armarac™

Armarac MX.800 Installation Guide

VERSION:
1.2

Intellectual Property

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Australia	2007259487
Canada	2654043
China	200780022106.X
Europe EPO	07808651.9
Japan	2009-515328
New Zealand	573545
United States of America	12/304,626

Liability

Thureon cannot accept responsibility for the completeness and correctness of the information. In particular, we accept no liability for damages which result from incorrect use or operation of the product.

Standards

The Armarac has been designed in compliance with the following guidelines and regulations:

IEC60297/EIA-310-D

ISO1170.0-2002

ISO1664.1-1997

Safety

Handling Safety

- Be careful. Do not lift heavy loads without assistance.

- Equipment with casters is built to move on a smooth surface without any obstacles.

- Do not use a ramp inclined at more than 10°

Safe Operation

The Armarac is supplied in a perfectly safe condition. Thureon can only warrant to the original purchaser the safety, reliability and performance of the Armarac system and accessories if it is assembled, operated, extended and modified as specified in this manual.

- The manual must always be kept near the Armarac.

- Please refer to the documentation of additional devices.

- Use the Armarac only if in a technically correct condition. Have any damage or faults repaired immediately by authorized personnel.

- Use only original accessories.

- Only the activities described in this manual should be undertaken by the operator. No responsibility whatsoever can be accepted for unauthorized modifications or repairs!

- Maintenance and cleaning only to be carried out by specialists.

Electrical Safety

- Do not work alone under hazardous conditions.

- High short circuit current through conductive materials could cause severe burns.

- A licensed electrician is required to install permanently wired equipment.

- Check that the power cord(s), plug(s), and sockets are in good condition.

- To reduce the risk of electric shock when grounding cannot be verified, disconnect the equipment from the AC power outlet before installing or connecting to other equipment. Reconnect the power cord only after all connections are made.

- Do not handle any kind of metallic connector before the power has been removed.

- Connect the equipment to a three wire AC outlet (two poles plus ground). The receptacle must be connected to appropriate branch circuit/mains protection (fuse or circuit breaker). Connection to any other type of receptacle may result in a shock hazard.

Packaging and Disposal

All the materials used for the packaging, the Armarac and accessories are suitable for recycling.

- Keep the original packaging for later transport.

All parts must be dissembled and disposed of in accordance with legally applicable requirements!

WEEE (**W**aste **e**lectrical and **e**lectronic **e**quipment)

This symbol on the product, accessories or its packaging shows that the product may not be disposed of with residual waste. The device must be handed in at a corresponding point for disposal or electrical and electronic equipment recycling. Further information on where old electrical equipment can be handed in for recycling can be had from the local authorities, recycling centers or the place where the equipment was bought.

Table of Contents

Section A – Preparation

1.   Tools Required

The following tools will be required to successfully complete the installation and configuration of your MX Series Armarac:

- Hex Allen Key Set – Metric

- Spirit Level

- Ø10mm (or 3/8-inch) drill bit for timber (if mounting to timber framed wall)

- Ø10mm (or 3/8-inch) drill bit for masonry (if mounting to brick or concrete wall)

- Rotary power drill (hammer function if mounting to masonry wall)

- 13mm (1/2 inch) long socket and socket driver wrench

- Mini hacksaw

- Pencil (for marking out)

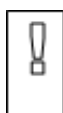## 2.   Maximum Rated Load

Introduction

The Armarac is designed primarily for mounting flat against a clear, unobstructed wall.

Due to the weight of the Armarac enclosure and that of the possible equipment it may contain, it is essential to ensure that the wall and fasteners are of adequate strength to accept the resultant loading.

Maximum Rated Load

A single 1U Vertiblade mounting blade is capable of supporting a 20kg (44lb) device. A 2U Vertiblade mounting blade is capable of supporting a 40kg (88lb) device.

The maximum supported equipment load within any one MX.800 Armarac is 200kg (440lb)

If in any doubt please consult an engineer before proceeding.

Note: if the proposed walls' load bearing rating is not adequate then we strongly recommend using the Armarac Support Stand (MXO-BASE). Please consult your reseller or contact Thureon for more information.

