

UCoustic

9210 soundproof cabinets



High performance intelligent
soundproof cabinets

Product overview and technical data



Contents

USystems' UCooustic 9210 soundproof cabinets

Product overview and technical data

UCoustic 9210 soundproof enclosures

Overview of the 9210	3
Standard specification	4-5
Proof of quietness	6
Cooling and best installation practice	7-9
Best practice energy saving option	10
UCoustic IP44 cabinet	11
UCoustic anti vibration cabinet	12
Intelligent locking option	13
Intelligent power	14
UCoustic 9210 accessories	15-16
7210 and 7250 soundproof enclosures	17
Dimensional and technical information	18-19

Quality, recycling, compliance and manufacturing statement

USystems is registered as meeting the quality manufacturing requirements of BS EN ISO 9001:2008. Our products comply with CE, SCC, CMC and RoHS standards and are UL listed.

We recycle well over 90 per cent of our waste.

We are Carbon Trust accredited – the Carbon Trust provides specialist support to business and the public sector in the UK to help cut carbon emissions, save energy and commercialise low carbon technologies.

Compliance

UCoustic cabinets are compliant with the following standards

EN 55022: 2006.

EN 6100-3-2: 2006.

EN 61000-3-3: 1995: + A1: 2001 + A2: 2005.

EN 55024: 1998 + A1: 2001 + A2: 2003.

FCC CFR 47: Part 15: B: 2008.

Manufacturing statement

UCoustic cabinets are manufactured in accordance with IEC 297 3 and EIA STD 310 for panels and racks for housing electronic equipment.

Flammability

Acoustic foam FMVSS 302 – Pass. UI94: V0, HF1 ISO 9001 Accreditation.

Overview

USystems has designed and produced a range of highly efficient soundproofed cabinets for all office environments - ideal for any working environment where noise from active IT equipment is distracting or invasive. This can have the added benefit of saving space and capital expenditure as there is no need to build a dedicated comms or server room separate to the office.

UCoustic soundproof cabinets - the major benefits

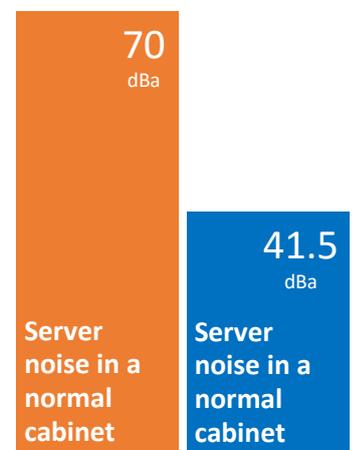
- Excellent all round 19" datacomms and server cabinets
- Unrivalled sound attenuation performance – 28.5 dBA
- Unbeatable cooling capacity – 7.2 kW
- Energy saving ducting kit

UCoustic cabinets - are also outstanding because

- Acoustics independently tested by MIRA to ISO 3744
- Freestanding floor or wall mounted models (see separate brochure)
- Available in 12U, 24U and 42U heights
- Compatible with all leading makes and types of server and SAN storage, including IBM, HP, Dell, Sun, Groupe Bull and EMC²
- For relocation, heavy duty castors are fitted as standard
- Affordable, lockable and easy to populate

UCoustic cabinets - major options

- IP 54 rating
- Anti-vibration system



The sound of IT equipment emanating from a UCoustic data cabinet is significantly quieter – by 28.5 dBA – than from a normal server cabinet, which no other soundproofed cabinet can match.



Standard specification

9210 Floor standing cabinets

The UCoustic 9210 soundproof enclosure is available in active or passive configuration and three heights – 12U, 24U and 42U; all are 780 mm wide and 1100 mm deep.

Active cabinets have two centrifugal fans in the rear doors to deal with higher heat loads – to ensure maximum energy efficiency, they are fitted with variable fan speed controls and temperature sensors.

Passive cabinets utilise the IT equipment fans to draw ambient air from the front and then rely upon the temperature differential between the cabinet IT equipment space and the room ambient temperature.

Key features

- Wardrobe style front and rear doors on active and passive cabinets
- Active rear doors contain one centrifugal fan in each door; each fan has a speed controller and temperature sensor.
- Fully adjustable 19" mounting angles fitted front and rear
- Soundproof cable entry system
- Six cable entry points via removable gland plates, three at the top and three at the bottom.
- Load bearing castors
- For maintaining the IT equipment, all doors and panels are easy to remove and refit
- Cabinets are finished in USpace Black with Montana Blue highlights



Overview and principle

Signature UCooustic cabinets for boardroom and office

The Executive cabinet comprises the same specification as the standard 9210 UCooustic with the additional option of a real wood finish to blend elegantly with other office furniture – without compromising decibel attenuation, psychoacoustics, thermal performance or cabinet strength.

Standard finishes

- Oak
- Maple

Finishes available to special order

- Ash
- Beech
- Cherry
- Sapele
- Walnut



24U with passive doors, side panels and top cover in light oak

Real wood finishes can be supplied in a combination of any of the following configurations:

- Passive doors, front and rear.
- Side panels
- Top cover

Please note - active rear doors cannot

Be finished in wood

Cabinet dimensions – see page 16



24U with passive doors in maple



Proof of quietness

Under standing how sound is created and escapes from a standard data cabinet



The UCoustic cabinets are quieter than other soundproof cabinets due to their superior design.

To achieve this, we have invested heavily in research and development and the best, most effective acoustic materials.

