



# *EDGE-9*

Aisle Containment



We engineer for a sustainable tomorrow.

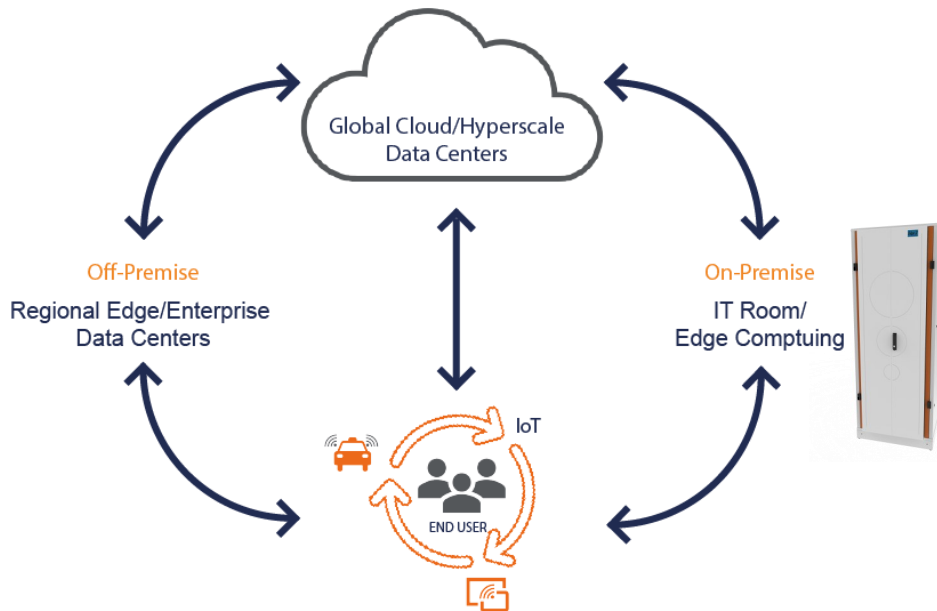
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## Why edge compute?

In our digital age more devices are connected to the internet utilising cloud based storage. The number of devices and users continue to increase which puts a strain on bandwidth causing latency.

This can be done in an environment other than a traditional data room thereby saving real estate and comms/data room build expense.



The reduction in user bandwidth availability and the increase in latency could have dire consequences depending upon the application being used.

USystems offer a broad range of self contained intelligent modular systems called *EDGE* to house localised computing, which can be deployed directly into factories, warehouses, offices, M2M, multiple users, businesses etc., either as a standalone rack or bayed together in a dedicated room.

This latency and decrease in bandwidth can be overcome by introducing on-premise edge computing. This allows the user to access immediate computer power locally whilst using the cloud simply to store information.

## Rapid deployment Micro Data Centre

It is accepted that traditional data center designs are inefficient; so the purpose of a aisle containment is to improve efficiency. When designed correctly, aisle containment lowers cooling costs and crucially saves money.

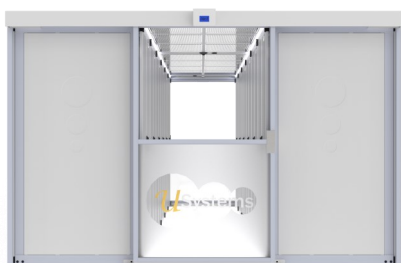
To build on top of this design platform, we have taken aisle containment further, by building in integrated energy efficient cooling, intelligence and security, making the EDGE-9 a complete data center solution.

The EDGE-9 solution is designed pre-configured from the factory with built in intelligence and energy efficient LX cooled InRows for rapid deployment and expert installation

Peace of mind is provided by an on-board environmental and security monitoring system. Real time alarms and alerts which can be viewed via a WebUI, so you know what's going on and see who's coming and going 24/7.

