Ultima 5M
Video Wall Controller

PICMG 1.3 Configuration User Guide

Document Reference	Ultima5M Manual
Document Issue Level	1.5

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INTRODUCTION

COMPANY PROFILE

Blue Chip Technology is a leading specialist PC product manufacturer in Europe, providing innovation with quality design and manufacturing from a single source.

Based in the North West of England, our purpose built complex contains both advanced research and development facilities, and manufacturing facilities.

Specialising in the provision of industrial computing and electronic solutions for a wide range of UK and European organisations, Blue Chip Technology has one of the UK's largest portfolios of industrial PCs, Industrial PCs, peripherals and data acquisition cards. This extensive range of products, coupled with our experience and expertise, enables Blue Chip Technology to offer an industrial processing solution for any application. This is one of the products from our portfolio, providing you with a cost effective product development and volume production tool.

A unique customisation and specialised system integration service is also available, delivering innovative solutions to customers problems. The company's success and reputation in this area has led to a number of large design and manufacturing projects for major companies.

British Standards Institute approval (BS EN 9001) means that all of Blue Chip Technology's design and manufacturing procedures are strictly controlled, ensuring the highest levels of quality, reliability and performance.

Blue Chip Technology are committed to the single European market, and continue to invest in the latest technology and skills to provide high performance computer and electronic solutions for a world-wide customer base.

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REGULATORY STATEMENTS

CE
This product meets the essential protection requirements of the European EMC Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC), and is eligible to bear the CE mark.

> **Warning**
>
> This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC
NOTE:
This equipment has been designed to meet the requirements of a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

WARNING:

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

RELATED PUBLICATIONS

The following publications will provide useful information related to the Standard Personal Computer and can be used in conjunction with this manual.

- IBM Personal Computer AT Technical Reference, 1502494, IBM, 1984.
- IBM Personal System/2 and Personal Computer BIOS Interface Technical Reference, 15F0306, IBM, 1987.
- The Programmers PC Sourcebook, Microsoft
- The Winn L. Rosch Hardware Bible, Brady

TRADEMARKS

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All 80x86 and Pentium processors are registered trademarks of Intel Corporation.

MS-DOS and WINDOWS are registered trademarks of the Microsoft Corporation.

Linux is a registered trademark of Linus Torvalds.

ATA-Disk Chip is a trademark of Silicon Storage Technology Inc.

PRECAUTIONS

Certain precautions are necessary when designing with, handling, and using circuit boards. ***It is imperative that precautions are taken at all stages to avoid electro-static discharges, which will damage boards. Those boards fitted with an on-board lithium battery must be handled carefully to avoid maltreatment of the battery that could create a hazard.***

ELECTRO-STATIC DISCHARGES

Some of the devices within the Industrial PC can be totally destroyed by static electricity. Also bear in mind that the damage caused by static electricity may be partial and not immediately obvious. This could have an effect on your product's reliability and warranty. Ensure that you take necessary static precautions; ideally you should wear an approved wrist strap or, if that is not possible, touch a suitable ground to discharge any static build up. This should be repeated if the handling is for any length of time.

When carrying any boards around, please place them into anti-static bags. This will prevent any static electricity build up. If the board has an on-board battery, do not use black anti-static bags because these tend to be conductive and will discharge any on-board battery.

ON-BOARD BATTERY

The Ultima 5M contains a Processor board with an on-board lithium cell connected. To that end the following precautions apply and should be observed. If the battery is mistreated in any way there is a very real possibility of fire, explosion, and harm. Great care should be taken with this type of battery. Under NO circumstances should it be:

- short-circuited
- exposed to temperatures in excess of 100 ºC or burnt
- immersed in water
- unsoldered
- recharged
- disassembled

Expired batteries remain hazardous and must be disposed of in a safe manner.

BIOS & CMOS RAM

Please be aware that on Industrial PC products, it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings on the Processor board being used for details).

ELECTROMAGNETIC COMPATIBILITY

This product has been assessed operating in representative, standard configurations. As with any PC product, however, final installation & configuration can vary significantly, and so the following guidelines are offered to help ensure that compatibility is maintained.

- All components added to a system should either carry appropriate equivalent levels of compliance, or be tested for compliance as part of the final system, and should be installed in accordance with supplier recommendations.
- The external enclosure should be securely fastened (with standard lids and covers in place) to ensure good metal-to-metal contact around the internal electronics
- Any metal back plate must be securely screwed to the chassis of the computer to ensure good metal-to-metal (i.e. earth) contact.
- Metal, screened, connector bodies should be securely connected to the enclosure.
- The external cabling to boards causes most EMC problems. It is recommended that any external cabling to the board be totally screened, and that the screen of the cable connects to the metal end bracket of the board or the enclosure and hence to earth. Round, screened cables with a braided wire screen are used in preference to those with a foil screen and drain wire. Wherever possible, use metal connector shells that connect around the full circumference of the cable screen: they are far superior to those that earth the screen by a simple "pig-tail".
- The keyboard and mouse will play an important part in the compatibility of the processor card since they are ports into the board. Similarly, they will affect the compatibility of the complete system. Fully compatible peripherals must be used otherwise the complete system could be degraded. They may radiate or behave as if keys/buttons are pressed when subject to interference. Under these circumstances it may be beneficial to add a ferrite clamp on the leads as close as possible to the connector. A suitable type is the Chomerics type H8FE-1004-AS.
- USB cables should be high quality screened types.
- Ensure that the screens of any external cables are bonded to a good RF earth at the remote end of the cable.
- An earth stud is available on the back of the unit to improve grounding in extreme environments

Failure to observe these recommendations may invalidate the EMC compliance.

GETTING STARTED

MANUAL ORGANISATION

This manual describes the Blue Chip Technology ULTIMA 5M Video Wall Controller.

We have tried to include any unique information relying on end users to be computer literate and experienced in configuring hardware and software in a PC environment. The manual is sectioned as follows:

Overview, listing the Chassis's features and specification;
Layout, and dimensional details;
Installation, and associated issues;

We strongly recommend that you study this manual carefully before attempting to interface with the ULTIMA 5M PC or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance. ***IT IS PARTICULARLY IMPORTANT THAT YOU READ THE SECTION 'PRECAUTIONS' BEFORE HANDLING ANY BOARDS.***

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Technical Services department with the relevant details.

OVERVIEW

INTRODUCTION

The ULTIAM 5M is a modification of the standard ULTIMA ruggedised PC compatible microcomputer designed for reliable operation in adverse environments. The unit has been designed specifically for use with the Matrox Mura range of Video Wall Controller cards. It is available as a 19" rack mountable unit, and as a desktop unit. Both units use a common chassis and layout. System controls and disk drives are protected behind a sealed lockable steel door. The machine is cooled internally by filtered air, which enters through a removable filter at the front panel and exits at the rear. Access to boards is by a removable top cover. Connections to the boards are made at the rear of the chassis and behind the front door.