We also looked at what makes the noise in a cabinet, how it escapes, where it escapes from and what type of noise it is.

Only by thoroughly understanding all these factors were our engineers able to design and construct a class-leading soundproof cabinet.

The type of sound – known as psychoacoustics – is as important as sound reduction, for it is concerned with the perception of sound: just because the noise level has been reduced, it doesn't mean that the 'new' noise is pleasant on the ear.

The design of the UCoustic cabinet eliminates offensive frequencies, so ensuring that the noise you hear is as pleasant as possible.

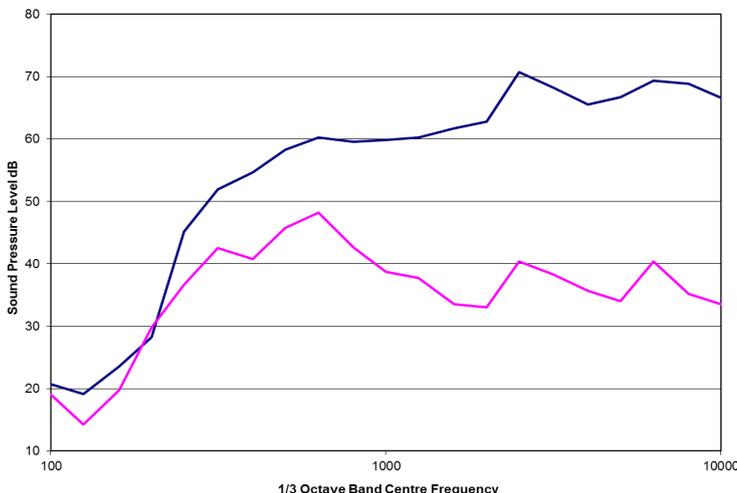
Independently tested by MIRA

To prove that the UCoustic cabinet really is as quiet as we claim, we had it independently test by MIRA, the UK's premier motor industry centre for engineering test and design, who are experts on advising vehicle manufacturers how to minimise in-vehicle sounds.

They assessed the UCoustic cabinet for sound power measurement in accordance with ISO 3744 – in comparison with a standard data cabinet (see graph), it proved that UCoustic cabinets are significantly quieter.



42U UCoustic Cab Sound Pressure Level Comparison



Independent tests at MIRA proved that UCoustic cabinets (bottom line) are significantly quieter than standard data cabinets (top line).

— Standard 19" cabinet
— UCoustic 9210 cabinet

Cooling a best installation practice

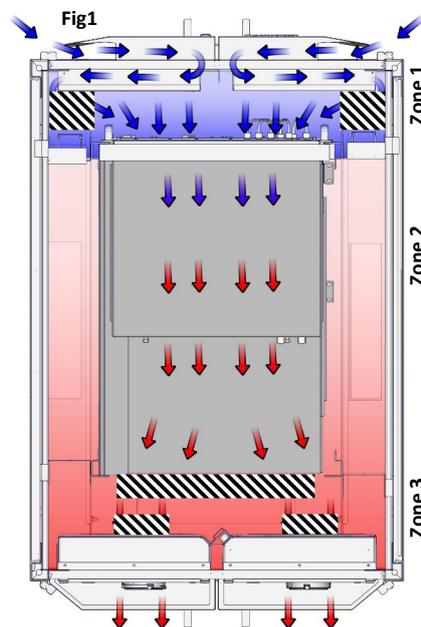
Both the passive and active models have excellent cooling capabilities – the passive model can achieve between 1.75kW and 2.75kW depending upon the height and the active models can achieve 7.2kW. But in order to achieve these figures it is paramount that ‘best installation practice’ is adopted. To fully appreciate what this really means we need to understand the airflow characteristics of the UCoustic 9210 design.

Airflow characteristics

The key difference between most 19" soundproof cabinets is the poor segregation between cold air entering into the cabinet and the IT equipment space – failure to deal with this results in hot spots and general heat recirculation issues.

The UCoustic 9210 deals with the problem by creating three separate zones – the first zone is the ‘patent pending’ double pass wardrobe front doors, ambient air passes through the full height of the doors and into the second zone. This feature is of key importance as this allows a uniform flow of ambient cool air to be available at any ‘U’ position within the cabinet – so no equipment needs be starved of cool air. It is worth noting that this vertical space should be kept clear and that all cabling should be kept managed against the infill panels provided, using jumper rings or cable trunking (please see Figs 2 and 5 on page 8)

The result of best practice sealing - no hot air recirculation



▨ = keep these areas clear of obstruction to aid airflow

The second zone is the IT equipment space and sealing between the first and second zone is critical; the UCoustic cabinet comes as standard with foam infills which covers the periphery of the 19" area see Figs 2 and 4.

Cabling can pass through this area from front to rear but maintaining the seal's integrity is very important.

In addition to the peripheral area the 19" aperture also needs to be treated in the same way – completely sealed. Unfortunately not all equipment comes in the standard 19" format, for this reason we have a number of solutions designed to assist in this process - see Fig 2 and 5.

Air on and off



The patent pending air inlet wardrobe doors enable the required volume of air to uniformly flow over the full height of the ‘U’ (usable) space on both sides of the cabinet, thus ensuring that all the enclosed IT equipment receive the necessary amount of air.