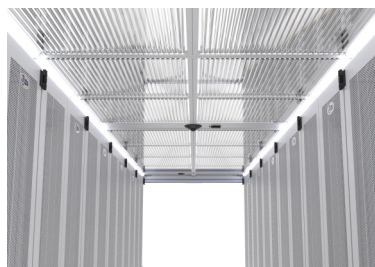
Advanced configurations are available for enhanced levels of security and redundancy.

EDGE-9 is available in multiple size configurations and options to suit your requirements. Racks are 42U or 47U high, 23.62"/600mm or 31.50"/800 wide, 39.37"/1000mm or 47.24"/1200mm deep. InRow coolers are either 11.81"/300mm or 23.62"/600mm depending on the duty required.



**Electronic Door**

Incorporating soft motion safety the USystems sliding door will stop and reverse on the lightest contact. Compact in design, silent in operation and with no mechanical moving parts the linear motor is both reliable and smooth running.



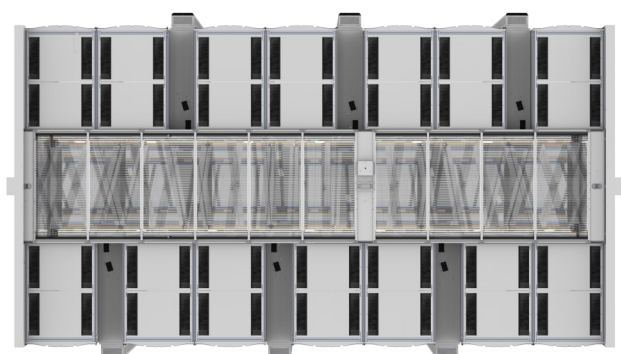
**Aisle Lighting and PIR Detector**

Energy saving LED lighting operates only as required when triggered by PIR



**LCD display**

Displaying environmental alarm state and major monitoring points



Integrated precision cooling

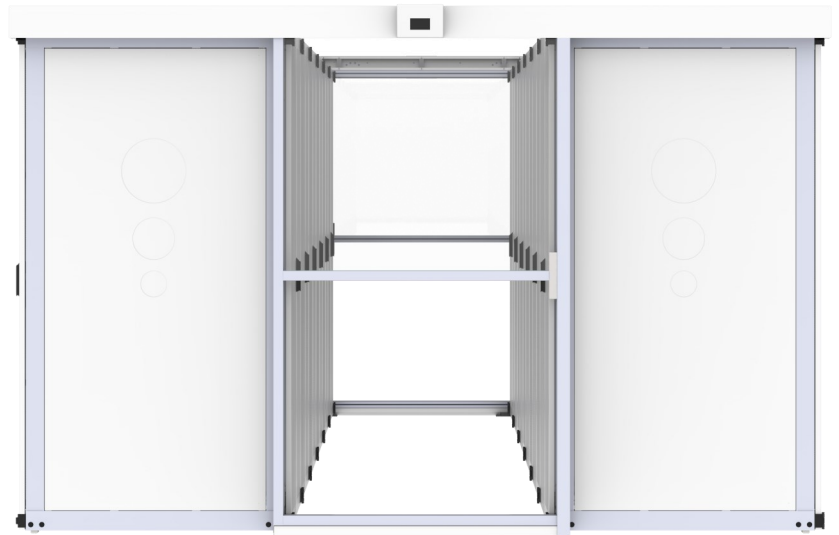
## Aisle Containment

Many years of innovation and experience accumulated at USystems producing cutting edge data center solutions has been channelled into developing the most effective and efficient aisle containment systems currently available.

Thermodynamically advanced, cost and energy efficient, our solutions incorporate Horizontal (flat roof) and Vertical solutions spanning hot aisle or cold aisle options all of which improve cooling efficiencies specific to your data center requirements. Each style of containment can be designed around multiple height cabinets without affecting thermal performance.