FEATURES

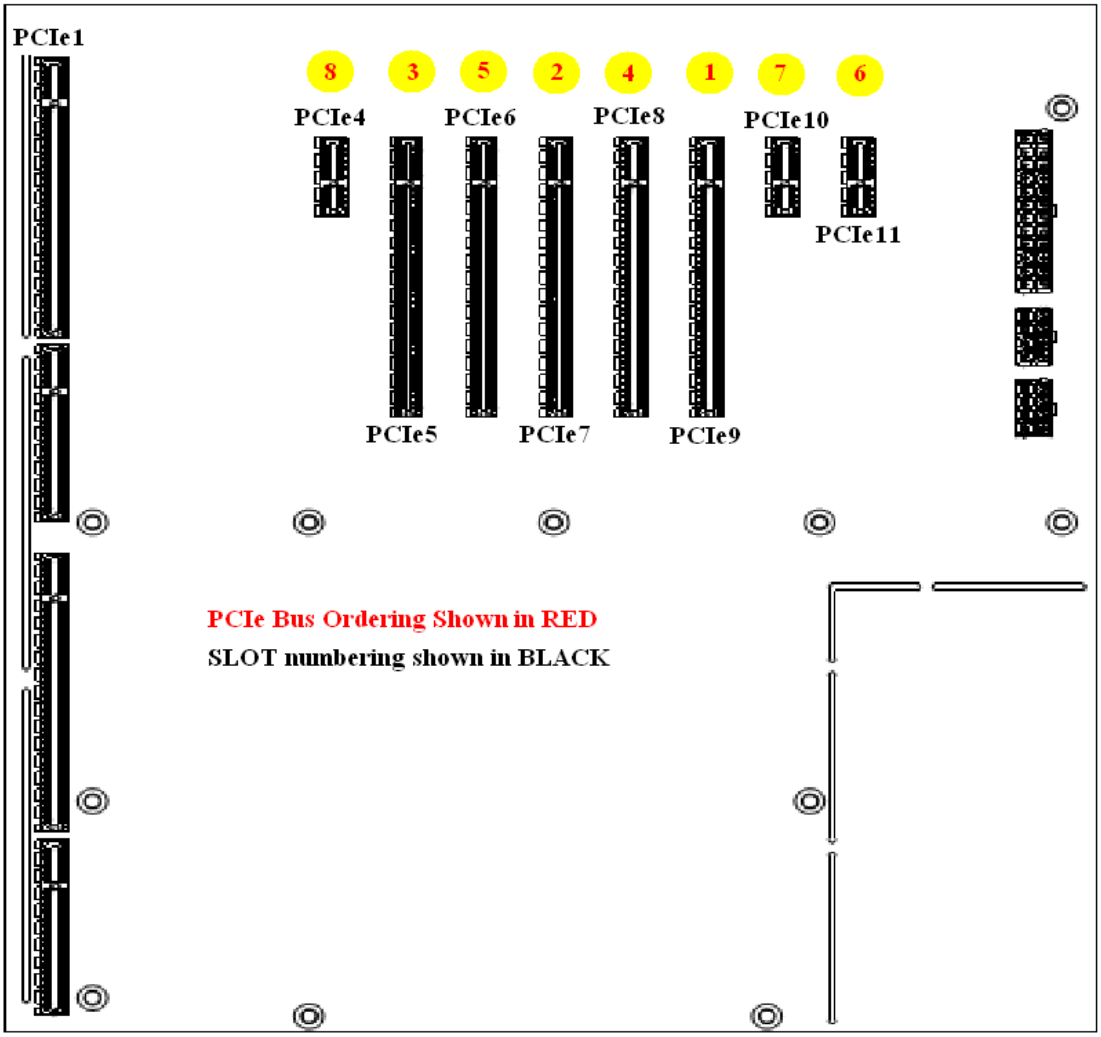
- Robust polished stainless steel chassis using recognised electromagnetic compatible (EMC) emission and immunity design techniques.
- Front panel with lockable door security for system controls.
- PICMG 1.3 compliant.
- Switch mode power supply unit
- Shock and vibration protected drive cage
- Filtered air through two 92 x 38 mm, 12V DC fans mounted behind the filter panel.
- Quick access to the air filter. The filter is a coated polyester material of 30 PPI porosity having a flammability rating to UL94 Class V0.
- Card retention mechanism.
- Optional telescopic slide rail fittings.
- Each system is supplied configured to order. The System Release Documentation details each particular system's configuration

ULTIMA 5M PICMG 1.3 SPECIFICATION

The following list describes the default and optional configurations available

- Single Board Computer
  - LGA1155 for 3rd Generation Intel Core i7/i5 processors
  - Intel Q77 PCH
  - Dual DDR3 DIMM supporting up to 16GB memory
  - Dual 10/100/1000Mbps Ethernet
- Passive PICMG 1.3 Backplane
  - 5 PCI Express x16 slots
  - 3 PCI Express x 1 slots
- Intel i7 3770S Gen 3 CPU
  - i5 Gen 3 CPU options are available
- 4GB 1333MHz DDR3 DIMM
  - Higher Capacity/Speed options are available
- 6 SATA Ports
  - 2 x 6Gbps
  - 4 x 3Gbps
- 14 USB
  - 2 Rear USB 3.0 (on SBC)
  - 2 Front USB 2.0
  - 2 additional USB 3.0 Ports available via header on SBC (Optional Fit via cable)
  - 4 additional USB 2.0 Ports available via header on SBC (optional fit via cable)
  - 4 additional USB 2.0 Ports available via header on backplane (optional fit via cable)
- 2 RS232
  - 9 way D-type
- 1 Parallel Port (optional fit via Cable)
  - 25 Way D-type
- 750W ATX Power Supply
  - Higher capacity PSU options are available
  - Optional 800W Dual Redundant configuration
- 500GB SATA HDD
  - Other capacity HDDs are available
  - DVD Optical drive option available
  - Supports total of 3 internal SATA options
- Dual High Capacity 92 x 38mm Chassis Fans
  - Speed Control available
- Audio Input Output Card
  - Optional
- Matrox P690 Graphics Card
  - Optional as Control Monitor via PCI Express x 1 Port
- Matrox Mura
  - Optional As required
  - Up to 5 Mura Cards supported
- Support for further two PCI Express x 1 Adapter cards

BACKPLANE LAYOUT

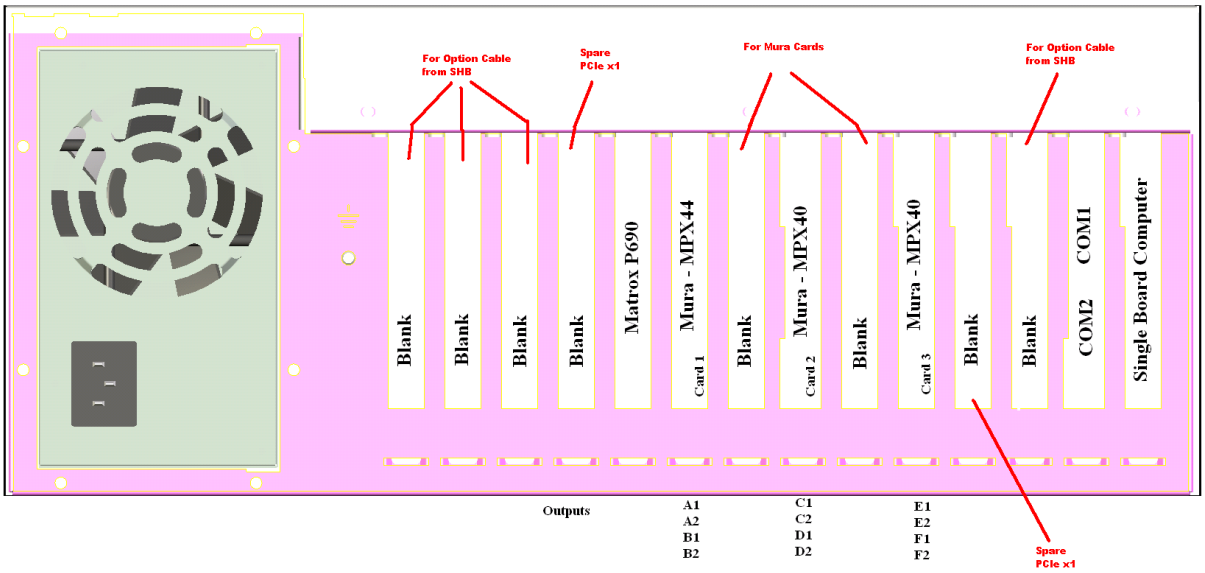


The picture above shows the slot layout on the backplane. Due to the need to match signal lengths between the slots and the PLX 96 lane switch, the slots are not enumerated in order.

When installing Matrox Mura cards into the backplane, they should be installed in the following order

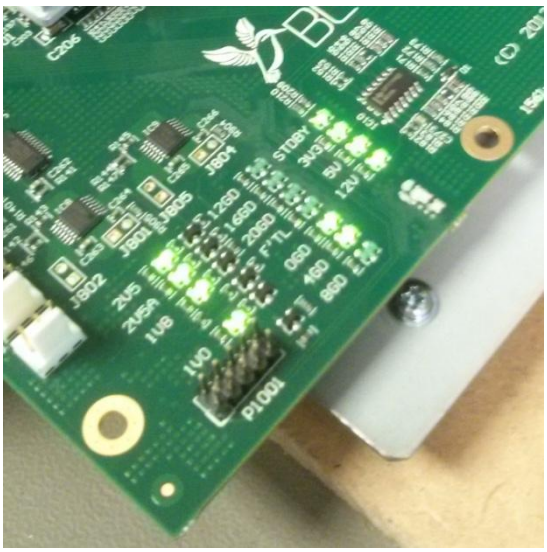
Backplane Connector	Matrox Card	Example	
		Card	Output
PCIe 9	Card 1	MPX40	A1, A2, B1, B2
PCIe 7	Card 2	MPX40	C1, C2, D1, D2
PCIe 5	Card 3	MPX40	E1, E2, F1, F2
PCIe 6	Card 4	MPX40	G1, G2, H1, H2
PCIe 8	Card 5	MPX40	I1, I2, J1, J2

Example 1: 3 Mura Cards with P690 and PCI Express x 1Audio Card



The above picture shows the rear view of the chassis. The Matrox P690 is positioned in PCIe Slot 10 as expected, and the first Mura card is positioned in PCIe Slot 9.

BACKPLANE LED'S



The LED's on the backplane indicate the speed of each PCI Express x 16 slot.

The 0GD Led should always be Full On and should not flash indicating that it has synced at full Gen 2 speeds.

When operational, all Power LED's should be lit.