Depending on the model chosen – passive or active, the resulting hot air exits the cabinet either through the passive wardrobe doors or via the active temperature controlled doors, which is in effect the third zone. Once again it is imperative that the air exhaust space is kept clear of obstruction from cabling, PDU's etc

NB The active rear door on the 12U model exhausts hot air to the base of the door and not the top as in other height models

Cooling and best installation practice continued

It has long since been established that allowing heat recirculation in 19" cabinets results in IT equipment overheating which shortens its working life and more often leads to software and systems failures. Unfortunately this issue is compounded when using soundproof materials, owing to their heat insulation properties.

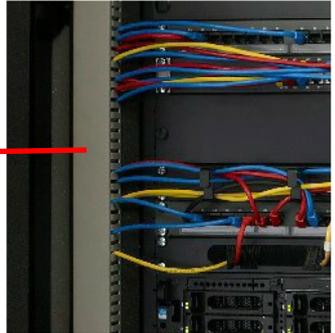
So to maintain optimum performance and a safe, controlled working environment for the IT equipment - one that overcomes hot spots and heat recirculation issues - it has to be dealt with by correct airflow management. Achieving this comes down to a combination of clever enclosure design and the application of best installation practice.

Fig 3



UCoustic 9210 blanking panels require no fixings and play an important role in both airflow and sound proof management. A major benefit is the prevention of hot air re-circulation which eliminates the risk of hot spots.

Fig 4



Keeping the vertical and horizontal cabling organised and managed is essential in order to allow ambient air to pass through onto the active equipment.

The foam running around the sides of the infills must be maintained to ensure its ongoing effectiveness.

Fig 5



UCoustic sound proof tower infill foam helps to retain maximum thermal performance and sound attenuation when fitting non 19" equipment such as a tower PC - available in 2 size kits to prevent hot spots and the potential over heating of active equipment

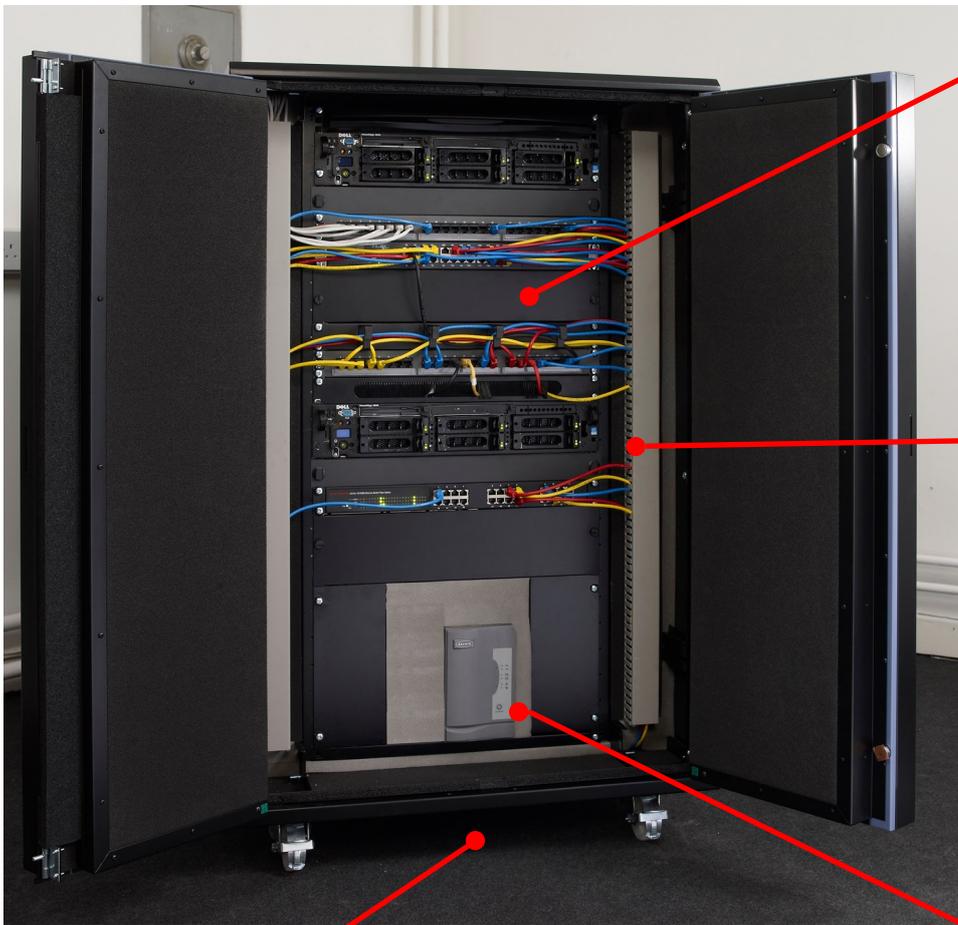


Fig 6



UCoustic sound proof cable entry system enable cabling in and out of the cabinet without compromising both sound or thermal performance. There are six available ports in total, three at the top and three at the bottom of the cabinet so further cable entry systems can be deployed as required

Cooling and best installation practice continued

Heat recirculation - controlled test results

During original heat load testing USystems engineers demonstrated how critical it is to maintain the seal integrity between the first zone (i.e. air intake doors, 19" facia) and the second zone (i.e. the IT equipment area). They removed just one small foam block from the bottom corner of the cabinet and the data from the temperature probes revealed an immediate heat gain of 15°C/59°F in the localised area, which meant the air on temperature to the IT equipment increased to 37°C/99°F and alarmingly the whole front zone increased by 5°C/41°F.