3.   Recommended Fastening System

Anchoring Systems

The Armarac wall mount bracket is designed to fasten to the wall with two vertical columns of four M8 (5/16in) anchors down each side, spaced horizontally 400mm (16in) centers.

Installation to a wall with 600mm (24in) vertical centers requires the optional 600mm wall mounting adapters.

Note: Please drill all holes using the chassis *as the template.*

Substrate	Recommended System	
Wooden Frame; Carpentry	Hilti HSL Heavy Duty Anchor HUS-H Universal Screw Anchor *Or equivalent*	
Masonry; Concrete Block, Concrete Slab Brick	Hilti HSL Expansion Anchor (M8) [note suitable for brick] *Or equivalent*	
	Hilti HIT-HY Series Chemical Anchor System, and Hilti HAS Threaded Anchor Rod (M8) *Or equivalent*	
For more information and availability see **www.hilti.com**		

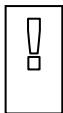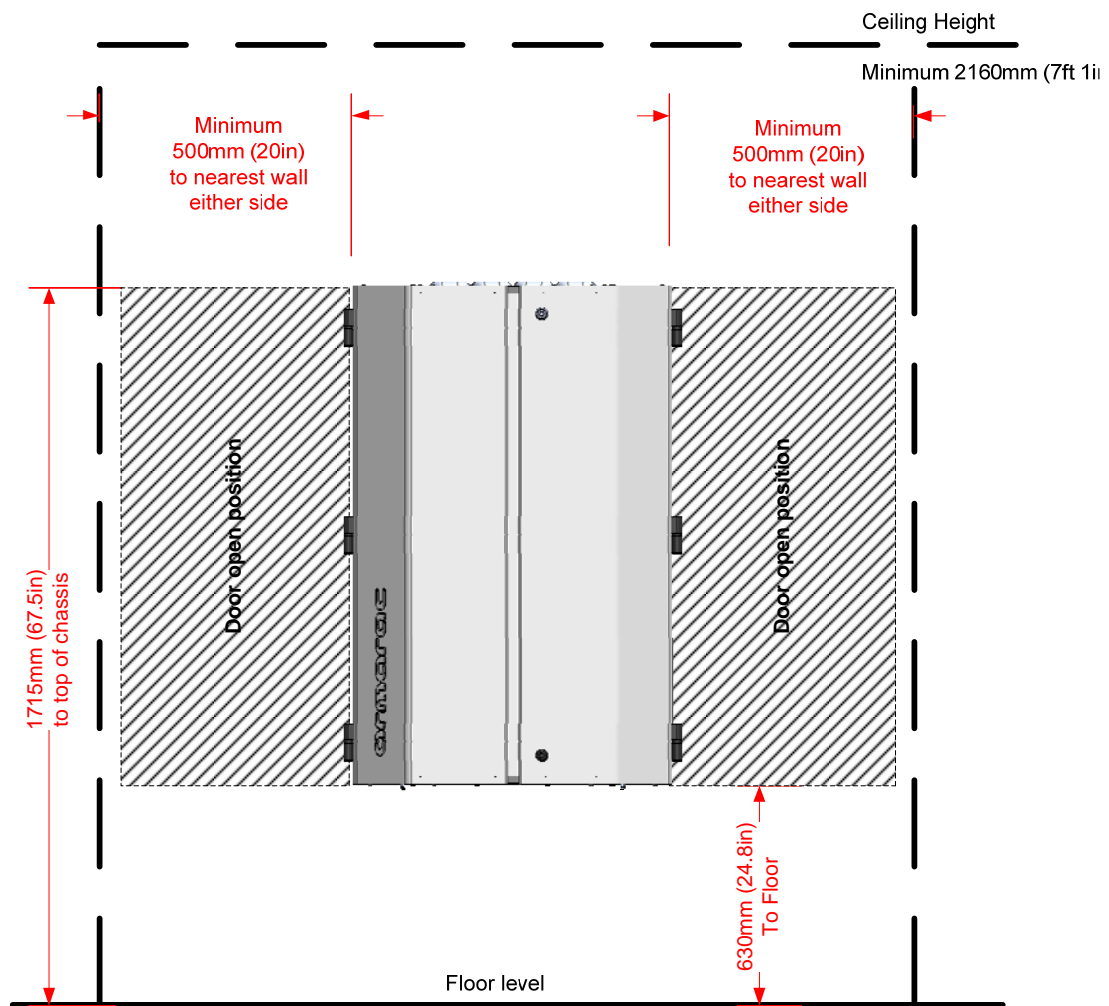When using the MXO-BASE Support Base; four (4) M10 (3/8in) anchors should be used to secure the base to the floor. And another two (2) M8 (3/8in) fasteners to secure the top of the Armarac chassis to the wall for added stability. Refer to recommended fastening systems above.