Slot:	***LED:***	
SHB	0GD	Full 'on' – PCIe[x16] sync at Gen 2 0.5s 'on'/0.5s 'off' – some PCIe lanes sync at Gen 2 1.5s 'on'/0.5s 'off' – PCIe[x16] sync at Gen 1 0.5s 'on'/1.5s 'off' – some PCIe lanes sync at Gen 1
P402 (PCIe9)	4GD	
P502 (PCIe7)	16GD	
P401 (PCIe5)	8GD	
P601 (PCIe8)	20GD	
P501 (PCIe6)	12GD	

ULTIMA 5M MURA INDUSTRIAL PC

CHASSIS FEATURES

CHASSIS

The basic chassis is common to both types of assembly (rack mounting and desktop), and comprises several sub-assemblies:

Chassis body including the cooling fan assembly
Chassis front panel
Chassis cover
Internal drive cage assembly
Power supply unit and associated battery pack

The common metalwork is of stainless steel construction with riveted fitments. Removable items are fixed by screws.

Fitted internally are two cooling fans, Single Board Computer, passive back plane and HDD.

The front panel has two hinged doors. Both doors have vent holes to allow air through to the filter. The right hand door, which is lockable, gives access to the drive bays, the power on/off switch and two USB ports.

CHASSIS SPECIFICATION

Chassis

19" Rack mountable polished stainless steel chassis
Optional Card restraining system
Shock mounting for drives
Front panel handles
Optional fully extending heavy-duty slide rails
High capacity fans
Air filter approved to UL94 V-0
Locking door covering disk drives, power and reset switch.
Nitrile/PVC seals - Approved to FMVSS302

Temperature	Non-Operating	-20 ºC to +70 ºC	
	Operating (1)	+0 ºC to +50 ºC	[Chassis + SBC]
	Operating (2)	+0 ºC to +35 ºC	[With Mura Cards Fitted]

Note1: Unit should not be started at temperatures less than 5ºC as items with mechanical parts, such as the HDD, may not operate correctly at such low temperatures resulting in damage

Note2: Max Temperature changes are restricted to ± 20ºC per hour as damage to HDD's resulting in data loss may occur above this rate of change

Humidity

0-90 %RH non-condensing

Shock:

(IEC 68-2-27)
Operating 5G 11 ms, ½ sine wave
Non-operating 15G 11ms, ½ sine wave

Vibration:

(IEC 68-2-6)
Operating 5 to 500 Hz, 0.5G
Non-operating 5 to 500 Hz, 2.0G

Safety

Designed to meet EN 60950

CHASSIS LAYOUT

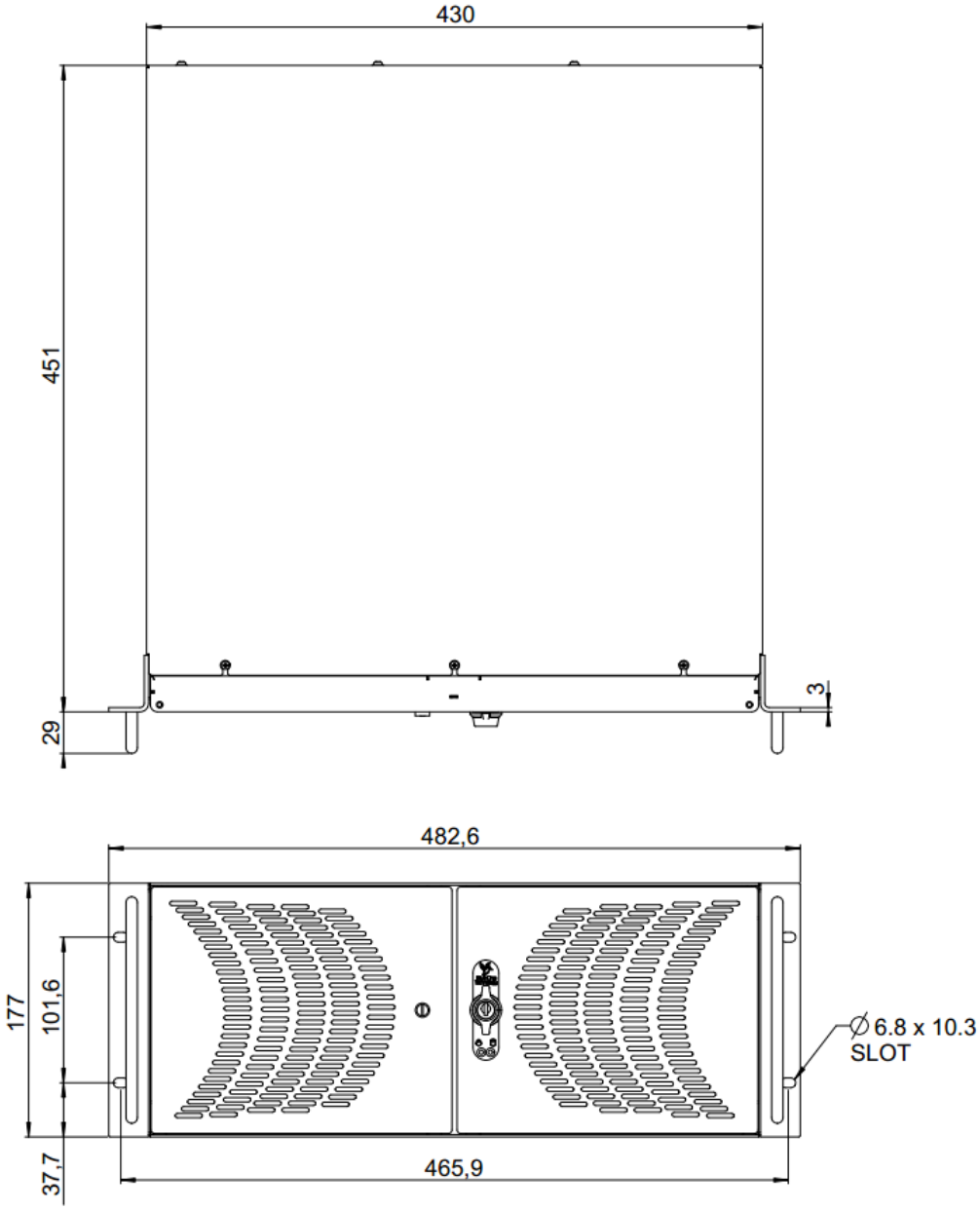
RACK MOUNT

The rack mounting chassis is made of polished stainless steel and is shown in Figure 1. It comprises the same chassis as the bench mount, but has mounting ears. The chassis is completed by a polished stainless steel lid held in place by eight screws.

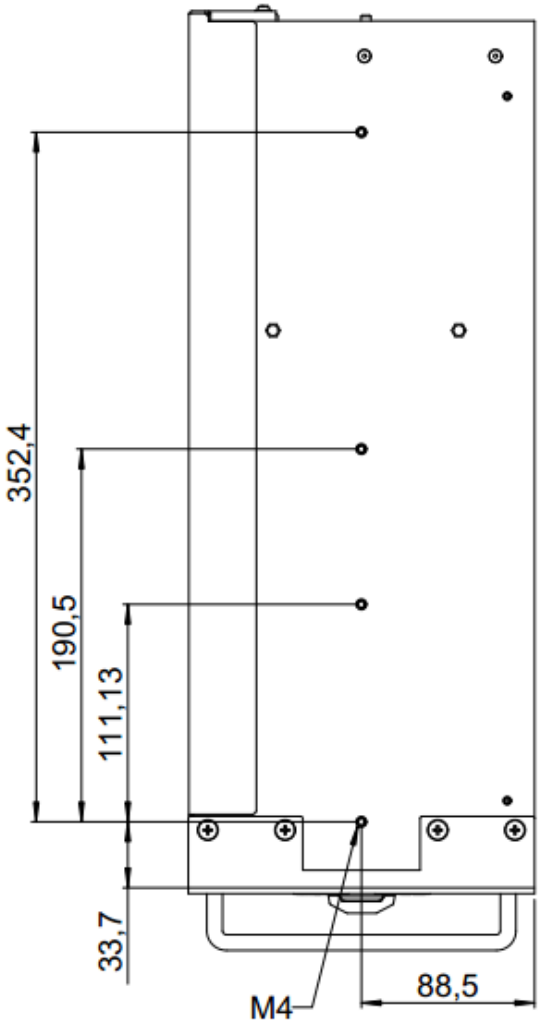
The front panel is a 4U high, full 19" racking width panel. The front panel secures the unit to the rack ladder by four fixing screws. To permit withdrawal from the racking, handles are fitted to the front panel.

The rack mount unit has tapped holes along each side to facilitate the mounting of the slide rails. Take care not to insert longer screws than those provided in the side (M4 x 6 maximum). Overly long screws may cause internal damage.