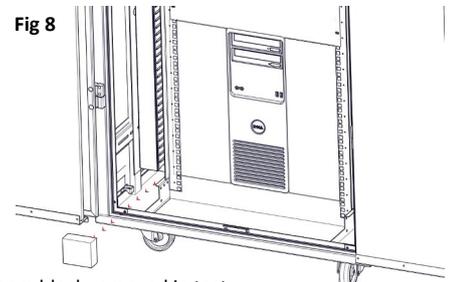


Fig 8
Foam block removed in test
NB These foam blocks are in each corner and allow cables to flow from front to rear

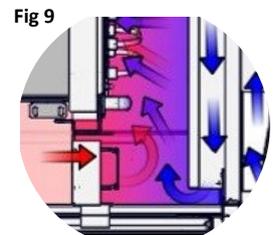
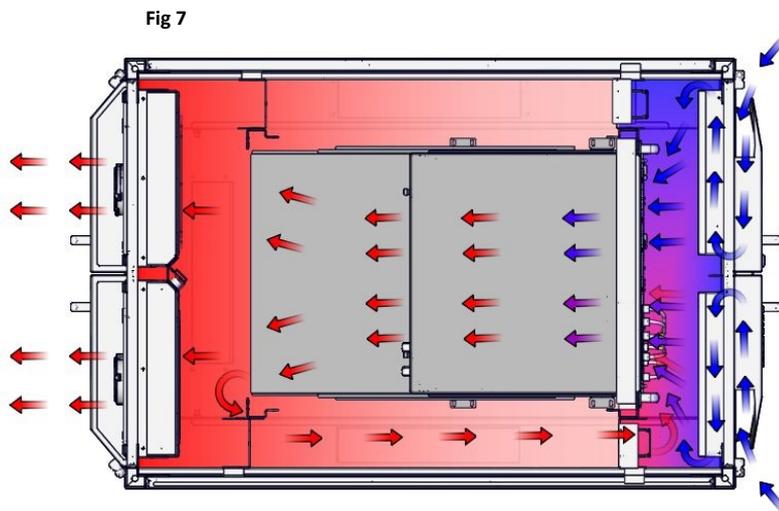
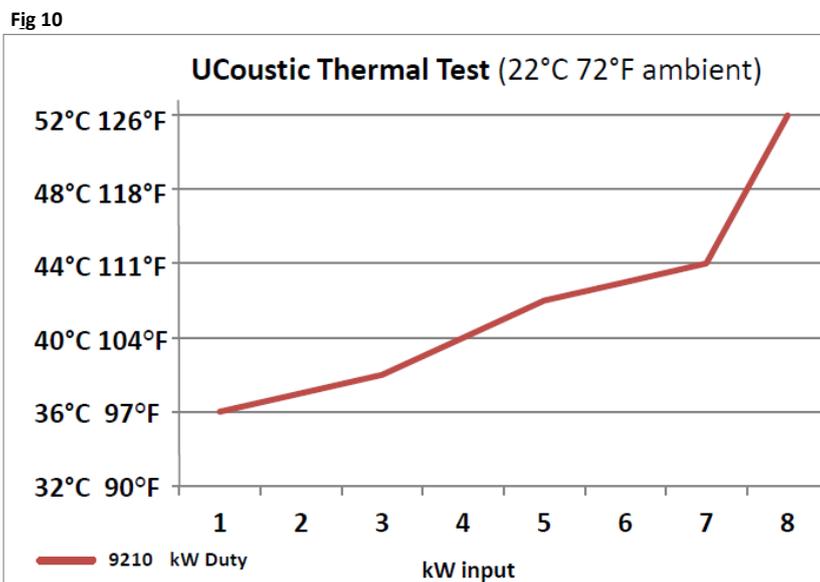


Fig 9
As illustrated, the cold ambient air mixed with the in-rush of hot air from the rear of the cabinet. This led to a rapid heat gain in the air on temperature to the IT equipment in both the localised area and a general increase in the front zone.

UCoustic 9210 heat load results



This graph (fig 10) details the thermal load tests carried out by USystems engineers. The overall design of the UCoustic cabinet enables it to successfully achieve cooling for such a high heat load.

It is worth noting however that the 7.2kW figure was achieved without any airflow restrictions in the key areas of the cabinet as detailed in Fig 1 on page 7, ensuring best installation practice.

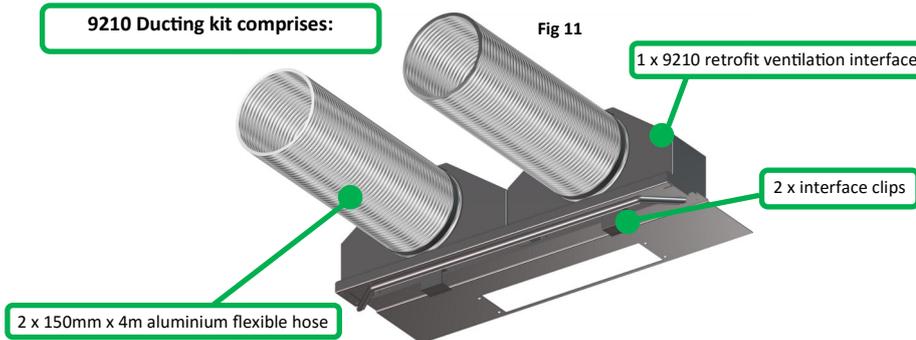
This is the thermal test graph detailing the UCoustic 9210 7.2kW cooling performance