> **If in any doubt please consult with an engineer**
> **as to the best anchoring system to use for your environment.**

4. Recommended Spacing and Clearances

For the Armarac to function correctly it is essential to provide enough clearance above, below and to either side of each Armarac. Access to the equipment will be compromised if the following minimum clearances are not maintained.

4.1 Single -MX.800.FAN Armarac

Ceiling Height

Minimum 2160mm (7ft 1in)

Minimum 500mm (20in) to nearest wall either side

Minimum 500mm (20in) to nearest wall either side

Door open position

Door open position

1715mm (67.5in) to top of chassis

630mm (24.8in) To Floor

Floor level

⚠ *Note: Please consider future expansion requirements when positioning your Armarac. If you have the room, consider allowing space for a second enclosure at either side.*

4.1   Single - MX.800-FAN Armarac (continued)

Ceiling Height

Minimum 2160mm (7ft 1in)

1715mm (67.5in)
to top of chassis

566mm (22.3in)

630mm (24.8in)
To Floor

Floor level
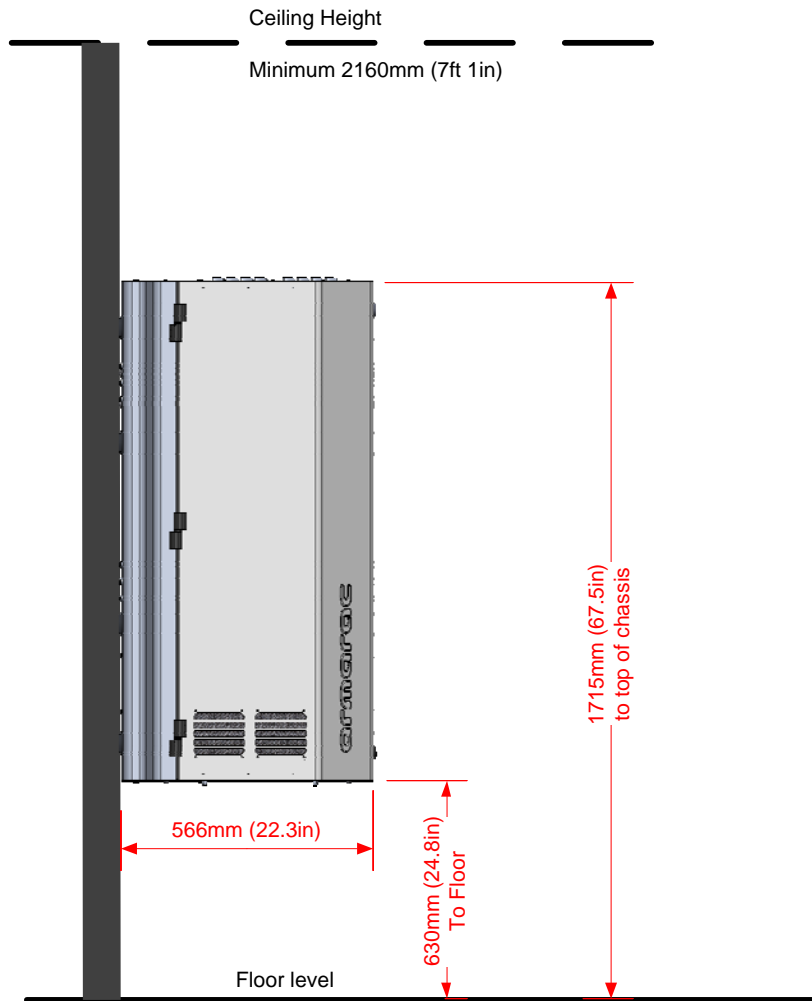
4.2   Multiple -MX.800-FAN Armarac's