Figure 1 Rack Mount Dimensions



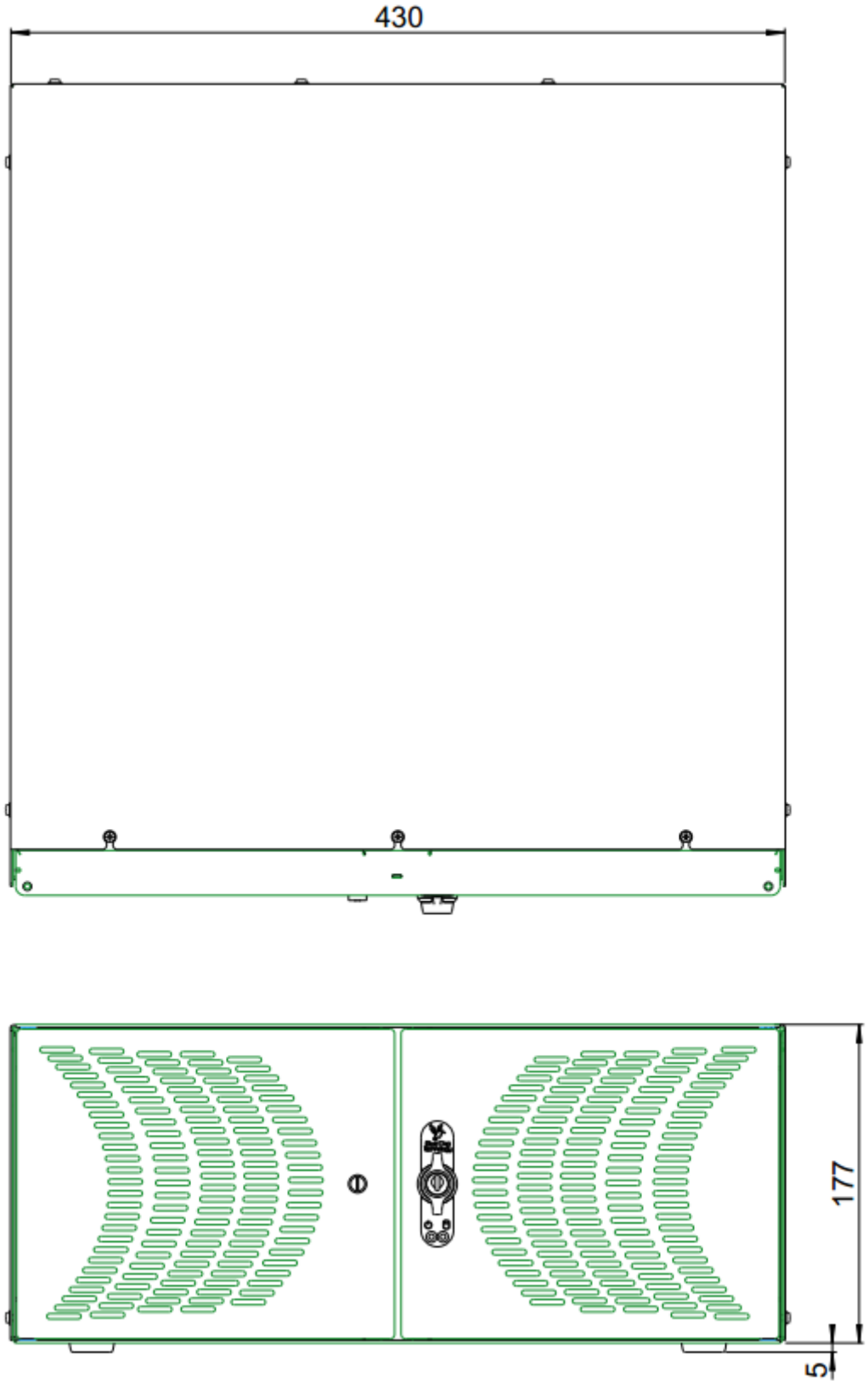
Note: Hole patterns in door relate to Standard Ultima 4U

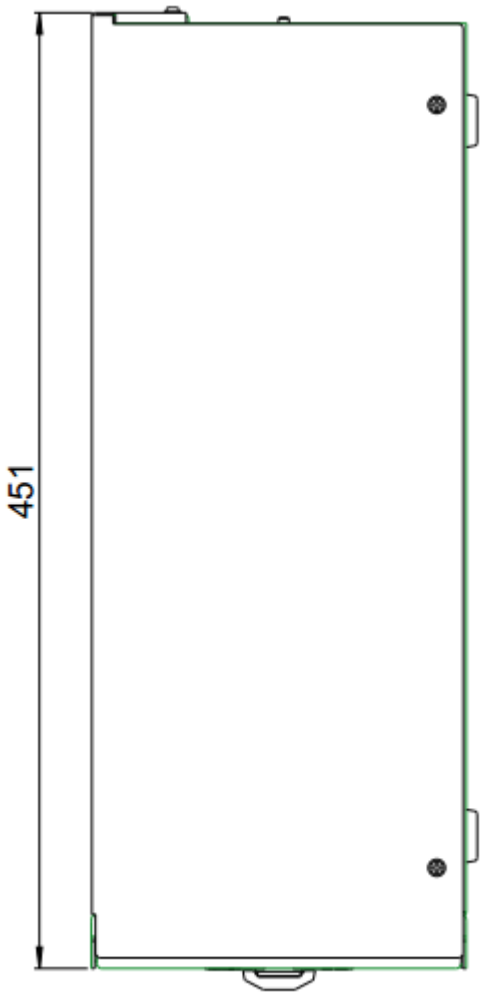

352,4
190,5
111,13
33,7
M4
88,5

DESKTOP

The desktop unit is shown in Figure 2. It comprises the same chassis as the rack unit, but without the mounting ears.

Figure 2 Desktop Dimensions





FRONT PANEL

Operator controls and the air filters are located on the front panel behind sealed doors. The operator controls are behind a key-lockable door, on the right hand side. A ¾ turn fastener allows access to the filter on the left hand door.

REAR PANEL

All electrical connections to the ULTIMA are made at the rear of the unit. Units are configured individually to requirements. Refer to the System Release Documentation for details of a particular PC configuration.
Due to proximity of other electrical equipment, it may be necessary to connect the chassis earth stud direct to the best available cabinet earth in a rack mount installation. This is to ensure the integrity of the system EMC.

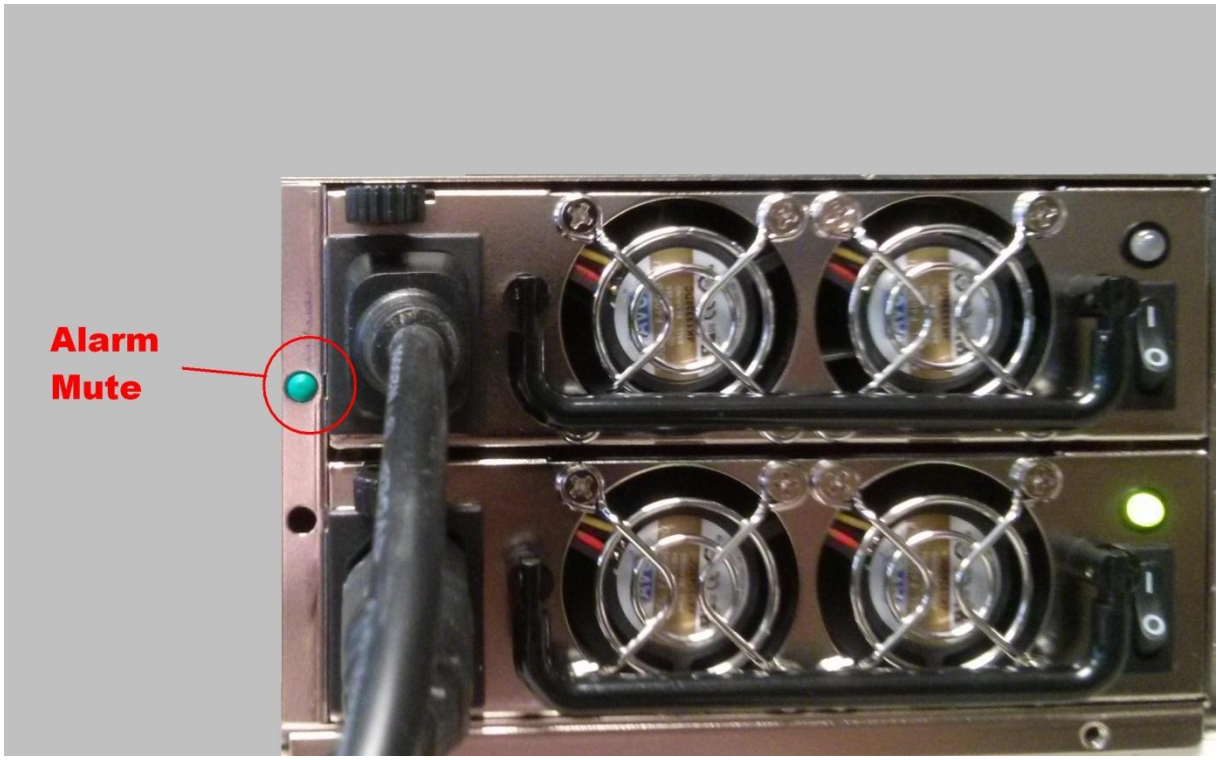
POWER SUPPLY & BBU

The chassis can be fitted with a variety of ATX style Power Supplies.
Some PSUs may have switchable input voltage range. In these cases the following warning should be observed.

