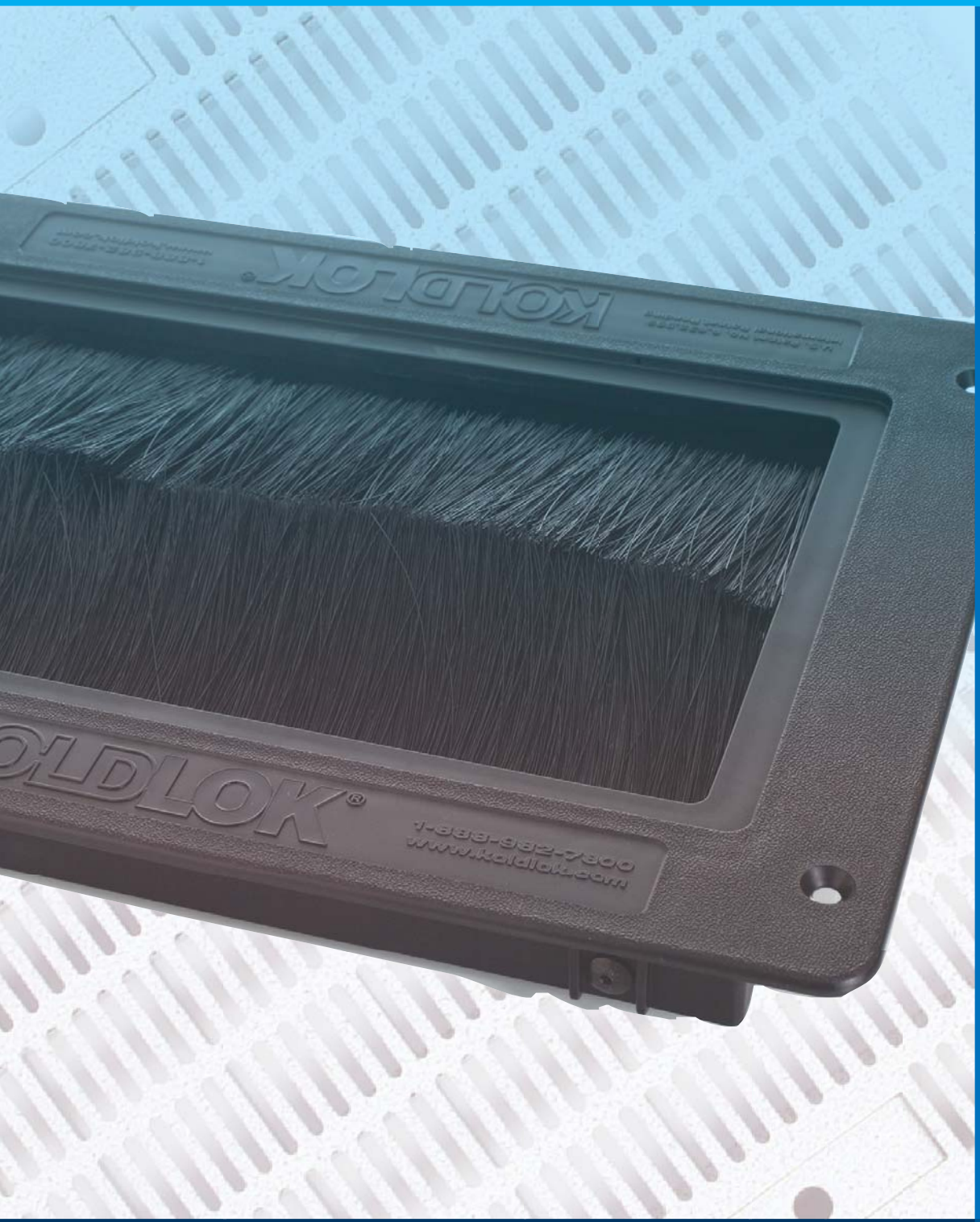
edp
Engineered Data Products



Intelligent Airflow & Environmental Solutions For Data Centres

KOLDLOK®

Raised Floor Grommets

With today's servers generating more heat output, keeping the data centre cool and operating efficiently is a major consideration. These heat generating servers are often packed into smaller footprints that require more cooling capacity. Additional cooling capacity typically comes from adding more cooling units, which is expensive. A better solution is to reclaim lost cooling capacity before adding more. This can be achieved by sealing unmanaged openings that are wasting cold air and ensuring cold air is directed to where it is needed most - **Cooling Your Servers.**

Poorly cooled data centres often suffer from hotspots that can lead to equipment failure. Also, cooling equipment may not be working as efficiently as it could. KoldLok offer a range of specially designed raised-floor grommets to seal cutouts within the raised-floor and stop cold air from escaping, whilst still allowing cables to pass through. The KoldLok raised-floor grommets are static disappative and prevent static discharges being carried up the cables. By sealing cutouts within the raised-floor, cooling of the data centre environment is drastically improved.

Cooling in the data centre can be made more efficient by:

- Sealing all unnecessary air escape routes. This will increase under-floor static pressure and reduce bypass air.
- Removing any perforated tiles that are in the hot aisle. Having perforated tiles in hot aisles reduces the effectiveness of the cooling units due to latent cooling.
- Latent cooling also causes a reduction in the humidity within the data centre, which in turn can affect the performance of your servers, which may require you to continually re-humidify.
- Switching to a proper Hot Aisle/Cold Aisle configuration with sufficient underfloor pressure and minimal bypass air will maximise the room's cooling efficiency. It will also reduce the risk of hot exhaust air from one cabinet flowing into the air intake of adjacent cabinets.

