm) fingers and snap-on cover
ASR8606	2U horizontal cable manager with 6 in. (152 mm) fingers and snap-on cover
ASR8603A	2U horizontal cable manager with 6 in. (152 mm) fingers, snap-on cover, rear cable pass-through holes and slots for ASR8008BLK/ASR8016ABLK horizontal cable channel
ASR8605	3U horizontal cable manager with 6 in. (152 mm) fingers, snap-on cover, rear cable pass-through holes and cable channel slots

Model	Description
ASR8425A	1U horizontal cable manager with four rings
ASR8426A	2U horizontal cable manager with four rings
ASR8428	2U horizontal cable manager with four rings and pass-through holes
ASR8427A	2U horizontal cable manager with multiple rings and small cable retainers
ASR8113A	Cable management rings, 10 pack (5 large, 5 small)
ASR7707	Cable management rings, 8 in. (203 mm) deep for 30 in. (750 mm) wide enclosures (ASR3x5x), 8 pack

Model	Description
ASR8429	1U cable pass-through manager with brush strip
ASR8129	Cable management arm for use with sliding shelves
ASR8008BLK	Horizontal cable side channel, 18 in. (457 mm) to 30 in. (750 mm) adjustment, for routing cable front-to-back between the standard wide rack mounting rails
ASR8016ABLK	Horizontal cable side channel, 10 in. (254 mm) to 18 in. (457 mm) adjustment, for routing cable front-to-back between the standard wide rack mounting rails
ASR7706	Mounting rail brush strips for 30 in. (750 mm) wide enclosures (ASR3x5x), 6 pack

ASR8603A

ASR8605

ASR8606

ASR8425A

ASR8426A

ASR8428

ASR8427A

ASR8113A

ASR7707

ASR8129

ASR8429

Rack enclosures allow you to use a system of troughs and partitions for routing power and data cables across the top.

These troughs and partitions:

- Reduce the need for expensive suspended cable tray systems
- Install toollessly with snap-in tabs and have standard attachment points for cable ladder systems

1. Power cable trough

- Supports power distribution cables
- Provides separation from data cables
- Data cables pass through underneath to front partitioned area

Model	Description
ASR8561	Cable trough, 24 in. (600 mm) enclosures
ASR8571	Cable trough, 30 in. (750 mm) enclosures

2. Solid data cable partition

- Partitions the top of the enclosure into cable routing areas
- Solid face provides clean appearance at the front of the enclosure

Model	Description
ASR8163ABLK	Pass-through data partition, 24 in. (600 mm) enclosures
ASR8173BLK	Pass-through data partition, 30 in. (750 mm) enclosures

ASR8561

ASR8162ABLK

ASR8163ABLK

ASR8186

4. Cable ladders and accessories

- Cable ladders and attachment kits for routing power and data cabling overhead from rack to rack

Model	Description	Model	Ladder Accessories
ASR8164ABLK	Cable ladder, 6 in. (152 mm) (AR8164AKIT 6 in. ladder with attach kit)	AR8461	Ladder corner clamp
ASR8165ABLK	Cable ladder, 12 in. (304 mm) (AR8165AKIT 12 in. ladder with attach kit)	AR8462	Ladder angle clamp
ASR8576	Alternate mounting — ladder to power troughs	AR8463	Ladder stacking
ASR8177BLK	Alternate mounting — ladder to data partitions	AR8465	Ladder wall termination
ASR8168BLK	Ladder to NetShelter SX roof	AR8169	Ladder clamp kit
ASR8186	Ladder elevation bracket	-	-
ASR8460	Ladder to two-post rack	-	-

3. Pass-through data cable partition

- Partitions the top of the enclosure into cable routing areas
- Pass-through hole provides cable access into multiple cable areas

Model	Description
ASR8162ABLK	Solid data partition, 24 in. (600 mm) enclosures
ASR8172BLK	Solid data partition, 30 in. (750 mm) enclosures

Shelving

Fixed and sliding shelves to enable the mounting of tower units, monitors and other equipment.