Best practice energy saving option

UCoustic ducting kit

(see Fig 11)

Enables hot exhaust air to be directed outside the room or building, **saves on energy** and keeps the room cool

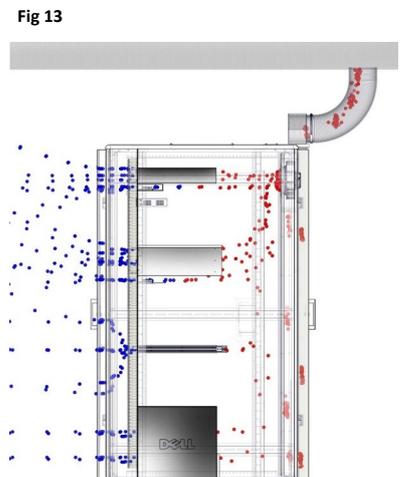


Hoses discreetly blocked from view - can be directed to go through wall or ceiling. There is room at rear of cabinet to open doors for access even when exhaust fitted

- Save money, energy and power consumption on existing room air conditioning
- Divert and recycle waste hot air providing free heating to other rooms
- Helps prevent hardware and software failures
- Helps prevent any unnecessary downtime
- Access to rear of cabinet and door opening is not affected when the ducting kit is utilised
- Retrofittable to the 24U and 42U UCoustic 9210 active cabinet
- Can be directed to exhaust through wall, window or ceiling plenum - see Figs 12 and 13



The UCoustic 9210 ducting kit enables hot exhaust air to be directed outside the room or building, thereby protecting the ambient room temperature.



IP44 floor standing cabinets

Retains the sound attenuation and heat dissipation of the standard 9210 UCoustic but with an IP 44 rating.

The cabinet is ideal for:

- Dusty environments
- Offices in industrial areas
- Sensitive active equipment
- Laboratories
- Schools

Specification

As with the standard UCoustic 9210 soundproof enclosure the IP variant is available in active or passive configuration and three heights 12U, 24U and 42U; all are 780 mm wide and 1100 mm deep.

Active units have two fans in the rear doors fitted with variable fan speed controls and temperature sensors which combined help to deal with high heat loads thus ensuring maximum energy efficiency and cooling.

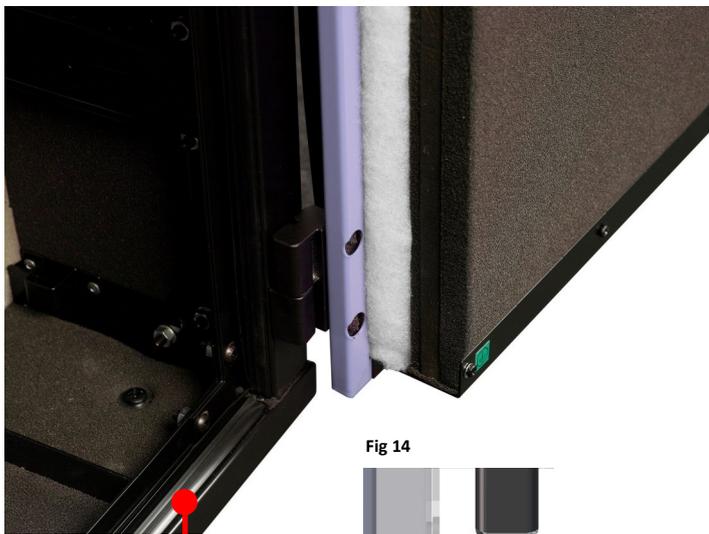


Fig 14

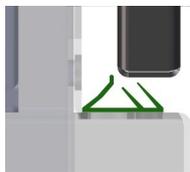
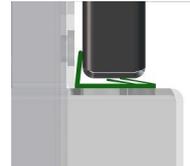
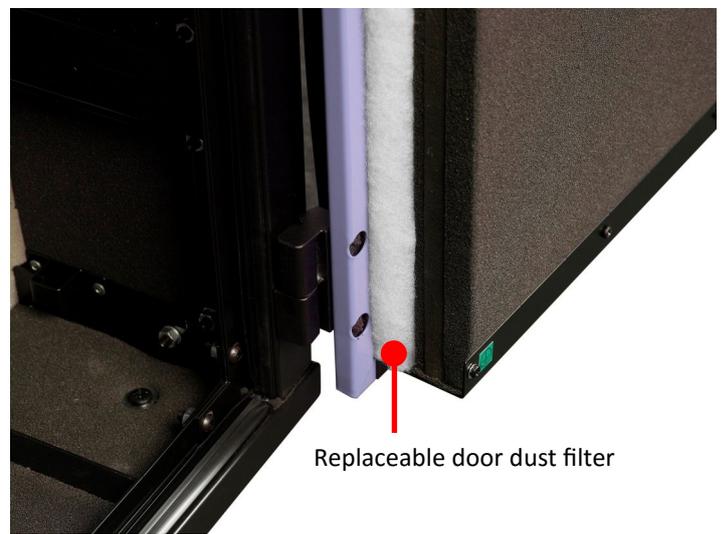


Fig 15



Three point IP seal (Fig 14) assists in all round protection, when compressed (Fig 15)



Replaceable door dust filter



9210 intelligent power

UTelligent

Intelligent power solutions

With today's ever increasing cost of power and the drive to reduce consumption, **iPower** gives the user control and information to reduce costs by using the tools that identify, log and manage events.

iPower's flexibility allows information to be managed using SNMP/HTTP and RS485 Mod-Bus protocols and is available in a full range of socket configurations and current ratings.