### Benefits

- Up to 60% energy savings
- Thermodynamically advantageous
- Enhanced efficiency
- Hot or cold aisle versions
- Cost effective
- Low-maintenance
- Custom built
- Quick and easy installation
- Modular
- Retrofittable
- Re-locatable
- Expandable



## Containment Technical Specifications

General		
Item		Measurements
Aisle Width	mm	1000 or 1200
Overall Width	mm	min 3000 max 3600 (Depending on cabinets spec'd)
Standard Row Height	U/mm	42U/1866.9mm, 47U/2089.15mm, 48U/2133.6mm
Colours		Powder Coated Black RAL9005 Semi-Gloss or Grey RAL7035 Semi-Gloss
Materials		Referenced below
Standardisation		CE

Particular parts	
Item	Material
Fixed Roof Panel	Frame 1.2&1.5mm Steel - Powder Coated Black RAL9005 Semi-Gloss or Grey RAL7035 Semi-Gloss
	2x Window 4.0mm Clear Polycarbonate
Shrink Away Roof Panel	Frame 1.2&1.5mm Steel - Powder Coated Black RAL9005 Semi-Gloss or Grey RAL7035 Semi-Gloss
	2x Window 0.33mm Transluminous Rigid Vinyl
Rack/InRow to Roof Brackets	1.2mm Steel - Powder Coated Black RAL9005 Semi-Gloss or Grey RAL7035 Semi-Gloss
Filler Roof Panel	Frame 2.0mm Steel - Powder Coated Black RAL9005 Semi-Gloss or Grey RAL7035 Semi-Gloss
	Foamed PVC Panel 10mm
Aisle End Barrier Panel	Frame 1.5mm Steel - Powder Coated Black RAL9005 Semi-Gloss or Grey RAL7035 Semi-Gloss
Aisle Single Leaf Doors (Manual and Electronic Non Lock)	Lintel 0.9mm(Stainless Steel),1.2,1.5&2.0mm Steel - Powder Coated Black RAL9005 Semi-Gloss or Grey RAL7035 Semi-Gloss
	Goal Post and Door Frame – 42.5mm x 42.5mm Anodised Aluminium Extrusion
	Door Window – 4mm Clear Polycarbonate
Aisle Single Leaf Doors (Electronic Locking)	Lintel 0.9mm(Stainless Steel),1.2,1.5&2.0mm Steel - Powder Coated Black RAL9005 Semi-Gloss or Grey RAL7035 Semi-Gloss
	End Frame – 1.2mm Steel - Powder Coated Black RAL9005 Semi-Gloss or Grey RAL7035 Semi-Gloss
	Door Frame – 42.5mm x 42.5mm Anodised Aluminium Extrusion
	Door Window – 4.0mm Clear Polycarbonate
Rack/InRow Barrier Panel	Frame 1.2&1.5mm Steel - Powder Coated Black RAL9005 Semi-Gloss or Grey RAL7035 Semi-Gloss
	Foamed PVC Panel 10mm

## CL80 InRow Cooler

The coupling of InRow coolers and aisle containment provide greater precision cooling over old fashioned data centers set-ups such as CRAC based designs.

Aside from taking up less real estate, adding flexibility by creating POD based systems such as the EDGE 9®, and removing the need for raised flooring, the overall design allows for higher cabinet heat loads. In fact the CL80 InRow is capable of handling up to 75kW sensible cooling per system.

The combination of EC fan technology, managed air flow, water volume control and the incorporation of the ColdLogik Management System culminate in a cooling system that can grow with your heat loads.

Crucially the CL80 InRow can give a 60% energy saving over traditional data center designs.

### Lower OPEX

- 40% more energy efficient than other In Rows
- Up to 60% energy savings compared to CRACs
- Rapid ROI and lower cost of ownership
- Significantly faster deployment than alternative cooling
- Scalable design – simply add cabinets and InRows as your business grows
- No additional room air conditioning required such as CRAC units

### General

- Broad coverage of cooling capacity and options
- Most energy efficient InRow in the market
- Highest cooling duty available for an InRow cooler industry wide
- Operates above dew point, no condensation management required
- Control the whole room environment from one solution utilizing the inbuilt ColdLogik Management System 'CMS'
- Monitor entire process with a ColdLogik Room Management System 'RMS'



## Performance Examples

Performance examples—these three examples are showing the IRC options , with differing duties attainable when regulating or changing the water temperature. Other performance duties are attainable when calculating bespoke project specific requirements.