Model	Description
ASR8105BLK	Fixed shelf, 50 lb. (22 kg)
ASR8122BLK	Fixed shelf, 250 lb. (113 kg)
ASR8123BLK	Sliding shelf, 100 lb. (45 kg)
ASR8128BLK	Sliding shelf, 200 lb. (90 kg)
ASR8422	Double-side fixed shelf for two-post rack
ASR8126ABLK	17 in. (431 mm) sliding keyboard shelf

ASR8105BLK

ASR8122,28BLK

ASR8126ABLK/
ASR8127BLK

ASR8422

Bolt-down and Stabilization

Stabilization plates and hardware to prevent tip over in stand-alone rack applications and meet specific anchoring requirements.

Model	Description
ASR7700	Rack stabilization plate to prevent tipping when sliding out equipment
ASR7701	Rack bolt-down kit, meets IBC seismic requirements for moderate seismic zones
ASR7701-S	Rack bolt-down kit, meets IBC seismic requirements for high seismic zones

ASR7701 and
ASR7701-S

ASR7700

Miscellaneous Mounting Brackets

Variety of mounting brackets for mounting IT equipment.

Model	Description
ASR7711	0U multipurpose accessory mounting bracket for side mounting of 1U/2U products and rack PDUs
ASR8150BLK	23 in. (584 mm) to 19 in. (482 mm) mounting adapter brackets for use with ASR7510 23 in. (584 mm) EIA mounting rails

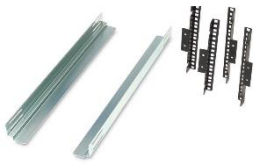
ASR7711

ASR8150BLK

Hardware Kits

Available for additional hardware to accommodate equipment mounted in varying mounting options.

ASR8100



ASR8006A

Model	Description
ASR8100	M6 cage nuts and screws, 32 pack
ASR8400	#12-24 screws, 100 pack
ASR8005	#10-32 cage nuts, 36 pack

Replacement Doors, Side Panels, Roofs

Standard doors, side panels and roofs are available for all enclosure sizes.

Specialty Roofs, Side Panels and Accessories

Model	Description
ASR7252	Networking roof for high density cabling, 30 in. (750 mm) wide x 42 in. (1070 mm) deep
ASR7716	Networking roof for high density cabling, 30 in. (750 mm) wide x 42 in. (1070 mm) deep
ASR7215	NetShelter AV enclosure top mount conduit access adapter
ASR7209	Open roof support bridge for overhead troughs and partitions
ASR7305A	NetShelter SX pass-through side panel, 42U x 42 in. (1070 mm) deep
ASR7313	NetShelter SX pass-through side panel, 42U x 47.5 in. (1200 mm) deep
ASR7315	NetShelter SX pass-through side panel, 45U x 42 in. (1070 mm) deep
ASR7316	NetShelter SX pass-through side panel, 45U x 47.5 in. (1200 mm) deep
ASR7375	NetShelter SX pass-through side panel, 48U x 42 in. (1070 mm) deep
ASR7314	NetShelter SX pass-through side panel, 48U x 47.5 in. (1200 mm) deep
ASR7714	Replacement snap-in brush strips for SX roofs
ASRCF501	Roof fan for 24 in. (600 mm) wide x 42 in. (1070 mm) deep enclosures, 120 Vac
ASRCF502	Roof fan for 24 in. (600 mm) wide x 42 in. (1070 mm) deep enclosures, 208–230 Vac
ASRCF503	Roof fan for 30 in. (750 mm) wide x 42 in. (1070 mm) deep enclosures, 120 Vac
ASRCF504	Roof fan for 30 in. (750 mm) wide x 42 in. (1070 mm) deep enclosures, 208–230 Vac
ASRCF505	Roof fan for NetShelter AV 24 in. (600 mm) wide x 32.5 in. (825 mm) deep, 115 Vac
ASR8132A	Combination lock handle for NetShelter SX enclosures, 2 pack

ASR7252/ASR7716

ASR7209

ASR7714

ASRCF503

ASR7215

Mounting Rails

Vertical EIA rail mounting kits for different widths and depths.

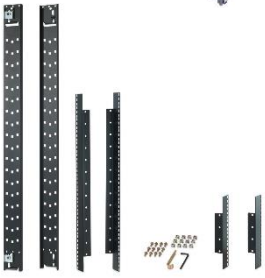
Model	Description
ASR7252	Networking roof for high density cabling, 30 in. (750 mm) wide x 42 in. (1070 mm) deep

ASR7510

Recessed Rail Kits

Intermediate mounting rails for supporting shallow-depth equipment.