Two Armarac's can be stacked vertically together on a single wall

Minimum 500mm (20in) to nearest wall either side

Minimum 500mm (20in) to nearest wall either side

Ceiling Height

Minimum 2.60m (8.5ft)

2460mm (96.8in) to top of chassis

1230mm (48.4in) to top of chassis

100mm (3.9in) To Floor

Floor level
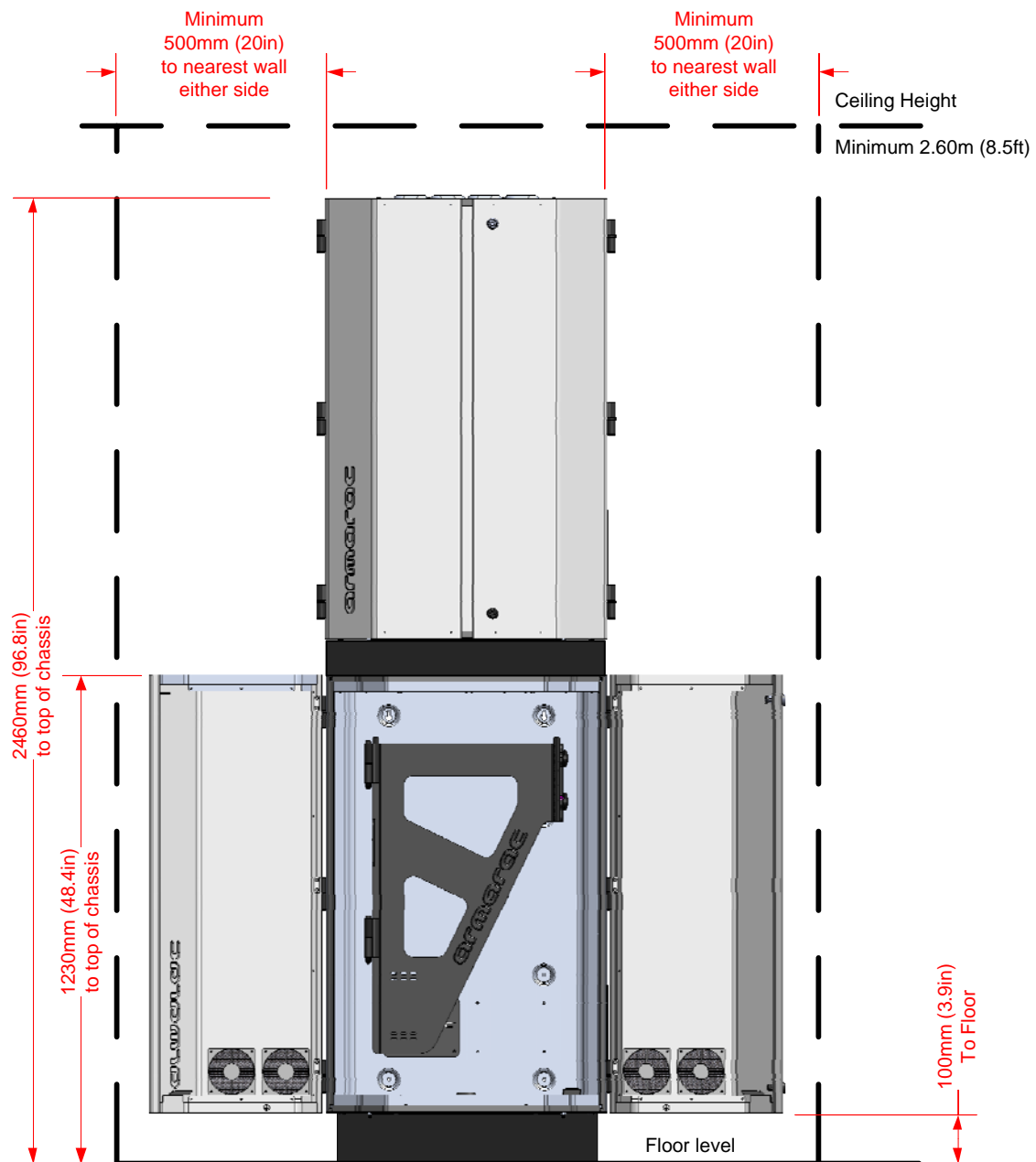
Section B – Enclosure Wall Mounting

5.   Mounting to a load bearing wall (base not required)

Step 1 – Separating the Chassis from the doors

De-box your Armarac.