### Maximum Duty

Our highest duties offer high performance cooling based on an Industry Standard 14/20°C (57.2/68°F) water supply/return from mechanically cooled external plant, and has the ability to offer cooling capacities of up to 72kW per rack.

Cooling Capacity CL80		300w	600w
Maximum Duty	kW	66	72
Air flow (50Hz 230v)	m <sup>3</sup> /h (cfm)	8192 (4822)	8192 (4822)
DB Air On	°C (°F)	45 (113)	45 (113)
DB Air Out	°C (°F)	19 (66.2)	17 (62.6)
Water In	°C (°F)	14 (57.2)	14 (57.2)
Water Out	°C (°F)	20 (68)	20 (68)
Volume Fluid Flow	m <sup>3</sup> /h (l/s) /	9.58 (2.7) / 42.2	10.32 (2.9) / 45.4
Fluid Velocity	m/s (ft/s)	1.86 (6.2)	1.7 (5.6)

### Nominal Duty

This is a more general, workable duty with 20°C/68°F water inlet and covers most requirements in Europe while also maintaining a room temperature of 27°C/80.6°F or lower. Delivering performance of up to 52kW per rack.

Cooling Capacity CL80		300w	600w
Nominal Duty	kW	47	52
Air flow (50Hz 230v)	m <sup>3</sup> /h (cfm)	8192 (4822)	8192 (4822)
DB Air On	°C (°F)	45 (113)	45 (113)
DB Air Out	°C (°F)	26.3 (79.3)	24 (75.2)
Water In	°C (°F)	20 (68)	20 (68)
Water Out	°C (°F)	30 (86)	30 (86)
Volume Fluid Flow	m <sup>3</sup> /h (l/s) /	4.11 (1.1) / 18.1	4.53 (1.3) / 19.9
Fluid Velocity	m/s (ft/s)	0.81 (2.7)	0.75 (2.5)

### Efficient Duty

Taking advantage of warmer water temperature inlets of 23C/73.4°F the necessity of mechanical cooling is reduced, and allows for most day free cooling. This will provide customers with higher efficiency cooling and lower running costs thus beginning to obtain a return on their investment while maximising real estate.

Cooling Capacity CL80		300w	600w
Efficient Duty	kW	24	40
Air flow (50Hz 230v)	m <sup>3</sup> /h (cfm)	4400 (2590)	7300 (4297)
DB Air On	°C (°F)	45 (113)	45 (113)
DB Air Out	°C (°F)	27 (80.6)	27 (80.6)
Water In	°C (°F)	23 (73.4)	23 (73.4)
Water Out	°C (°F)	33 (91.4)	33 (91.4)
Volume Fluid Flow	m <sup>3</sup> /h (l/s) /	2.12 (0.6) / 9.3	3.52 (1) / 15.5
Fluid Velocity	m/s (ft/s)	0.42 (1.4)	0.58 (1.9)

Cooling capacity data is shown for illustration purposes. USystems work alongside their customers who largely have unique challenges and ambitions. The nature of our technology, capabilities and approach is emulated in the delivery of efficient designs and solutions across the globe.