> **WARNING**
> Selection of the wrong voltage may cause permanent damage to the unit. Ensure that the switch is correctly set for the installation supply before connecting to the supply. If the wrong voltage is applied to the unit the internal fuse may protect the ULTIMA. However, this cannot be guaranteed. Blue Chip Technology accepts no responsibility for the consequences of operating the unit on the wrong supply.

Some Power Supply variants do not offer –5Volts. If this voltage rail is required, or if other specific voltage rails and power needs are required, then please contact Blue Chip Technology in order to identify a suitable power supply option to match your requirements.

For units fitted with a Dual Redundant power supply, in the event of failure of one of the modules, the other will continue to operate until such time that the faulty module or power feed can be replaced or resolved.



In the event of failure, an audible alarm will sound. This can be cancelled be pressing the Green button shown in the picture above. The faulty module/power inlet will have the LED turned off.

QUICK START GUIDE

If the Ultima 5M is provided with an operating system installed and pre activated, then the default username will be “videowall” with no password set. It is recommended that on receipt of the unit user accounts and passwords should be set up as required.

It is important that before powering on the unit for the first time that a display is attached to the relevant primary display output. This output can be identified as follows:

If no additional graphics cards are installed, then the primary display output will be the VGA port on the single board computer, as shown on the left.

If a Matrox P690 card is fitted, then it will occupy the 5th slot from the left as shown on the left. There are two versions of this card: one with a high density connector requiring an interface cable or one with dual DVI connections (as shown on the left).

If fitted, the P690 should be the primary display output, and the display should be attached to this.

If P690 and Matrox cards are both fitted, then the P690 will still be the primary display

If Matrox Mura cards only are fitted, then the primary display will be output 1 on the left most card fitted. Note that the upper connector is the Output ports, while a lower connector (if fitted) is the Input ports.

If more than 1 Mura is fitted from the factory, then to match the Matrox PowerDesk numbering system, the left most will be A1, A2, B1, B2, the next card on the right will be C1, C2, D1, D2 etc.

Note that P690 outputs will appear on the Matrox Powerdesk as the highest letters: so for only a single Mura card fitted, the P690 outputs would be C1 and D1, but for 5 Mura cards fitted, the P690 outputs would appear as K1 and L1

It is recommended that other displays are not attached until all applications have been added and the operating system has been customized as required. Note that after connecting additional displays to the Mura outputs, the unit will require to be rebooted in order for the new displays to be recognised.

INSTALLATION

ELECTRICAL

This item must be connected to an earthed socket. A stud is fitted to the rear panel of the chassis. It is recommended that this is also connected to a good earth within the racking system. Cutting washers must be used in order to maintain a good connection.

The plug on the power supply cord is intended to serve as the power disconnect device. The socket outlet into which this is plugged should be near the equipment, and should remain readily accessible when all items are mounted in the racking enclosure. It is good practice to identify the socket.

If the plug fitted to the power supply cord is removed, the cord should be connected to a suitably installed power disconnect device, by qualified personnel.

RACK MOUNTING

If the ULTIMA is to be installed in a 19" rack unit, it is recommended that telescopic slide rails are used. A slide rail kit is available from Blue Chip Technology Ltd.

WARNING
Under no circumstances must the ULTIMA be mounted in a 19" rack solely by its front panel fixings. Slide rails or a rear support must be used.

Before installation carefully assess the space available. Figure 1 gives outline dimensions of the chassis. Ensure there is enough room at the rear of the unit for cables. DO NOT mount the unit in such a way that air inlet or outlet vents are covered or blocked.

The slide rail kit will accommodate cabinets with front to rear ladder depths from 540mm to 790mm. The slide rail kit comprises:

M6 cage nut	12
M6 x 10 Pan Head screw	4
10/32 UNF Fillister Head Screw	8
Bar Nut	4
Large extension bracket (Rear)	2
Small extension bracket (Front)	2
Telescopic slide rail	2
M4 Screw & washers	8

The following procedure describes the installation for one slide rail. Both sets of slides will need to be installed to mount the ULTIMA within a cabinet.

CAGE NUT INSTALLATION
Refer to Figure 5 to identify the pattern of the ladder holes. Holes A, hold cage nuts to which the front panel will eventually be secured. Holes B hold cage nuts and clamp the front and rear ends of the fixed section of the slide rails.

Clip M6 cage nuts into front ladder sections in positions A and B. Repeat on the right hand side. A total of 8 cage nuts will be fitted to the front of the 19in cabinet.

Clip M6 cage nuts into rear ladder sections in positions B only. Repeat on the right hand side. A total of 4 cage nuts will be fitted to the rear of the 19in cabinet.

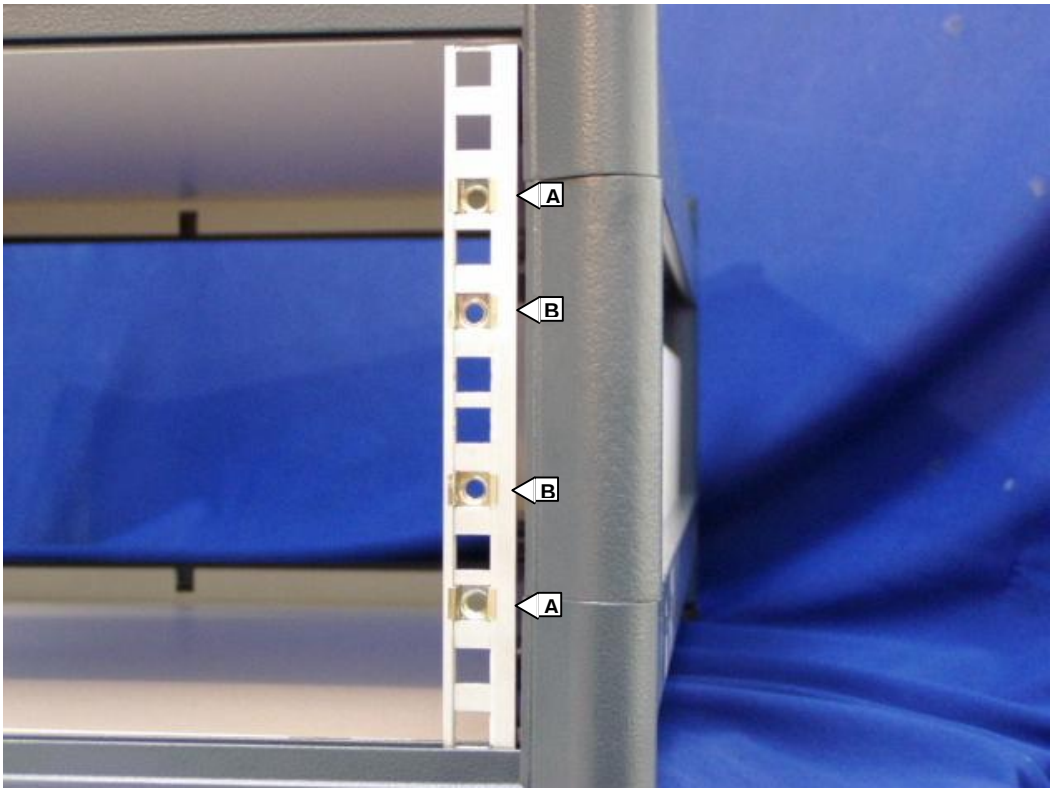


Figure 5 4U Ladder Holes (left hand side)

SLIDE RAIL AND BRACKET ASSEMBLY

Referring to Figure 6.1, withdraw the inner slide section and disconnect by depressing the spring catch. Figure 6.2 shows outer and inner slide rail sections disconnected, top and bottom respectively.

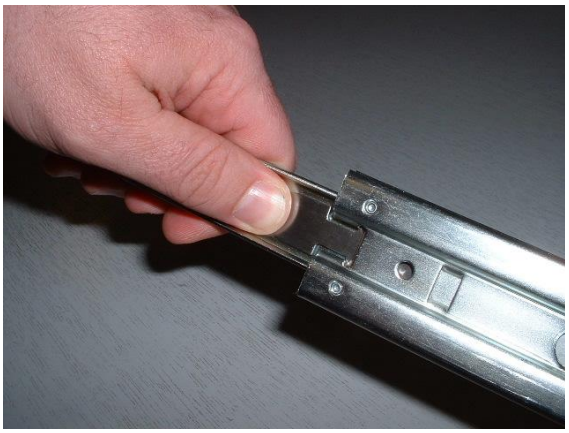


Figure 6.1

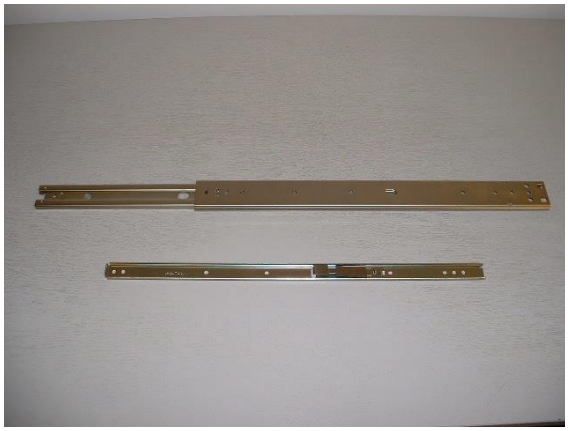


Figure 6.2

Figure 6.3, shows the relationship between the brackets and slide rail outer section. The small bracket fits to the front of the cabinet, the larger to the rear. Note the rail orientation, with middle slide visible at the front.