Lift out Armarac and place on the floor (minimum 2 people required – approximately 60kg/132lb).

Unlock the Armarac doors using the key barrel locks located on the front of the Armarac. Keys are located in the accessories bag that shipped inside the Armarac box.

Open one door and carefully disconnect the RJ12 cable from the fan control PCB located inside the door at the bottom.

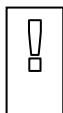Slide the door off its hinges and place somewhere out of the way.

Repeat the process for the other door.

You should now have the Armarac chassis ready to mount to its wall.
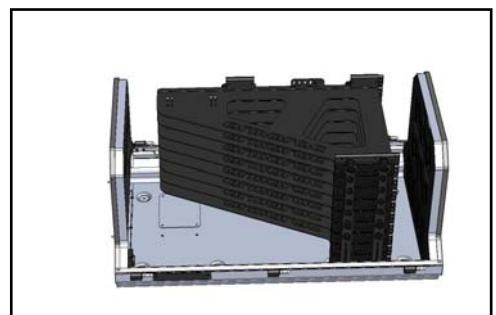
Step 2 – Identify the Armarac installation location

Identify the wall to which the Armarac is to be mounted.

Verify that the wall is load bearing and capable of holding a possible load of 200kg (440lbs). Consult with an engineer if in any doubt.

If installing on a wooden framed wall; locate the vertical stud centers. NOTE the *chassis* must be secured directly in to these framing studs.

Note that the MX.800 Models are suitable for 400mm (16in) stud center timber framed walls. 600mm (24in) center walls require the optional wall adapter kit (contact Thureon). For solid masonry walls use the 400mm (16in) holes– all other mounting substrates are required to use the Armarac Support Base (MXO-BASE).

Step 3 – Mark the position of the Chassis

Taking in to account minimum and recommended clearances and spacing referred to Section A–4 above, proceed to mark out the wall.

Hold the mark the <u>top-left</u> hole center **1650mm (65in) above floor level** (if mounting to a timber framed wall be careful to position the hole center directly on the centerline of the framing stud)
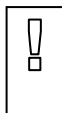
Note: if you are going to use an existing wall-mounted power outlet for the Armarac power supply (refer 6.2) then you need to align the Armarac mounting holes to allow for the power outlet to pass through the rear opening on the chassis. Please refer to Section F-16 for center dimensions.

Step 4 – Drilling the first holes

Drill the first hole with the appropriate drill bit size to the recommended depth for the chosen fasteners suitable for the type of wall and anchoring system.

The top two mounting holes in the Armarac chassis are "key holed" to facilitate ease of mounting – please ensure that the head of your selected fastener passes through the keyhole.

Fit the fastener in to the hole through the chassis (start with top left hole).

Note if using a chemical masonry anchor it will need to cure before taking the weight of the chassis.

Using a spirit level on the top and sides of the chassis to ensure the bracket is square, mark the <u>top-right</u> mounting hole center.

If needed (e.g. chemical anchor system) remove the chassis, drill the hole to the recommended size and depth for the anchoring system being used.

Step 5 – Drill the remaining holes

With the chassis held in place by the top two fasteners, mark and drill the remaining six holes through the chassis mounting holes.

Fit and tighten the remaining six fasteners.

Step 6 – Confirm Chassis is secure

Confirm all eight (8) fasteners have secured the chassis to the wall.

Verify all recommended torque (and if applicable curing times) specified by the anchoring system manufacturers have been met.