By sealing each cable cutout you will save about 2kW of cooling.

Patented Sealing System:

(U.S. Patent No. 6,632,999 & International patents pending)

Multi layer, opposing and interwoven filaments consisting of:
- 0.010" diameter upper filaments
- 0.020" diameter lower filaments
- Approximately 25,000 filaments per Grommet
- Static dissipative properties
- Premium-grade nylon Type 6 ensuring flexibility and self-sealing recovery
- Ensure passage of 100 amp power connector

"As we have closed cable openings with KoldLok Grommets, temperatures have gone down by nearly 10°F and demand on our air handlers has dropped. Where we have implemented KoldLok, we have probably cut bypass airflow in half."

Data Center Technician
Major Semiconductor Manufacturer

KoldLok Integral Raised Floor Grommets

46-1000-1010
Integral KoldLok

KoldLok Integral Raised Floor Grommets are designed to seal openings in new raised floor cutouts prior to the installation of communications or power cabling.

Features of KoldLok

- Double layer of static dissipative filaments, where the thicker under layer filaments support the top layer
- The grommets integrate with the raised floor static dissipation system, providing 1 GigaOhmn of resistance
- The grommets contain no loose or partially fastened parts, which can become separated or fall through the raised floor
- The grommets are impact resistant and durable

46-1000-3030
Split Integral KoldLok

Cost-effective Benefits of KoldLok

- Increases existing cooling unit capacity
- Reduces the need to purchase additional cooling units
- Improves equipment reliability and extends equipment life
- Increases static pressure under the raised floor and improves cool air delivery through perforated tiles and floor grates
- Facilitates Cold Aisle / Hot Aisle best practices

KoldLok Surface Raised Floor Grommets

46-2000-2020
Surface KoldLok

KoldLok Surface Raised Floor Grommets are designed to seal a variety of existing raised floor tile cutouts and allow flexibility of removing tiles without capturing cables. The Surface L and Surface XL feature additional metal plates that allows them to seal larger openings

Grommet Frame

- The frame is molded from durable polypropylene
- The frame consists of two, interlocking halves

46-2000-2030
Surface L KoldLok

Floor Mounting System

Custom adhesive mounting kit consisting of:
- Single-sided, pressure sensitive foam with adhesive backing
- Double-sided, pressure sensitive foam with adhesive backing
- Polyethylene foam buttons for static dissipation
- All foam components are non-particulating

46-2000-2040
Surface XL KoldLok

Sealing Effectiveness

- 100% bypass-airflow sealing in areas undisturbed by cable penetrations at static pressures up to 0.10 inches of water column
- 100% bypass-airflow sealing with four ½" (13mm) cables penetrating the grommet at the static pressure required to cool up to 3kW/cabinet
- 96% bypass-airflow sealing with four ½" (13mm) cables penetrating the grommet at a static pressure of 0.10 inches of water column

KoldLok Extended Raised Floor Grommets

46-4000-10013
6" (152mm) Extended KoldLok

46-4000-10012
3" (76mm) Extended KoldLok

KoldLok Extended Raised Floor Grommets are designed to seal a variety of existing perimeter openings, with the added flexibility of modification for large and unique openings

Grommet Features

- Two models available: One with 3" (76mm) filaments, the other with 6" (152mm) filaments
- Universal design fits both 24" and 610mm tiles
- Black anodized aluminium alloy filament holder that can be disassembled for custom modification

Floor Mounting System

Standard self-tapping screws or custom adhesive mounting kit consisting of:
- Double-sided, pressure sensitive foam with adhesive backing
- Polyethylene foam pads for static dissipation
- All foam components are non-particulating

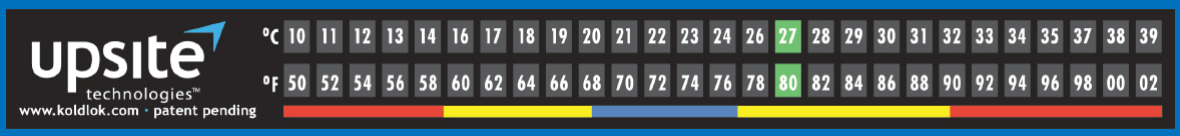
KoldLok Mini Raised Floor Grommets

KoldLok Mini Raised Floor Grommets are designed to seal small, 4"x6" (102mm x 152mm) cable openings. The KoldLok mini is the first fire-rated KoldLok and is positioned at a lower price point. Its single angled brush filaments provide between 95% and 98% effecive sealing from bypass airflow, at a static pressure of up to 0.10 inches of water column, and are available with or without static dissipation.

Grommet Features

- Designed for small 4"x6" (102mm x 152mm) cable openings
- Made with fire-rated resin and filaments that meet UL94 V0 standards
- Smaller size offers flexibility for data centres that have multiple cable openings

KoldLok Temperature Strip



The KoldLok Temperature Strip is a liquid crystal thermometer with an acrylic self-adhesive backing that quickly and accurately measures the air-intake temperature of IT equipment. The Temperature Strip indicates if the air temperature is within acceptable limits based on standards established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and equipment manufacturers.