#### Legend

DB - Dry Bulb

ΔT - Delta T / difference supply and return temperatures

Air On - Air onto coil / air off active equipment

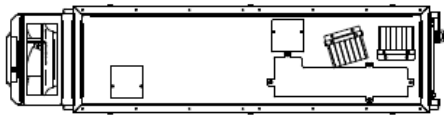
Air Off - Air off coil / air out from ColdLogik cooler

## CL80 InRow Technical Data

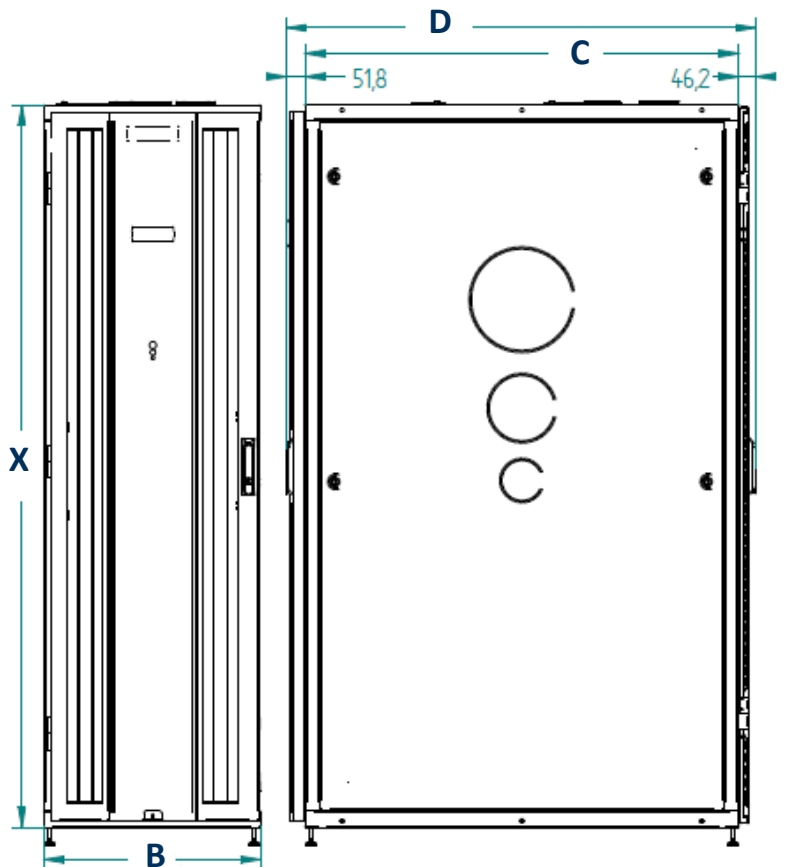
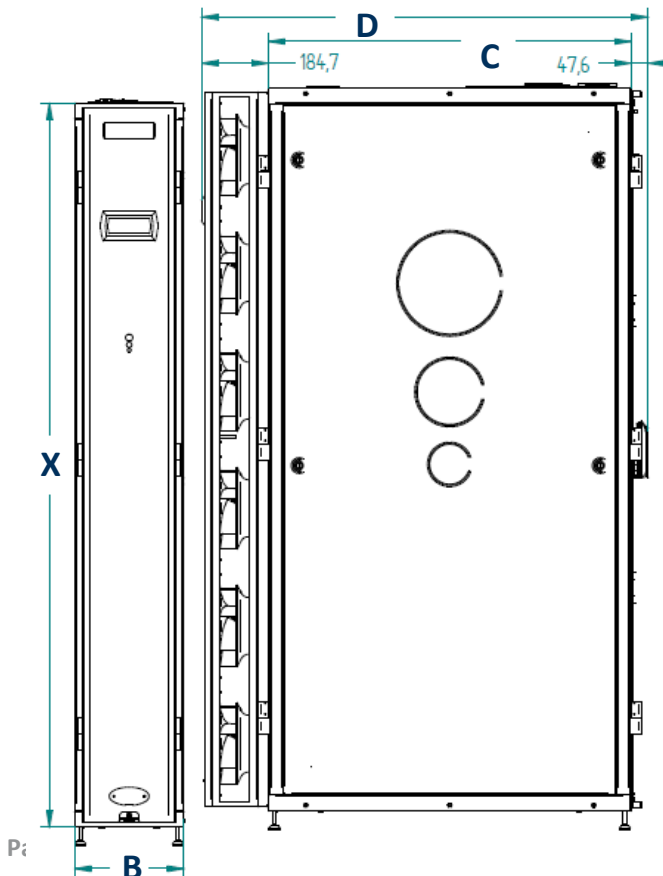
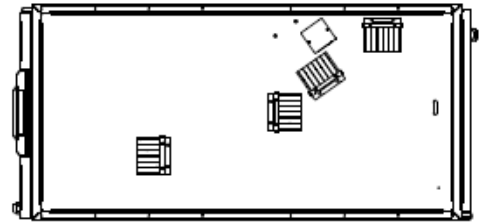
CL80						CL80 Combined Fan Performance			
Technical Information to Suit:		42U*				Type: Backwards Curved Centrifugal			
		300w		600w					
		1000d	1200d	1000d	1200d				
Height (X)	mm (inch)	2000 (78.4)				Number of fans		6	
Width (B)	mm (inch)	300 (11.8)		600 (23.6)		Air flow	m <sup>3</sup> /h (cfm)	30%	2553 (1502)
Frame Depth (C)	mm (inch)	1000 (39.4)	1200 (47.2)	1000 (39.4)	1200 (47.2)			70%	6293 (3703)
Maximum Depth (D)	mm (inch)	1232 (48.5)	1432 (56.4)	1098 (43.2)	1298 (51.1)			100%	8217 (4836)
Dry Weight	kg (lb)	140 (308.6)	168 (370.4)	200 (440.9)	240 (529.1)	Current 50Hz 230v / 60Hz 208v	A	30%	0.79 / 0.87
Wet Weight	kg (lb)	150.7 (332.2)	170.7 (376.3)	212.9 (469.3)	252.9 (557.5)			70%	4.46 / 4.92
Paint	Finalised on Order	RAL 7035 (Light Grey)						100%	9.04 / 9.98
Communication Protocol		RAL 9005 (Black)				Power Input 50Hz 230v	W	30%	61
		Modbus over TCP/IP (BACnet, SNMP optional)						70%	478
Connections	mm (inch)	1"						100%	1014
Water Volume Capacity	L (U.S.gal)	10.7 (2.8)		12.9 (3.4)		Total fan noise	dB	30%	67
Maximum RDC Current Draw (including all additional options)	A	6.3						70%	83
								100%	89