- iP1 - Overall power monitoring
- iP2 - Overall and per socket power monitoring
- iP3 - Overall and per power socket monitoring and per socket switching
- iP4 - Per socket switching only
- iP5 - Link legacy interface units
- All IEC sockets individually fused
- Mixed socket outlets (IEC, UK, International)
- Up to 32 sockets per unit, single and 3 phase build up to 63amp
- Billing grade measurement accuracy
- 5 year warranty
- Cost effective build and management options
- Compatible with both SNMP and RS485 (ModBus) management platforms
- Stand alone or Network configurations

As **SNMP/HTTP** via individual IP addresses or up to 32 units on a single IP address. Management information from each **iPower** unit is shown via WEB browser or through a dedicated software management package.

As a **ModBus** protocol **iPower** units can communicate with most modern management platforms or with **iPower's** own data logging and management software.

For existing Enterprise solutions MIB files can be supplied to provide a direct interface.

Historical and logging information is available and managed in a manner dependant on the protocol



9210 Accessories

This following is a select example of the comprehensive range of accessories available to the UCoustic family

Quick release UCoustic 9210 blanking panels



UCoustic 9210 blanking panels play an important role in both airflow and sound proof management. A major benefit is the prevention of hot air re-circulation on which eliminates the risk of hot spots.

UCoustic 9210 cable entry systems



UCoustic 9210 cabinets include one cable entry system as standard. There are six available ports in total, three at the top and three at the bottom of the cabinet. So further cable entry systems can be deployed as required.

UCoustic 9210 cable



Ensure best cabling practice by utilising finger cable trunking; sold in pairs and available in all UCoustic heights.

UCoustic 9210 cable tray



Ensure best cabling practice with 9210 cable tray, designed to fit in line with the top and bottom side cable entry posts. Available in 150mm width in all UCoustic cabinet heights and 300mm wide for the 42U cabinet.

UCoustic 9210 dust filter



This easy to apply washable filter prevent dust entering the cabinet, protecting sensitive hardware housed inside.

UCoustic 9210 tower infill kit



To retain maximum thermal performance and sound attenuation wen fitting non 19" equipment such as a tower PC, we have designed two sizes of tower infill kits (complete with foam to fill any possible gaps) which prevents hot spots and the potential overheating of active equipment.

UCoustic 9210 floor load spreader



A 9210 UCoustic cabinet can weigh anything up to 198kg (42U), so populated weight of up to 500kg (up to 1000kg without castors) is quite normal. This laminated floor load spreader prevents point loading on chipboard or wooden floors.

Fixed plinth with levelling feet (retrofitable)



All UCoustic floor standing cabinets come supplied with heavy duty castors as standard which have a weight loading of 500kg. The fixed plinth and levelling feet enable the weight loading to increase to 1000kg and assists in evenly distributing the weight especially on uneven floors. Unlike other designs, the UCoustic fixed plinth can be retrofitted post installation.



UCoustic compliant accessories

Load spreader



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Fixed plinth



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Levelling feet



UCoustic levelling feet can be attached directly to the cabinet along side castors to level the cabinet on an uneven floor

Baying kit



UCoustic cabinet baying kit

Earth bonding kit



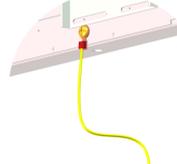
Standard cladding or wardrobe door earth bonding kit

Copper bus bar



Horizontal and vertical 3mm and 5mm thick solid copper options

Clean earth



Fixed larger earthing point for added safety

ESD Kits



Comprising earthing strap, coiled cable and earthing plug

UCoustic dust filter



Standard cladding or wardrobe door earth bonding kit

Cable entry system



Horizontal and vertical 3mm and 5mm thick solid copper options

UCoustic blanking panels



Fixed larger earthing point for added safety

Jumper ring panels



Comprising earthing strap, coiled cable and earthing plug

Finger trunking



Ensure best cabling practice by utilising finger cable trunking: sold in pairs and available in all UCoustic heights.

UCoustic cable tray



Ensure best cabling practice with 9210 cable tray, designed to fit in line with the top and bottom side cable entry ports. Available in 150mm width in all UCoustic cabinet heights and 300mm wide for the 42U cabinet.

Tower infill kit



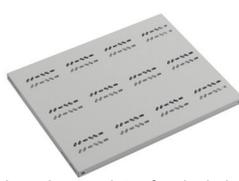
To retain maximum thermal performance and sound attenuation when fitting non 19" equipment such as a tower PC, we have designed two sizes of tower infill kits (complete with foam to fill any possible gaps) which prevents hot spots and the potential overheating of active equipment.

Cantilever shelf



Easy to fit shelving solution suitable for mounting non 19" equipment. Mount directly to the 19" mounting angles with cage nut fixings (included).

Fixed shelf



Standard or heavy duty fixed shelves with a maximum load bearing of 50kg and 100kg respectively - evenly distributed.

Chassis runners



Simple and cost effective alternative to cantilever and fixed shelving. Easy to fit and allows you to support and withdraw full width products with safety.

Telescopic shelf



Available in standard (45kg weight loading) and heavy duty (90kg weight loading) versions to fit all widths and depths of 4210 cabinets.