Figure 6.3

Referring to Figure 6.4 and 6.5, attach the front bracket to the slide rail outer section. For most installations the first attachment hole on both the slide and bracket is recommended. For assembly an access hole on the middle slide is provided. In this position the slide rail outer will sit flush to the front of the bracket slot face.

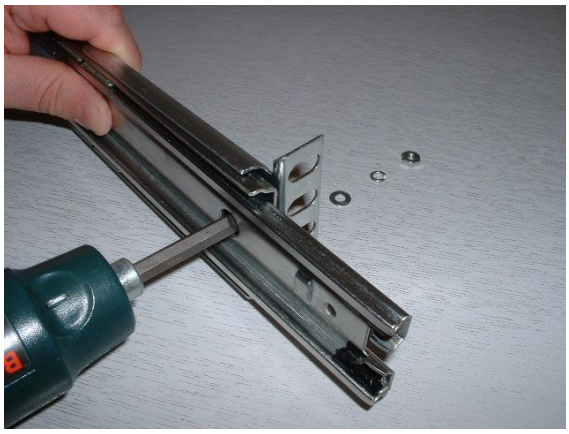


Figure 6.4

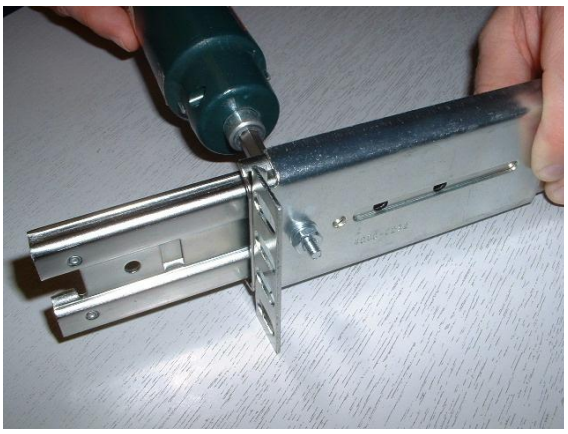


Figure 6.5

Referring to Figure 6.6 and 6.7, loosely attach the rear bracket to the slide rail outer section. The bracket position indicated is typically suitable for a 600mm deep cabinet. It is recommended that at least two screws, per bracket be used. The screws will be tightened once the slides are installed in the 19in cabinet.

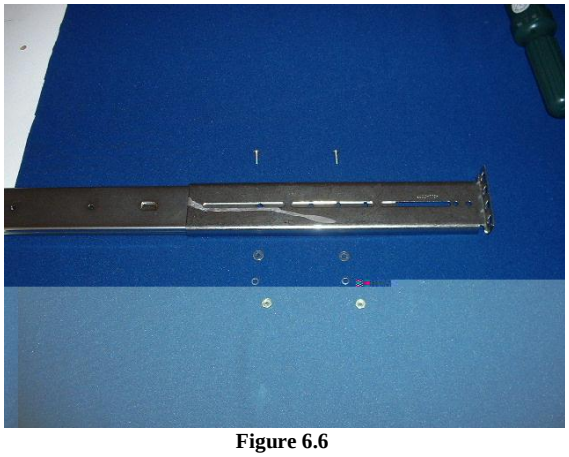


Figure 6.6

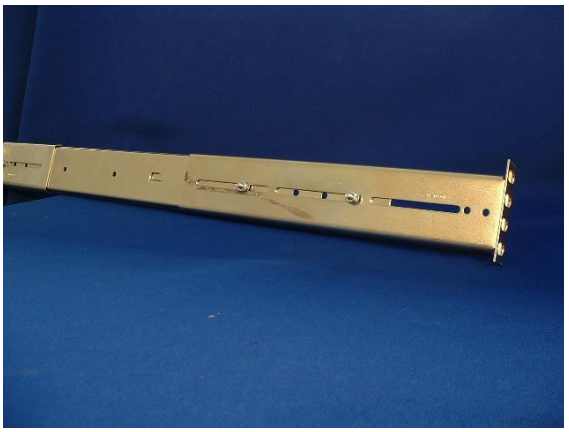


Figure 6.7

SLIDE RAIL INSTALLATION

Referring to Figure 6.8, insert fillister head screws through cage nut B at front and rear.

Figure 6.8

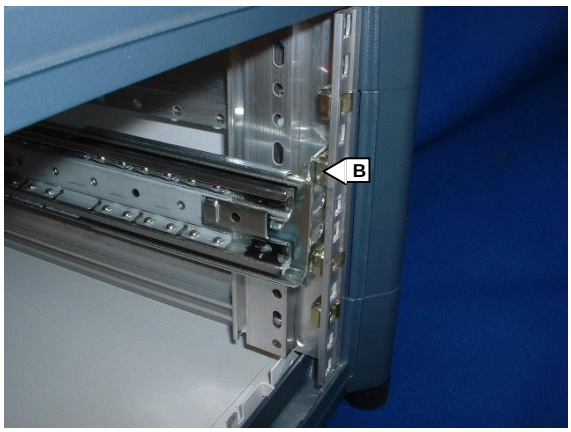


Figure 6.9

Referring to Figure 6.9, carefully position slide rail and bracket assembly on to fillister screws B at front and rear.

Referring to Figure 6.10, carefully slide bar nut behind front bracket and turn fillister screw to engage thread and loosely clamp the bracket. Insert fillister screw into lower cage nut B position (Figure 5) and loosely tighten. The installation will look like Figure 6.11.

Figure 6.10

Figure 6.11

Repeat this procedure at the rear.

Referring to 6.12, withdraw the middle slide until it locks into the extended position.

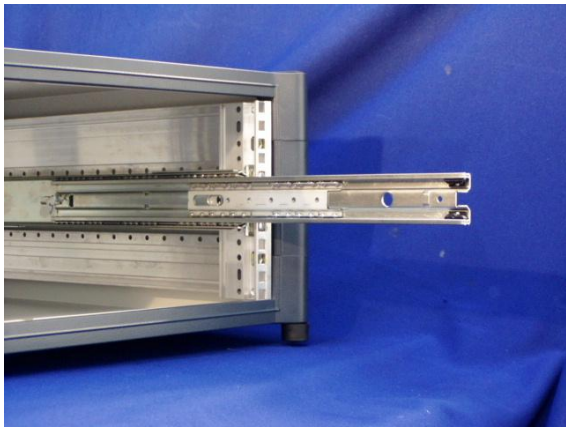


Figure 6.12

UTLIMA INSTALLATION

Referring to Figure 7.1 and 7.2, attach the inner slide rails to ULTIMA sides using 4 off M4 x 6 screws.

WARNING
Do not use longer screws (M4 x 6 maximum). Longer screws may damage the electronics within the unit.

Figure 7.1

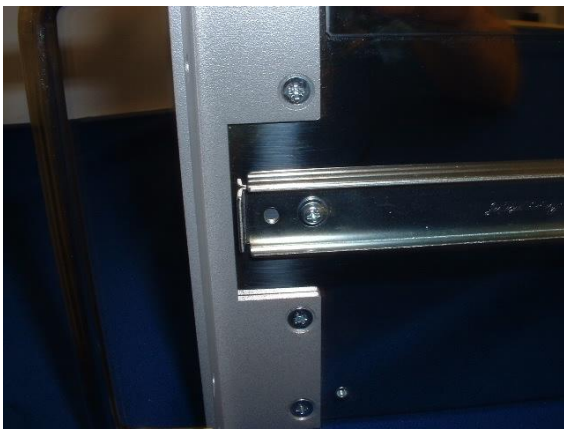


Figure 7.2

Referring to Figure 7.2, note the second hole position on the inner slide.

WARNING: depending on the configuration and equipping levels the Ultima chassis may exceed 20Kg in weight. Assistance may be required in installing the unit into a rack/cabinet.

Referring to Figure 7.3 and 7.4, slide unit on to extended middle sections until spring catches lock. Press the catches again and slide unit home. Tighten rear fillister screws. Adjust unit until front panel is central and does not foul equipment panels above and below. This is best achieved by adjusting each side and tightening front fillister screws separately. Tighten rear extension bracket screws.