\*Blanking panels available for 47U, 48U, 52U

300w



600w





## Controlled aisle environment

### **EDGE** Management System 'EMS'

#### Providing complete peace of mind

A standard feature of the EDGE range is the inclusion of the Edge Management System EMS monitoring the environmental status of the cabinet with up to 4 temperature and humidity reporting and alarming if over threshold is reached.

Additional contact sensors to notify of door access. Displayed on a easy to view Webui with SNMP trap send, V1, 2 and 3 available to send out data and alarms.

#### Because you need to know

Whilst it is the EMS which takes care of the energy efficient cooling, it is also the EMS which brings together the whole solution.

Alarms and alerts in real time will notify you of any issues with your cabinet. The LCD screen on the cabinet will also show an alarm status, touch will provide sensor data, fan status and contact sensor triggers.

### **ColdLogik** Management Systems 'CMS'

The ColdLogik Management System 'CMS' lies at the heart of the InRow solution.

The cold aisle temperature is controlled at the return air from the InRow by the 'CMS'. Automatically adjusting fan speeds, water flow rate and, if necessary, the output water temperature from the chiller with no operator intervention.

The whole process can also be overseen and controlled at individual cabinet level, room level and remotely via many of the industry standard communication protocols.

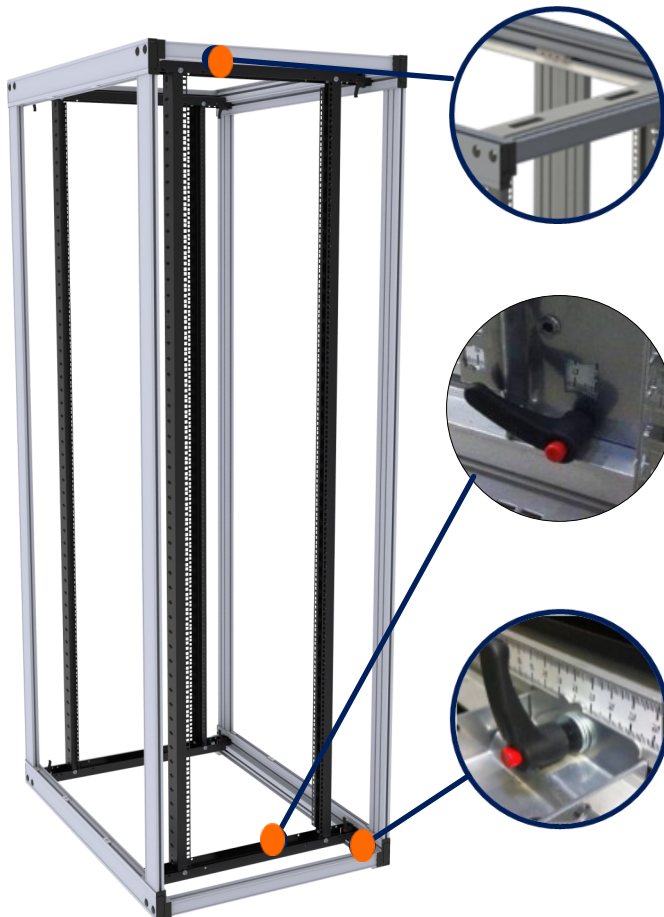
The ColdLogik system operates on a 'sensible cooling' principle – 'water above dew point' with the system remaining free of condensation.

## Supporting Racks and ODF

### 5210 Rack

The USpace 5210 Data Rack Solution is the premium cabinet range from USystems. Smart design and state of the art manufacturing facilities guarantees the unbeatable quality, style and innovation associated with USystems.

- 3307.0lbs/1500kg Static load rating
- \*750kg Dynamic load rating
- 3 heights, 2 widths, 2 depths as standard
- Rigid bolted aluminium construction
- Superior venting AirTech standard door with 80% airflow
- Superior venting AirTech 'V' door with 86% airflow
- Multi depth mounting with infinite adjustment rails
- Multi cable access through top and base
- Secure quick release cladding
- Left or right hand hinged doors
- Houses all major server brands



M6 fixing points on all internal aluminium frame member faces

*Ideal for fixing Rack PDUs and various cable accessories in a multitude of suitable positions*

Infinitely adjustable toolless 19" rail adjustment

*The integral ratchet allows for adjustment of the mounting rails without the need for additional tools*

Location markings for 19" rail depth positioning

*Quick and easy rail alignment with no need for a tape measure*

## 5210 ODF

As demand grows for ever increasing bandwidth and richer content, so does the demand for high density fibre deployments within the main distribution area of the datacentre or your central office.

The USpace 5210 ODF racks are designed to offer a solution to the challenges of high density cabling by providing a unique working and access environment within a small footprint that enables you to better manage your high density fibre network, and future-proof it as it evolves.

### Internal cabinet view



### Further Documentation

For additional information, please refer to the below. Available through your USystems representative, or our central inquires line at [sales@usystems.com](mailto:sales@usystems.com)

Complete Product Range	Available at <a href="http://www.usystems.com">www.usystems.com</a>
Operations and Maintenance Manual	Please contact <a href="mailto:sales@usystems.com">sales@usystems.com</a>
Troubleshooting Guide	Please contact <a href="mailto:sales@usystems.com">sales@usystems.com</a>
Product Datasheet	Available at <a href="http://www.usystems.com">www.usystems.com</a>

# EDGE MDCs



We engineer for a sustainable tomorrow.

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