Range & Limits

- The Strip measures in both Celsius (10°C to 39°C) and Fahrenheit (50°F to 102°F) temperature scales
- Blue area indicates optimal operating range as recommended by ASHRAE
- Yellow area indicates acceptable operating range based on equipment manufacturers' recommendations
- Red area outside acceptable operating range, indicates a definite hotspot above 32°C / 90°F or potential for condensation below 15°C or 59°F, either of which my result in equipment failure

KoldLok Raised Floor Grommets Product Line

46-1000-1010
Integral KoldLok (for New Cut-outs)

- Usable Cable Opening 203mm x 102mm (8″ x 4″)
- Centre Tile Cut-out Dimension 235mm x 172mm (9¼″ x 6¾″)
- Long Edge Tile Cut-out Dimension 235mm x 191mm (9¼″ x 7½″)

46-1000-3030
Integral Split KoldLok (for New Cut-outs)

- Usable Cable Opening 203mm x 102mm (8″ x 4″)
- Centre Tile Cut-out Dimension 235mm x 172mm (9¼″ x 6¾″)
- Long Edge Tile Cut-out Dimension 235mm x 191mm (9¼″ x 7½″)

46-1000-10052
Mini KoldLok (with static dissipation feature)
46-1000-10077
Mini KoldLok (without static dissipation feature)

- Seals Openings up to 102mm x 152mm (4″ x 6″)
- Usable Cable Opening 64mm x 127mm (2½″ x 5″)

46-2000-2020
Surface KoldLok (for Existing Cut-outs)

- Seals Openings up to 254mm x 184mm (10″ x 7¼″)
- Usable Cable Opening 210mm x 102mm (8¼″ x 4″)

46-2000-2030
Surface L KoldLok (for Existing Cut-outs)

- Seals Openings up to 254mm x 248mm (10″ x 9¾″)
- Usable Cable Opening 210mm x 102mm (8¼″ x 4″)

46-2000-2040
Surface XL KoldLok (for Existing Cut-outs)

- Seals Openings up to 254mm x 330mm (10″ x 13″)
- Usable Cable Opening 210mm x 102mm (8¼″ x 4″)

46-4000-10012
Extended KoldLok with 76mm (3″) Filament (for Large Cut-outs)

- Seals Openings up to 610mm x 102mm (24″ x 4″)
- Usable Cable Opening 559mm x 64mm (22″ x 2½″)

46-4000-10013
Extended KoldLok with 152mm (6″) Filament (for Large Cut-outs)

- Seals Openings up to 610mm x 178mm (24″ x 7″)
- Usable Cable Opening 559mm x 140mm (22″ x 5½″)

PLENAFILL®

PlenaFill Blanking Panels

Good practice in the datacentre requires that unused U space is sealed to prevent hot exhaust air from finding its way to the air intake area at the front of the cabinet. PLENAFILL™ Blanking panels are supplied in 27U sheets and can be cut to any required size, avoiding the need to store several sizes of traditional blanking panel. PLENAFILL™ is a proven solution to eliminate Hot Spots and reduce overal cabinet temperatures.

Features

- Pack of 10 PLENAFILL™ Blanking panels equals 270 1.75" (44mm) rack mount U's"
- Fits all 19" EIA server racks
- Fire rated material: ULVO class 94
- Quickly and Easily fill large sections of un-occupied rack space, stopping by-pass air flow
- No more guessing at how many blanking panels are needed
- Scalable / Less Storage Space / Less Freight Cost
- Installs in seconds - no tools required!

PLENAFILL™

Part Number:	49-PF-27U-10
Includes:	10 PLENAFILL™ Blanking panels
Dimension:	47.25" x 19.25" x .040"
	1200mm x 489mm x 1mm
Weight:	Approx. 1.40lbs (0.63Kg) each

Total shipping weight per pack of 10 = 17.5lbs (8Kgs)

49-PF-27U-10 does not include any attachment fastners, which should be ordered additionally.

Server rack manufacturer EIA rail types vary:
Square hole, Round hole, 10/32 threaded, etc.

For a quick tool-less installation the following parts may be ordered separately:

49-PF-BR:
Pack of 50 Black Snap Rivets for square hole rails.

Example of server racks with square hole EIA rails: EDP, SMC, TigerShark, Rittal, USpace, Wright Line, Chatsworth

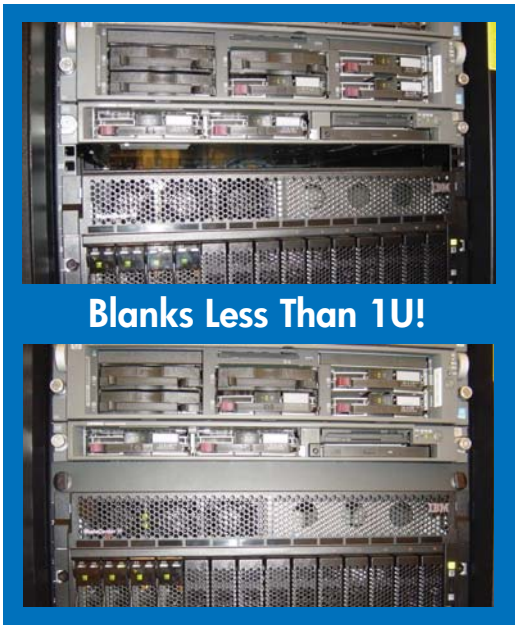
49-PF-PT:
PlenaTool rivet remover designed for removing 49-PF-BR

49-PF-RR:
Pack of 50 Natural Screw Rivets for round hole rails.