Side venting kit



Easy to fit shelving solution suitable for mounting non 19" equipment. Mount directly to the 19" mounting angles with cage nut fixings (included).

Document wallet



Standard or heavy duty fixed shelves with a maximum load bearing of 50kg and 100kg respectively - evenly distributed.

U measure strips



Simple and cost effective alternative to cantilever and fixed shelving. Easy to fit and allows you to support and withdraw full width products with safety.

Cage nut fixings



Available in standard (45kg weight loading) and heavy duty (90kg weight loading) versions to fit all widths and depths of 4210 cabinets.

Midi and wall box soundproof enclosures

As many office based servers, active equipment and their related cooling apparatus become more powerful to sustain the demands we make from them,, they are inevitably becoming noisier in the process. These background noises can lead to an impractical office working environment and they also run the risk of being in breach of EEC guidelines if too loud. The USpace 7250 and 7210 sound proof ranges continue the tradition of quality, style and innovation associated with the USystems repertoire of intelligently designed products.

- Houses all major server brands
- Open structure design
- Superior cable management
- Multi server practice
- Multi depth mounting
- Up to 1kW of cooling with additional fans
- Front and rear mounting angles
- Lockable easy access side panels
- One key fits all locks
- Quick release cladding
- Left or right hand hinged front door
- Value added styling

Sound proof 7250 USpace 700w wall box

Available in 12U, 18U and 21U heights, 600 deep and 700 wide, the 7250 soundproof wall box is a lower cost alternative to the UCoustic cabinet and is ideal for installations which don't require the same level of enhanced noise reduction and cooling as the UCoustic cabinet.

UP TO 15db NOISE ATTENUATION

UP TO 1.5kW OF COOLING with additional fans



Sound proof 7210 USpace 600w midi server

Available in 12U and 18U heights, 1100 deep and 600 wide, the 7210 soundproof midi server is a lower cost alternative to the UCoustic cabinet and is ideal for installations which don't require the same level of enhanced noise reduction and cooling as the UCoustic cabinet.