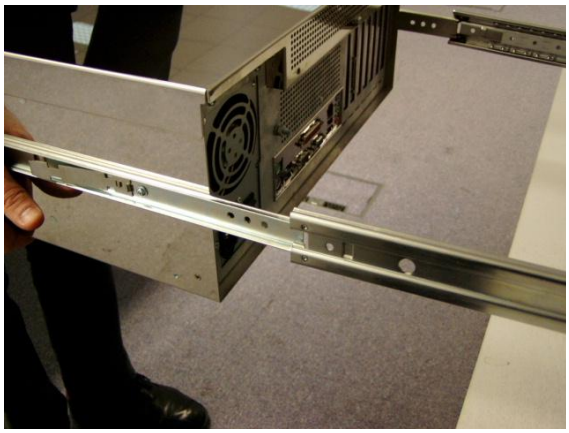


Figure 7.3

Figure 7.4

When the unit is satisfactorily adjusted, secure ULTIMA to the cabinet with 4 off M6 screws in cage nut positions A (see Figure 5).

MAINTENANCE

PRECAUTIONS

It is recommended that the unit is switched off and any mains cables disconnected before removing any cover. Some systems may incorporate battery-backed power supplies, in which case a failure to switch off the supply may result in internal electronics still receiving power. Note that some components may become hot during operation, and so it is generally good practice to allow the unit to cool before starting any significant internal maintenance work'

WARNING
The electronic assemblies within the unit are susceptible to electrostatic discharge (ESD). Take anti-static precautions before handling, otherwise damage will occur.

TOOLS

The following readily available standard tools are required to maintain and upgrade the ULTIMA:

- Pozidrive/Supadrive screwdriver size 1
- M5 Hex spanner.

REPLACING THE FILTER

Depending upon environmental conditions, from time to time the inlet filter will need to be cleaned. The air filter is accessible from the front of the chassis, and is located behind the two doors. Routinely examine the filter for dust build up. It may be cleaned or replaced..

Referring to Figure 8, turn the catch A, through 180° and the left hand door will open. The filter can be removed by pulling away from its locating frame. Similarly, unlock the right hand door and open to access the filter.

Wash the filter in warm water to which has been added a low foam domestic detergent, rinse and drip dry.

Replace filter into the recess in the front panel and close and lock the door by turning the door catch A back to its original position.

Figure 8

REMOVING THE TOP COVER

It is not necessary to remove all the cover screws to remove the Top Cover.
First loosen the three front cover screws and remove the three rear cover screws. Slide the top cover back slightly and lift to remove.

Replacing the unit cover is the reverse of the above.

REMOVING THE DRIVE CAGE

The Drive cage is removable as a single unit to allow for easier upgrade and replacement. The assembly is held in place by 7 screws, two behind the front door and 5 on the top of the cage assembly.

Referring to Figure 9.1, first remove the two front screws, indicated A. Next remove the 6 screws shown as B in Figure 9.2.

Disconnect the all power and signal cables to the drives in the cage. By moving slightly back then upwards, the drive cage can easily be removed.

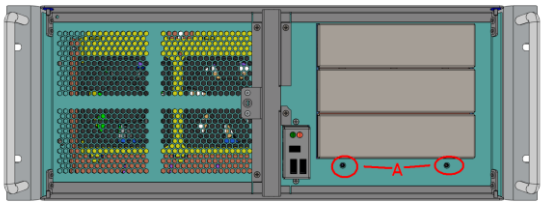


Figure 9.1

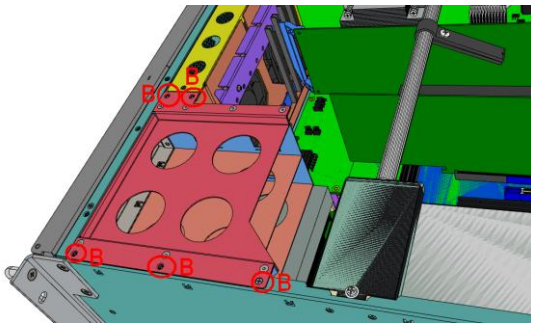


Figure 9.2

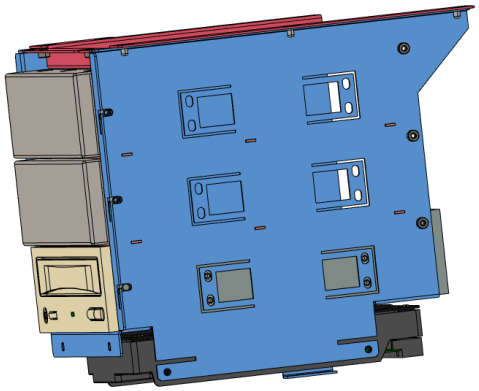


Figure 9.3

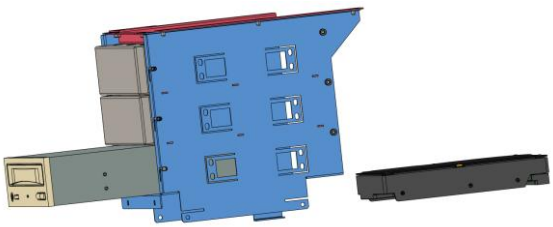


Figure 9.4

With the drive cage fully removed as indicated in Figure 9.3, there is access to all bays. From Figure 9.4, the HDD is fitted to the bottom 3.5” bay by sliding in from the rear, while for the 5.25” bays, the device is fitted from the front.

FITTING THE CARD RETAINING CLAMP

The ULTIMA system can be fitted with an optional card retaining clamp.

Before fitting the clamp, insert all the required expansion cards.

The clamp is held in place by two brackets. The Swivel mount of the Retaining arm is inserted into bracket as shown in Fig 10.2 and the opposite end screwed into Bracket as shown in Fig 10.3

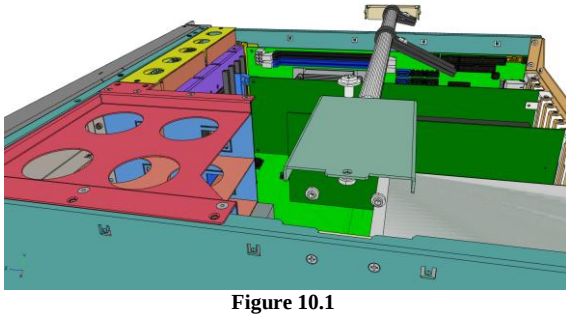


Figure 10.1

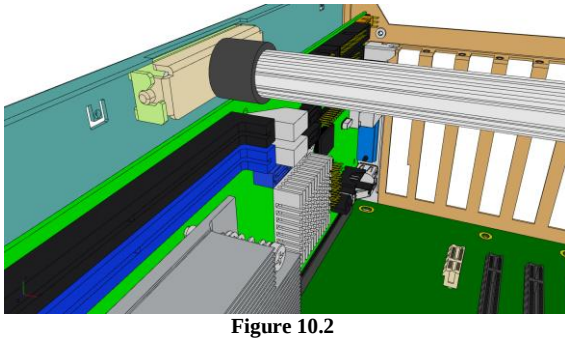


Figure 10.2

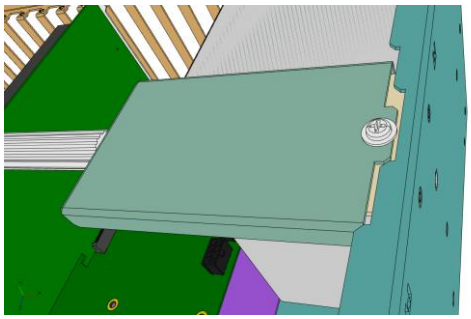


Figure 10.3

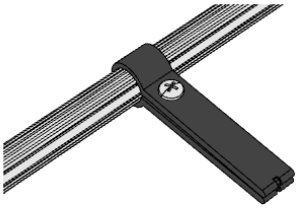


Figure 10.4

Once the retention arm is secured in place, fit a clamp onto the arm as shown in Fig 10.4. Position the clamp directly over the expansion card to be secured, aligning the small notch on the edge of the clamp with the top edge of the expansion board.

Once aligned, fit the screw and screw tightly to ensure no movement of the clamp.

Repeat procedure for other expansion cards

Note. The retaining arm is not suitable for low profile or some short length expansion cards

IMPORTANT: PLEASE REMOVE POWER BEFORE ATTEMPTING ANY OF THE ACTIONS BELOW.

ADDING NEW BOARDS

Remove the system cover, observing anti-static precautions.

Remove the expansion board clamp assembly.

Check the expansion card documentation to ensure it is correctly configured. Pay particular attention to the selection of the link settings if any.

Identify the back plane connector slot to be used. Remove the corresponding blanking plate in the back panel of the chassis by pushing in the 'Break-out' panel until it breaks away from the rear panel.

If a full-length board is to be installed, locate the board end (nearest the front of the unit) into the plastic guide corresponding to the chosen slot as shown in Fig 11.1.