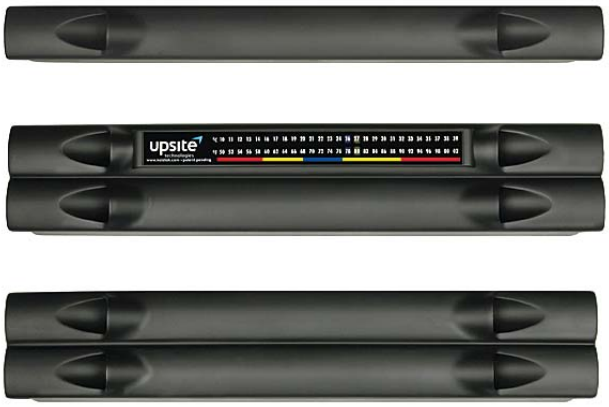
Example of server racks with round hole EIA rails: IBM, SUN

49-PF-TR:
Pack of 50 Thumb Screws for 10/32 threaded rails 3⁄8" (10mm)

Examples: SharkRack Series 2



HotLok Blanking Panels



In a data centre with a conditioned airflow temperature of 72°F (22°C), a series of HotLok Blanking Panels are installed. The consistent temperatures shown on the face and gaps between the panels reveal the highly effective sealing technology.

In a data centre with a conditioned airflow temperature of 72°F (22°C), and a series of non-HotLok Blanking Panels installed, the measured temperature of the heat radiating through the horizontal gaps is 91.5°F (33°C), which is much higher than the ASHRAE - recommended 77°F (25°C).

The HotLok® Blanking Panel is Upsite's latest cost-effective green solution for energy consumption savings and carbon footprint reduction in data centers. It is a next-generation, patent-pending blanking panel that provides a 99+ percent effective seal for both 1U and 2U openings in IT equipment cabinets.

Both 1U and 2U versions, with or without a mounted Upsite™ Temperature Strip, help control hotspots and bypass airflow for optimized cooling effectiveness by preventing hot exhaust air or hot-aisle air from migrating to the air-intake stream at the front of the cabinet. Depending on placement in the cabinet, HotLok Blanking Panels help deliver more cool air to the upper one-third of the cabinet, which is typically the hottest section and most prone to hotspots and equipment reliability problems.

The lightweight plastic unit is ergonomically designed to facilitate fast, easy, safe, tool-free installation and removal. Snap the Blanking Panel into any 19-inch EIA-310-E standard rack opening using the ample, inboard finger grips, designed to prevent injury to fingernails and knuckles. Removal is just as simple.

HotLok Blanking Panels can be used in most cabinets with the following mounting rail openings:

- Square 9.5mm – 3/8th
- Round M5 or 10-32
- Round M6 or 12-24

The Blanking Panels neatly stack 10 high (for 1U openings) and 20 high (for 2U openings) anywhere in the server room, making them readily available for rapid equipment reconfiguration and eliminating the need for particulate-emitting storage containers.

The energy-efficient cantilevered sealing vanes eliminate the gap between adjoining HotLok Blanking Panels or with installed equipment, providing a snug seal and no air leaks.

Priced competitively against available blanking plates, HotLok Blanking Panels offer a cost-effective airflow control solution. Tool-free installation and removal saves on labour costs and energy costs.

All HotLok Blanking Panels are fire-retardant, made of 100 percent recyclable ABS plastic, and RoHS compliant.

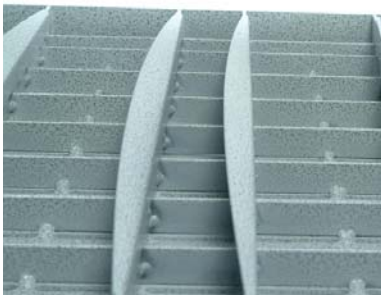
Triad ICE™ Airflow Panel

The Triad ICE™ Airflow Panel is a specially designed floor grille that features a unique Hi-Plume Stratification Fin. This fin increases cooling capacity and lowers server temperatures by 5 - 15 degrees Fahrenheit. The effect of this temperature decrease is an energy consumption drop of 4% for every degree Fahrenheit lowered!

The Triad ICE™ Airflow panel has been created to efficiently direct air to the servers. This cooling tile is designed to cool with as little wasted air as possible. The Uptime Institute tested traditional raised floor cooling and found only 28% of the air coming out of the tile actually goes through the servers. Triad Airflow panels redirect and concentrate the air to the server. This leads to better cooling with less air.

Triad has three performance parameters that can be captured in this temperature testing:

- Removes the short cycle that is prevalent in flat bottom tiles. This lowers the temperature of air coming out of the tile by 2 degrees celsius.
- Disperses the air into the server. This improves the mass flow rate through the server.
- Stratifies to 2.1m / 7' enabling you to cool the upper servers.



The Triad Airflow Panel is Different

The Hi-Plume Stratification Fin is scientifically designed to not only create positive airflow across the entire tile; the curved shape also creates a dispersed pattern of airflow out of the top of the tile. The effect "bends" the air outwardly allowing it to flow into the servers and reach servers at the top of the racks.

Features & Benefits

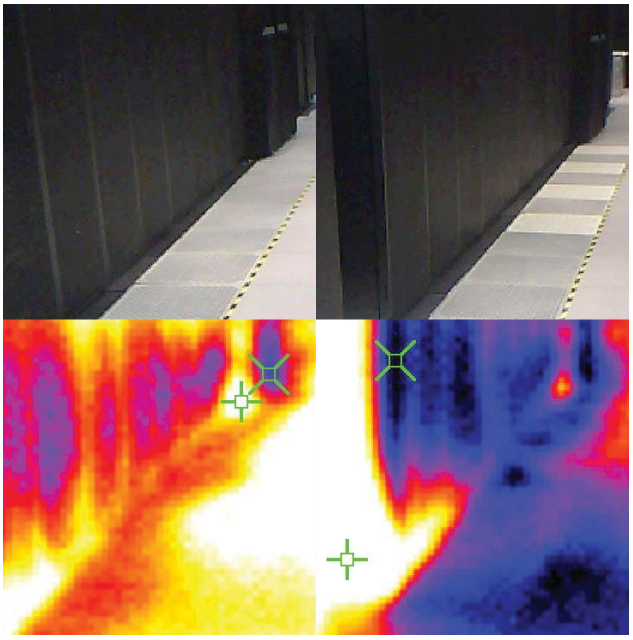
- 600mm x 600mm Heavy duty steel airflow panel with TopSat Leveler.
- Level can be adjusted both vertically and horizontally to allow a flush mount to the existing raised floor.
- Load rating of 680Kg (1,500lbs).
- Dual Lift-n-Lock integrated handles eliminate the need for suction cup lifters.
- Optional dampers and baffles can be fitted for greater airflow control.