Model	Description
ASR7252	Networking roof for high density cabling, 30 in. (750 mm) wide x 42 in. (1070 mm) deep
ASR7716	Networking roof for high density cabling, 30 in. (750 mm) wide x 42 in. (1070 mm) deep
ASR7215	NetShelter AV enclosure top mount conduit access adapter
ASR7209	Open roof support bridge for overhead troughs and partitions



ASR7503

Roof Module for Aisle closing

Light Box

Model	Description
ASR4410	Width: 300 mm
ASR4420	Width: 375 mm
ASR4430	Width: 400 mm
ASR4440	Width: 600 mm

Open Fire Roof Module

Model	Description	Features
ASR4110	Width: 300 mm	Fix Aisle width: 1200 mm
ASR4120	Width: 375 mm	Fix Aisle width: 1500 mm
ASR4130	Width: 400 mm	Fix Aisle width: 1600 mm
ASR4210	Width: 300 mm	Flexible ±200 mm Aisle width: 800 mm
ASR4220	Width: 375 mm	Flexible ±200 mm Aisle width: 1000 mm
ASR4230	Width: 400 mm	Flexible ±200 mm Aisle width: 1200 mm

Tunnel Roof

Model	Description	Features
ASR4310, 11	Width: 300 mm	"L" series - "U" series Aisle width: 1200 mm
ASR4320, 21	Width: 375 mm	"L" series - "U" series Aisle width: 1500 mm
ASR4330, 31	Width: 400 mm	"L" series - "U" series Aisle width: 1600 mm

Blind Aisle Closure Panel

Back panel in painted sheet metal for aisle closing, supplied with screws and fixing brackets.

Model	Description	Features
ASR4510, 11	Aisle width: 800 mm	Height: 42 mm, 47 mm
ASR4520, 21	Aisle width: 1000 mm	Height: 42 mm, 47 mm
ASR4530, 31	Aisle width: 1200 mm	Height: 42 mm, 47 mm
ASR4540, 41	Aisle width: 1500 mm	Height: 42 mm, 47 mm
ASR4550, 51	Aisle width: 1800 mm	Height: 42 mm, 47 mm

Upper Front/Rear Perimeter Closing Panel

Front/rear containment plate for the installation of a 150-mm high polycarbonate roof.

Model	Description	Features
ASR4610	Aisle width: 300 mm	Height: 150 mm
ASR4620	Aisle width: 600 mm	Height: 150 mm
ASR4630	Aisle width: 800 mm	Height: 150 mm

Upper Side Perimeter Closing Panel

Side containment plate for the installation of a 150 mm high polycarbonate roof.

Model	Description	Features
ASR4710	Aisle width: 1000 mm	Height: 150 mm
ASR4720	Aisle width: 1200 mm	Height: 150 mm

Manual Aisle Door

Symmetrical opening of the two doors fixed to a dedicated rail. The doors are opened from the outside using handles, with the possibility of installing a lock with a key. The doors have a safety opening system with unlocking from the inside in case of emergency.

Model	Description	Features
ASR4800, 01	Aisle width: 800 mm	Height: 42 mm, 47 mm
ASR4810, 11	Aisle width: 1000 mm	Height: 42 mm, 47 mm
ASR4820, 21	Aisle width: 1200 mm	Height: 42 mm, 47 mm
ASR4830, 31	Aisle width: 1500 mm	Height: 42 mm, 47 mm
ASR4840, 41	Aisle width: 1800 mm	Height: 42 mm, 47 mm

Automatic Aisle Door

Sliding doors can be supplied with an automatic opening device.

Model	Description	Features
ASR4850, 51	Aisle width: 800 mm	Height: 42 mm, 47 mm
ASR4860, 61	Aisle width: 1000 mm	Height: 42 mm, 47 mm
ASR4870, 71	Aisle width: 1200 mm	Height: 42 mm, 47 mm
ASR4880, 81	Aisle width: 1500 mm	Height: 42 mm, 47 mm
ASR4890, 91	Aisle width: 1800 mm	Height: 42 mm, 47 mm

ABRA

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