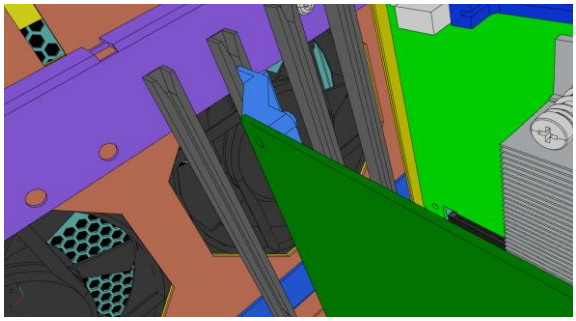


Figure 11.1

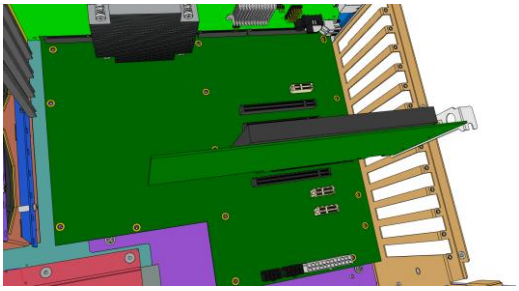


Figure 11.2

Slide the board down the guide until the edge connect contacts the back plane connector. Press the board firmly into place. Note that the lower end of the metal bracket has to be pushed into a spring clip just below the level of the back plane. This is designed to improve the EMC performance of the system.

Fasten the metal bracket into place using an M3 screw.

Re fit the card clamp assembly into position.

REPLACING THE SINGLE BOARD COMPUTER

The Single Board Computer can be removed and replaced as shown in the previous section.

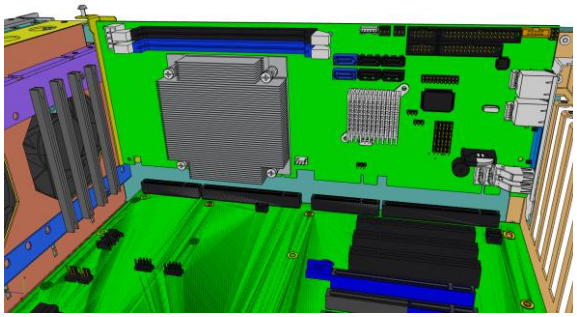


Figure 12.1

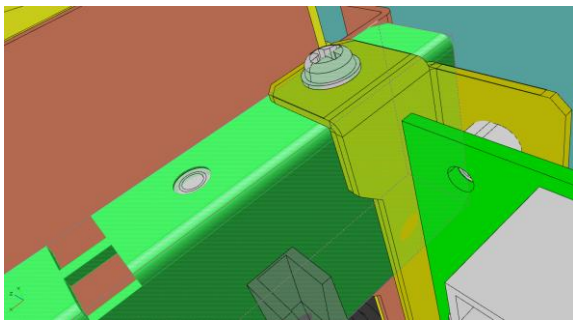


Figure 12.2

In addition to the retaining screw on the rear panel, the Single Board Computer is held in place with another screw as shown in Figure 12.2.

REPLACING A SYSTEM FAN

The latest Ultima Chassis design incorporates easier access to the System fans for either upgrade or replacement. Although the new design is such that it is possible to now replace a system fan without shutting down the OS, it is recommended that for safety the unit is powered off first.

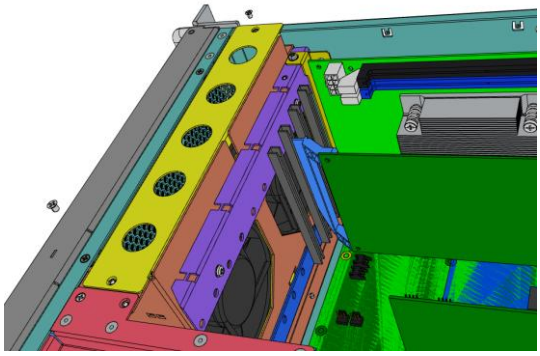


Figure 13.1

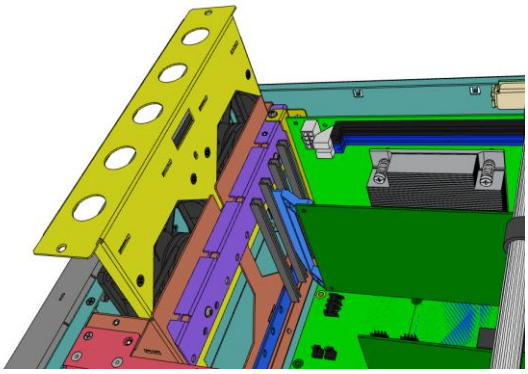


Figure 13.2

Remove the two retaining screws and pull the fan assembly upwards to remove. Each fan is held in place by 4 screws as show in Fig 13.3 below

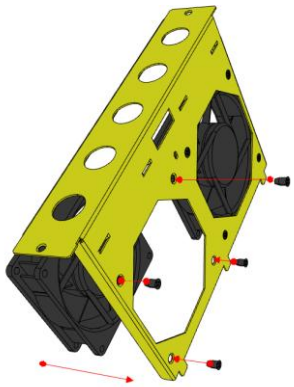


Figure 13.3

REPLACING THE PSU

The Ultima can be configured with either Dual Redundant Supply (Fig 14.1) or a standard ATX type supply (Fig 14.2).

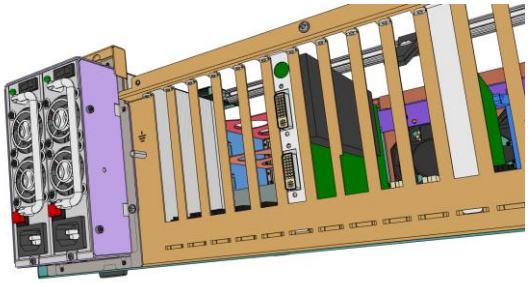


Figure 14.1

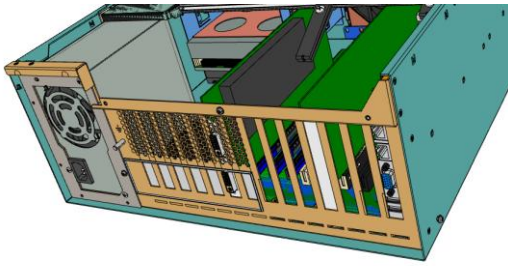


Figure 14.2

To remove the power supply unit, first ensure that the power supply is switched off and then disconnect the AC supply to the unit.

Remove the top cover as described previously.

Disconnect all the DC output leads from the drives, the Single Board Computer and the back plane.

On the ATX PSU model there are retaining screws on the inside of the chassis.

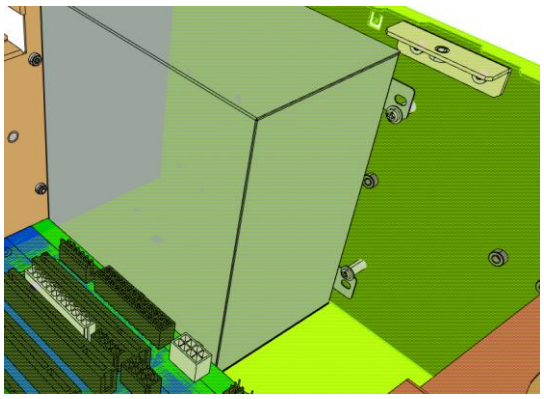


Figure 14.3

For the ATX model there are a further four retaining screws on the rear of the chassis, while for the Dual Redundant model, there are 8. The ATX model is removed via the top of the chassis however for the Dual Redundant, this is removed via the back as shown in Fig 14.4

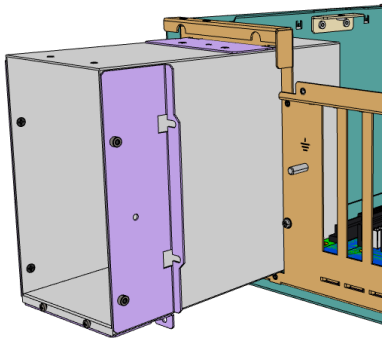


Figure 14.4

Note that the dual modules are removed first and then the upper bracket is unscrewed first from the inside before unscrewing the remaining 6 screws holding the remaining brackets to the chassis

Figure 14.5

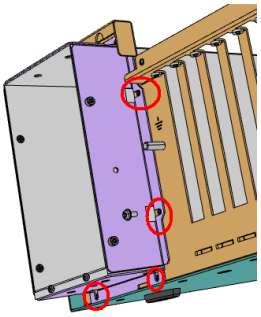


Figure 14.6

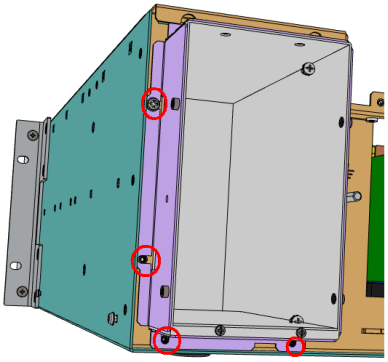


Figure 14.7

AMENDMENT HISTORY

Issue Level	Issue Date	Author	Amendment Details
1.0	December 2012	T MCK	Release of Ultima Mura configuration
1.4	July 2014	T Mck	Updated with new chassis design
1.5	Dec 2015	T Mck	Updated matrix on Page 11