TRIAD - More Than Just A Floor Grille

- **Delivers Air To Full Rack Height.**
- **4% Energy Cost Saving for Every Degree Fahrenheit Lowered.**
- **Run CRAC Units More Efficiently.**

Before Installation

This thermal image of a row of racks, shows the amount of heat radiating from the servers despite a full row of 56% open floor grilles.

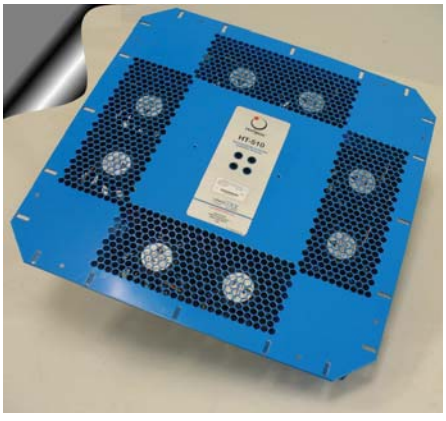


2 Minutes After Installation

In this thermal image just three Triad ICE™ Airflow Panels have been inserted into the row, the results are drastic. After just two minutes the cooling dispersion from the three panels creates a 360° dispersion pattern and a balanced stratification level that reaches the top of the rack.

HotSpotr™ Under Floor Air Mover

HotSpotr™ is a family of powered airflow improvement products that move chilled data centre air to precisely where it is needed the most. Top-of-the-line HotSpotr™ models are thermostatically controlled by the included temperature sensors; less expensive models are operator controlled to run as and when required.



HT-510 Features

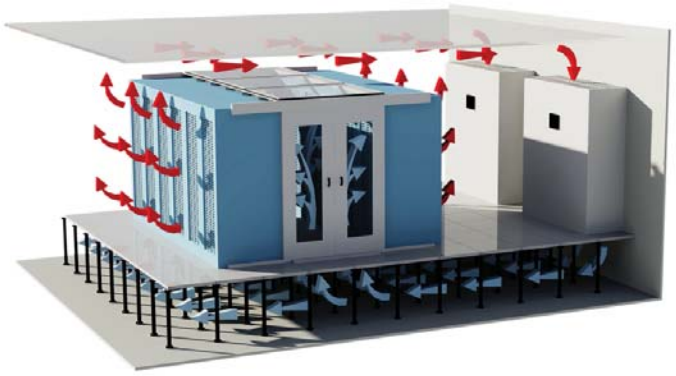
- Underfloor air mover to deliver cold air to server racks
- Supports 10-12KW racks
- Mounts directly to popular grates
- Adaptors for all 24" and 600mm floor and tile types
- Thermostatically controlled to maintain selectable temperatures
- VFD control of fan speed
- EPO option
- Certified to IEC-60950-1
- Ready for A-Cool Network for full "Room Scale Intelligent Cooling"
- All necessary accessories supplied

The HT-510 HotSpotr™ consists of a redundant matrix of high performance DC fans in an aluminum enclosure controlled by an intelligent thermostatic controller. Attached to or mounted underneath a grate or perforated tile; Hotspotr™ delivers cooling air where, when and in the right amount.