UP TO 1.5kW OF COOLING with additional fans

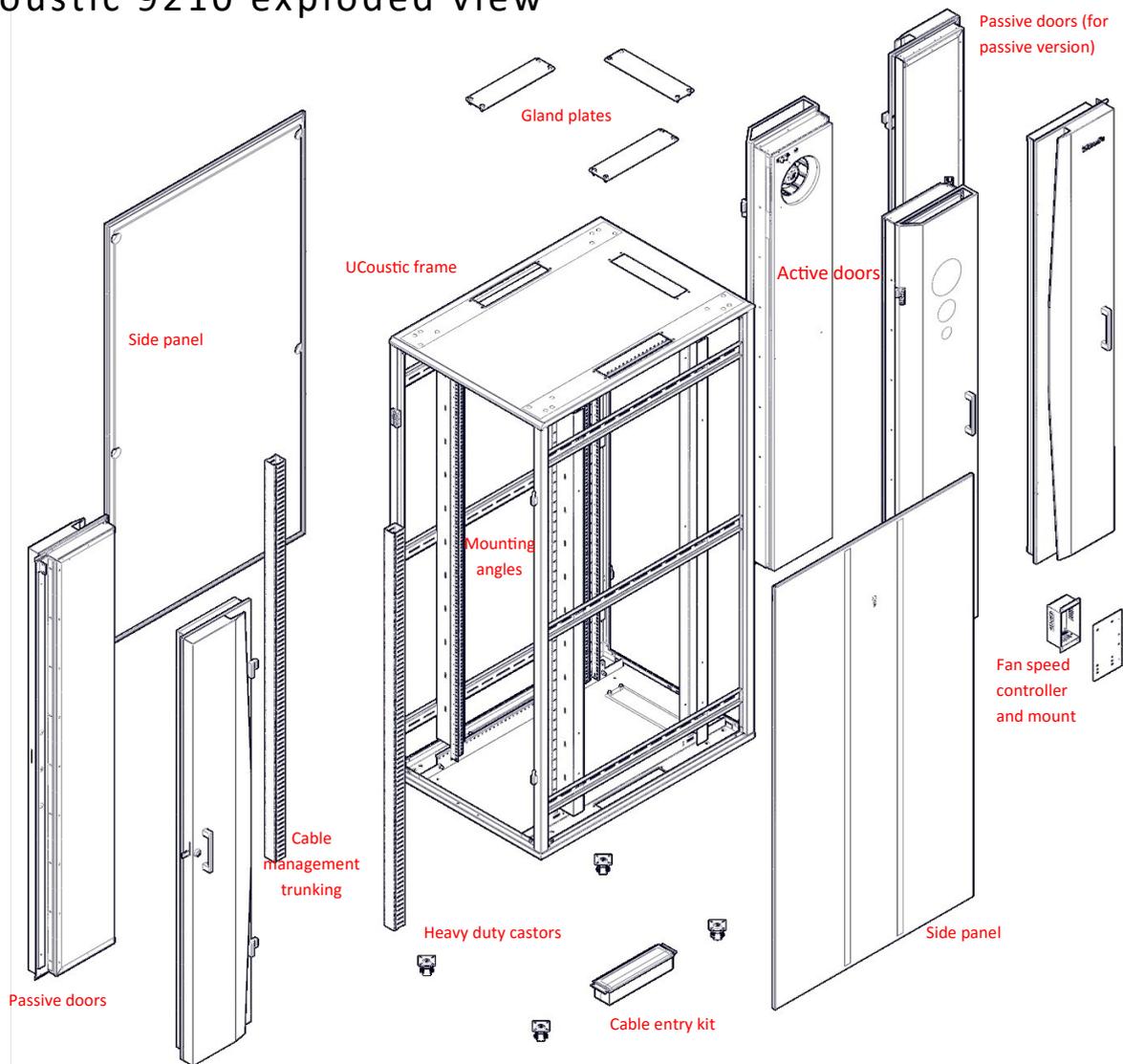
UP TO 15db NOISE ATTENUATION

250kg WEIGHT LOADING evenly spread



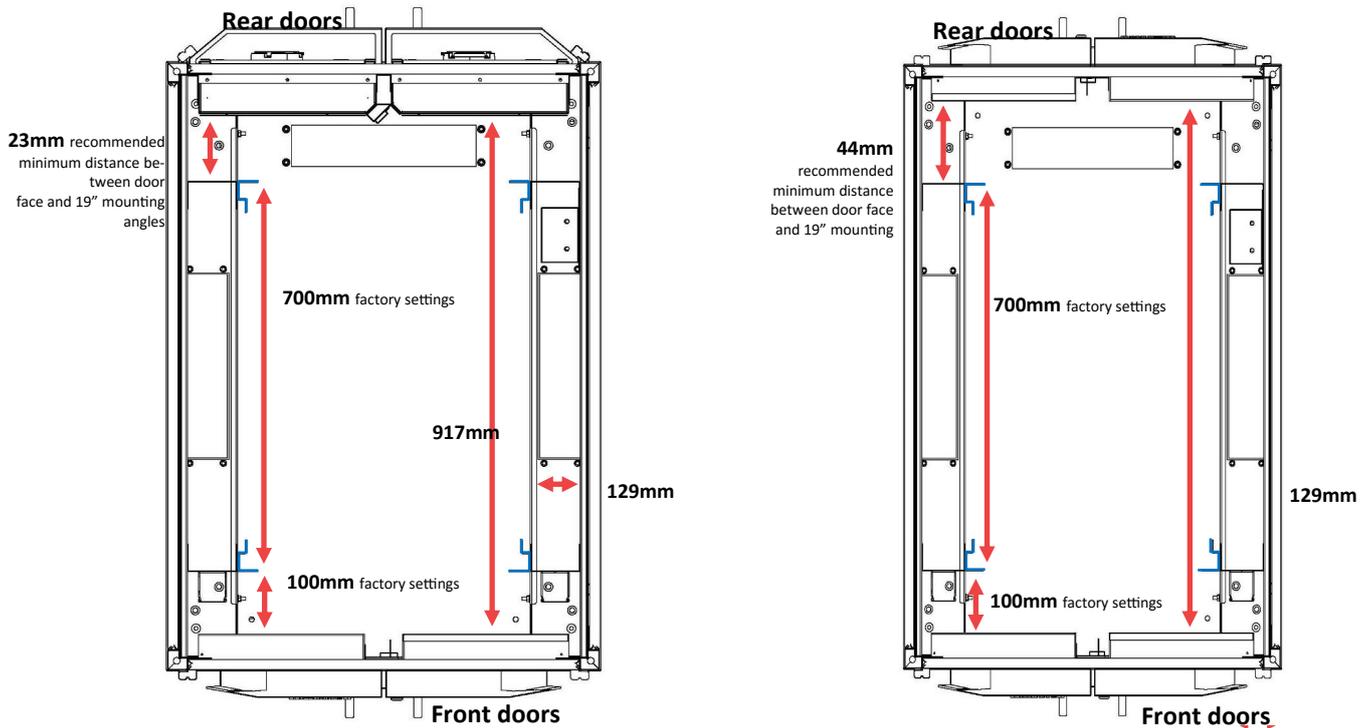
Dimensional and technical information

UCoustic 9210 exploded view



Description	Quantity	Description	Quantity
Passive doors (for active)	1 set	Cable entry kit	1
Passive doors (for passive)	2 sets	Gland plates	6
Active doors	1 set	Fan speed controller & mount	1
Side panels	2	Heavy duty castors - braked	2
UCoustic frame	1	Heavy duty castors - un-braked	2
Cable management trunking	2	Mounting angles	4

UCoustic



External dimensions and weights

	Active units			Passive units		
Cabinet usable space	12U	24U	42U	12U	24U	42U
External height without castors	620 mm	1152 mm	1954 mm	620 mm	1152 mm	1954 mm
External height with castors	720 mm	1252 mm	2054 mm	720 mm	1252 mm	2054 mm
Weight	118kg	179kg	298kg	109.5kg	166.5kg	275kg
Floor footprint (w x d)	780 x 1100 mm					
Floor footprint with doors (w x d)	780 x 1210 mm					
Usable internal depth	850.2 mm					
Maximum load capacity	1000kg without castors			500kg on castors		

Energy and attenuation performance

	Active units	Passive units			
Maximum heat load	7.2kW - all heights	1.75kW	2.25kW	2.75kW	
Maximum power consumption	Up to 1 Amp - all active models		Not applicable		
Attenuation performance	28.5dBa - all models				

UCoustic data cabinets

Space utilisation with unrivalled sound attenuation and heat dissipation



A server room in a cabinet!



USystems Limited

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