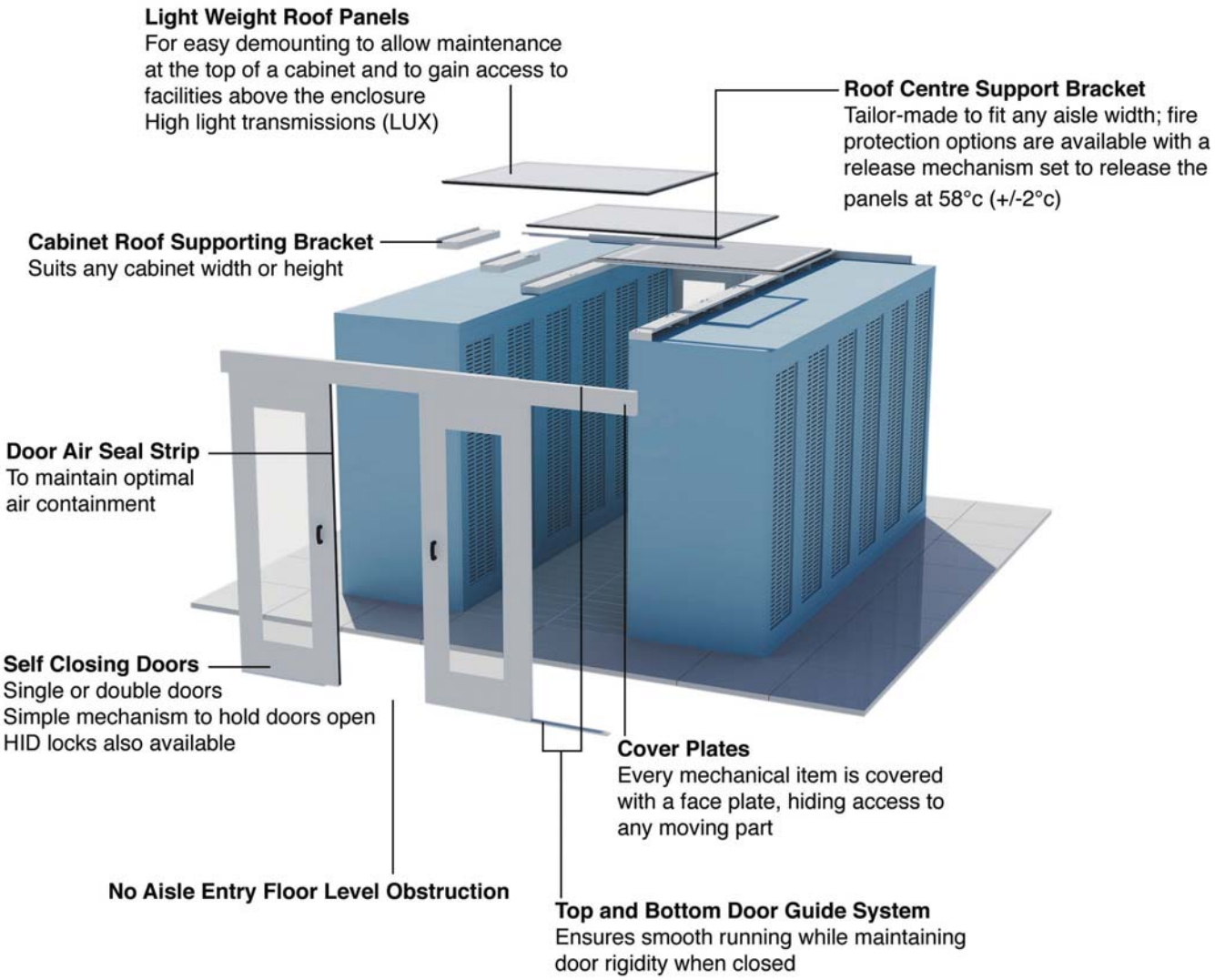
HT-510 operates in one of two modes. In Stand Alone mode, sensors placed at the rack top intakes sense the critical rack temperatures. The smart controller maintains proper cooling by dynamically varying the fan speed. In the Networked "Room Scale Intelligent Cooling" mode, several HT-510s are networked to a central controller. The controller then monitors the thermal health of the entire data centre and actively manages airflow distribution to match the heat distribution in the room.

stableAir

Cold Aisle Containment



Cold Aisle Containment is a non-intrusive, bespoke retrofit to Data Centres, whereby the cold aisle is contained to maximise cooling efficiency. By preventing the recirculation of air back to the CRAC units it significantly improves the efficiency of your building's cooling system and helps reduce your carbon footprint. By creating a positive pressure in the cold aisle, air is directed straight into the servers, making them run more efficiently and reducing the risk of failure. Also, in the event of a total cooling shutdown, Cold Aisle Containment stops a heat outage for 35 minutes, giving you more time to react. Being able to regulate the airflow enables better control of the room's temperature. Increasing the temperature of CRAC units by 1°C, provides a typical saving in the region of 4% of cooling power bills. In addition, the chiller units will make greater use of natural air temperature (free cooling), further enhancing energy savings. 74% of server failures occur in the top third of the rack where the temperature is traditionally hotter. Cold Aisle Containment provides temperature equilibrium across all servers, no matter where they are positioned in the rack.



Features

- Retrofits to existing cabinets no matter what their height
- Light weight roof panels that are easily demounted for maintenance access to the top of a cabinet. The panels also have a high light transmission
- Tailor-made centre roof support bracket with a choice of fire protection options. A release mechanism allows the release of the panels at 58°C to allow sprinklers to distribute water to the source of the combustion
- Gas fire protection system also available, where roof panels feature a rubber seal to prevent gas leakage
- Doors are self closing with the option to keep aisle entry at floor level clear of obstruction
- Top and bottom door guide system ensures smooth running while maintaining door rigidity when closed
- Cost effective solution without reduction in quality

Benefits

- Cost savings of between 10% and 30% of current building cooling systems
- Power savings of room hardware (servers, switches, routers, etc.)
- Control of room temperatures, humidity, airflow and balancing
- Improved U-space utilisation
- Reduces the building's carbon emissions, improving eco friendly status
- Typical payback within less than 12 months

Homogeneous Containment Systems

These systems are suitable for data centres where the cabinets are of uniform size and height, e.g. same model by the same manufacturer.

Heterogeneous Containment Systems

These systems are suitable for data centres where the cabinets are not of uniform size or height e.g. different models and/or different manufacturers. Special filler panels close off areas where there is an indifference in size, so ensuring full containment

ColdLogik™

Perfect climate – Perfect control

ColdLogik Climate Control Cabinets

Data Centres are the powerhouse of today's global economy. Without modern computing power applied to all facets of today's advanced economies, the quality of life would be very different.

However great the benefits, it is an unfortunate fact that today's data centres are highly inefficient in their use of energy, and their subsequent effect on the global climate.

ColdLogik™ replaces the traditional approach to data centre cooling, allowing loads of up to 45kW per cabinet, with the added benefit of removing real estate problems inherent with hot aisle / cold aisle and aisle containment designs.

The waste heat generated by equipment within the cabinets is removed at source by water cooling, without the risk of leakage in the data centre by its patent pending leak prevention system.

ColdLogik™ allows cooling water temperatures to rise from the traditional 6°C, reducing chiller size and energy costs, and increasing the availability of energy efficient 'free cooling'. In fact ColdLogik™ is the only system that can accept water temperatures at 14°C and up to 22°C and achieve heat dissipation of up to 45kW per cabinet.

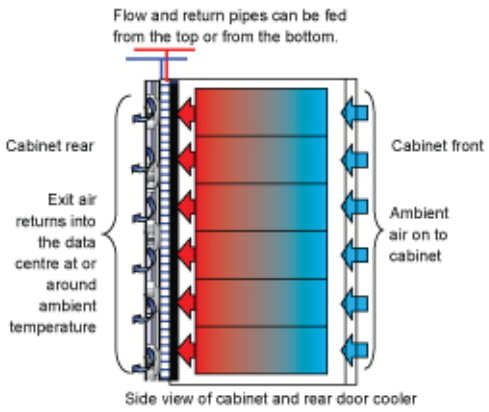
In Excess of 60% Energy Savings

HOW?

CRAC Systems for 100kW Data Centre load - Uses more than 40kW of power
ColdLogik System for 100kW Data Centre load - Uses less than 4kW of power

PLUS

ColdLogik can reduce the Power Usage Effectiveness 'PUE' in a well run Data Centre by 25%



ColdLogik™ - How it Works

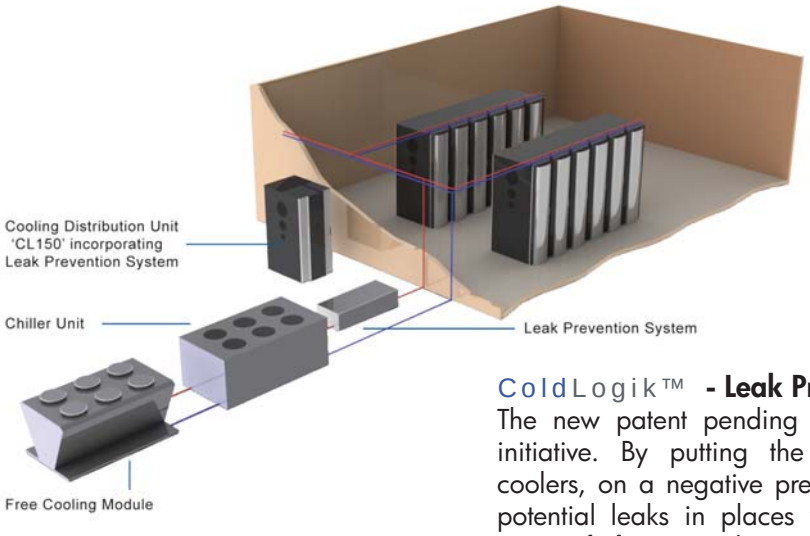
1. Chilled water is provided by a free cooling module, chiller, or a combination of both.
2. The resulting chilled water is pumped through the pipework by the patent pending Leak Prevention System.
3. Chilled water is then drawn through each rear door cooler. The waste heat from the active equipment housed within the cabinets is redirected to a heat exchanger matrix. The net result is that the exhaust air returning back into the room is at ambient temperature and therefore has no impact upon the interior of the data centre.
4. The ColdLogik™ System Controllers' continually monitor the 'air off' temperatures and the returning water temperature. This in turn regulates the rear door cooler fan speeds, the inlet water temperature and voulume.

ColdLogik™

Perfect climate – Perfect control

ColdLogik™ - Free Cooling Module

Free cooling modules can be supplied as a factory fitted extra within the chiller cubicle when space is at a premium, or as a separate self contained unit. All the units are designed to the closest ambient for the desired system water temperature, which at worse case is within 3°C. ColdLogik™ free coolers are all fitted with inverter driven, energy efficient fans to increase energy saving when ambient falls below the point of free cooling. These can be fitted to an existing facility when changing from a standard CRAC to a ColdLogik™ system.



Features

- Up to 45kW sensible cooling per 600mm & 800mm wide cabinet
- Up to 90% energy saving
- The only water cooled solution with the patent pending Leak Prevention System
- Energy efficient 'ColdLogik™ Management System' that allows the doors to operate individually or as a system that maintains the room at the correct temperature, even with external heat loads, and eliminates the risk of condensation
- Retro-fit capability to any already installed OEM rack
- Built in redundancy
- Condensate free operation
- Modular and scalable
- Two standard heights 42U & 48U in two widths of 600mm and 800mm

ColdLogik™ - Leak Prevention System

The new patent pending Leak Prevention System is another ColdLogik™ initiative. By putting the Data Centre loop, including the rear door coolers, on a negative pressure circuit, the whole Data Centre is safe from potential leaks in places where it can be least afforded. In the unlikely event of, for example, a coupling coming loose, or a hole being drilled into a pipe, air would be pulled into the gap/hole, thereby preventing water from escaping. The resulting air in the circuit is drawn through to a tank inside or outside the chiller, where it is finally vented out of the system and prevented from continuing back around the loop. Inline sensors detect a leak and provide a warning, alerting the user to the problem. Importantly the ColdLogik™ system will continue to work, with no notable effect on its cooling capabilities. As with all aspects of the ColdLogik™ system the 'LPS' can be retrofitted to an existing circuit, is modular in design and therefore scalable so, as your Data Centre grows, so can ColdLogik™.

CL20 Series Rear Door Cooler 'RDC' Interface Frame

The CL20 RDC Interface Frame enables users to continue using their existing cabinets and still gain the benefits of the ColdLogik™ system.

Working in harmony with the incumbent air conditioning system, the CL20 RDC helps reduce energy cost, enables greater use of cabinet space, prevents hot spots, enables greater processing speeds and, because the existing cabinet is used, costly down time is saved.

Rittal Liquid Cooling Package

The modular configuration and scalability of the climate control innovation, Rittal Liquid Cooling Package (LCP), help to minimise investment costs and maximise investment confidence, while providing sufficient scope for future extensions. The result? Solutions that are geared to your specific requirements, which may be rapidly supplemented or replaced as your needs change.

The Liquid Cooling Package family allows Data Centres to be extended in a temperature-neutral way, without the need for room changes. As a climate control enclosure on the side panel of a server rack, LCP Standard and LCP Plus solve the problem of high power losses for each rack. LCP Extend helps to ease the pressure on the room's existing climate control system by providing additional useful cooling output. The latest dimension in high-performance cooling is the Data Centre solution LCP Plus, with a useful cooling output of up to 30kW per rack.

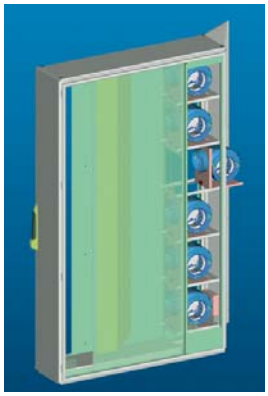
The main benefits to the user are the even distribution of cold air in front of the 19" level, full accessibility, and optional cooling of one or two server racks with an LCP Standard or Plus. Thanks to the rack-optimised design, the air/water heat exchanger is easily integrated into existing infrastructures. Its modular design helps to keep investment to the level currently required.

LCP Extend - Up to 12kW of Cooling

To support existing air-conditioning systems, Rittal now offers liquid based cooling systems for retrofitting on server racks. The LCP unit is based on an air/water heat exchanger technology and solves the problem of high heat losses of up to 10kW per rack. The hot air, dissipated towards the rear by the servers, is forced through the air/water heat exchanger by fan units and then expelled.

LCP Standard - Up to 20kW of Cooling

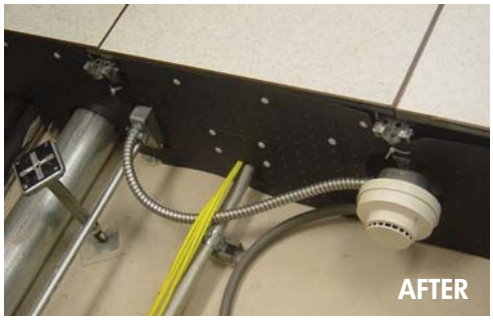
The LCP Standard is installed as a climate control enclosure at the side of the server rack. It solves the problem of high heat losses with a scalable cooling system based on air/water heat exchangers. The enclosure houses one, two or three air/water heat exchangers with cooling capacities of 4kW each. The full configuration delivers a standard cooling capacity of 12kW - with options to raise this up to 20kW. The cold air is introduced laterally in front of each server row.



LCP Plus - Up to 30kW of Cooling

LCP Plus solves the problem of high power dissipation of up to 30kW per rack. It is fitted as an environmentally controlled chamber on the side of a server rack. Major advantages to the user are the even distribution of the chilled air in front of the 19" level, complete accessibility and cooling, of either one or two server racks. The cold air is blown in horizontally - directly in front of the rows of servers - and ensures smooth thermal conditions.

PlenaForm Air Baffle System



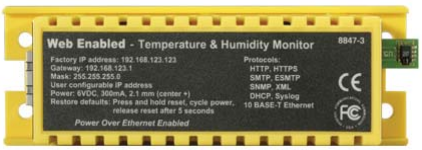
PLENAFORM® is a flexible, snap together, air flow baffle system which helps to solve dynamic thermal imbalances in data centers. It is scored both vertically and horizontally so sections can be removed or added onto to meet any height or width requirement. All angles of bend radius may be attained, including inside and outside mounting to raised floor pedestals. The continuous punch out hole pattern allows attachment to any style raised floor pedestal at any height or width location with cable ties.

Easy to Install - Right Out of the Box!

- Control and Balance Data Center Airflow
- Separate Hot Aisles from Cold Aisles
- No Installation Tools Required
- On-Site Configurable (Width and Height)
- Fits ANY Raised Floor Pedestal
- Reduces Energy Consumption and Operating Costs
- An Inert, Non-Conductive and Non-Hygroscopic Material
- Flammability rating of UL V- 0 per UL94
- RoHS and WEEE Compliant
- An Energy Saving and Thermal Tuning Tool

Geist Environmental Monitoring

With IT equipment continuing to increase its demand for both power consumption and cooling, understanding where and when these environmental conditions impact Data Centre dynamics, and reacting to adverse conditions can be a daunting task. Geist Environmental Monitoring products relieve this pressure, with a range of models available finding a solution has never been easier. Geist make it easy to monitor the environmental conditions; all their monitors are viewable via a web browser. With simple Plug & Play installation, the monitor can be up and running in minutes, and with monitoring and alarm notification by e-mail and SNMP trap you'll know when there is an issue. Geist products can be integrated with network management software and are secured by password access.



47-G1172 - Micro Monitor

- Small form factor.
- One Internal temperature & humidity sensor.
- POE enabled.

47-G1045

- 1U Rack mount form factor.
- Five internal sensors: Temperature, humidity, airflow, light & sound.
- Five RJ12 ports for additional remote sensors or sensor port splitters.
- Three I/O ports for contact closure sensors.
- Local display.
- Range of additional sensors and accessories.

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