Step 7 – Reconnecting the Doors to the Chassis

Locate the doors removed in Step 1

Gently line up each door up to the chassis and slide down on to the hinges (fans go at the bottom of the door)

Once remounted on the hinges, reconnect the RJ12 cables to the fan control PCB on each door.
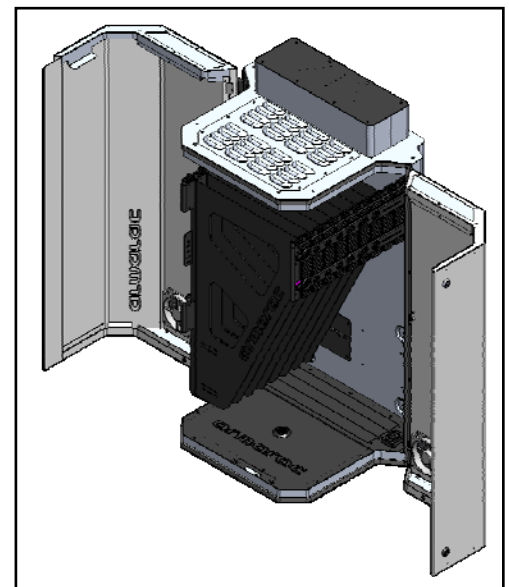
6.   Connecting a Power Supply

Two options are provided for regarding supplying power to the Armarac enclosure;

    A. Use the provided internal IEC-C19 power receptacle

    B. Use a standard wall-mounted flush box power outlet, and fit the Armarac to the wall over this outlet

6.1   Internal IEC-C19 power receptacle

Step 1 – Remove the power receptacle

Remove the lower *Patch Panel Mounting Tray* from the rear of the *chassis* using a 2.5mm hex key.

Remove the *power socket shield* using a 7mm hex socket.

Remove the plastic closed grommet from the right-hand-side rear of the chassis covering the cable entry hole provided to facilitate power cable entry.

Step 2 – Terminate the power feed

If using conduit, terminate your gland in to the opening provided on the chassis (1-inch diameter).

Route the cable inside the Armarac and through the hole on the side of the *power socket shield*

Terminate the power feed on to supplied IEC C19 power termination socket (maximum rating 250V 16A).

Refit the *power socket shield* to the *Chassis*.

Refit the *patch panel mounting tray* to the chassis.
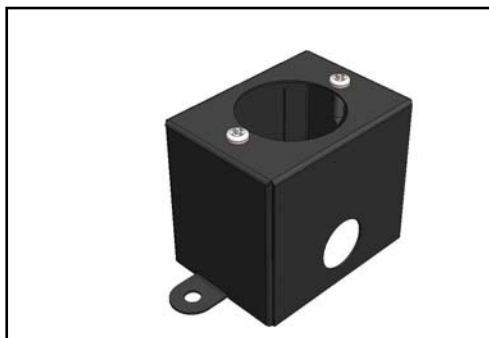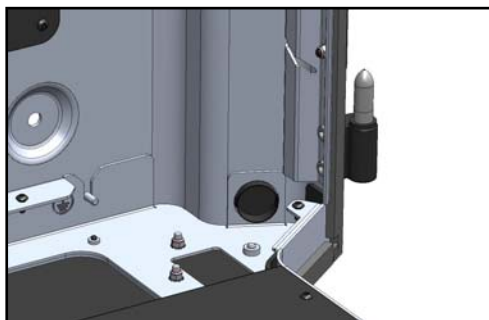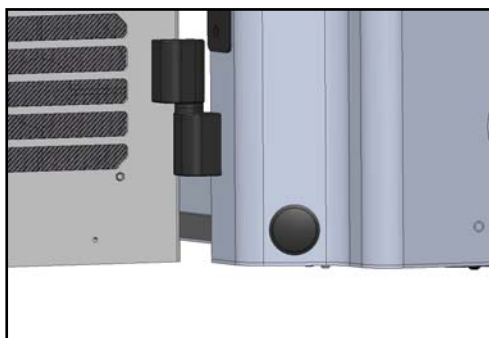
6.2   Wall-mounted Power Outlet

Step 1 – Relocate the power socket cover plate

Remove the *power socket cover* from the rear of the *chassis* using a 2.5mm hex key.

Reposition the *power socket cover* on the *chassis* over to the right hand side as shown.

Step 2 – Install/connect the power outlet

If the power outlet is already in place you can now install the Armarac in to position and fix it to the wall as described in Section 5 above.

Alternatively you can now install a new outlet in the correct position.

The cut-out in the *chassis* is suitable for a single (shown), double or quad power outlet to be fitted.
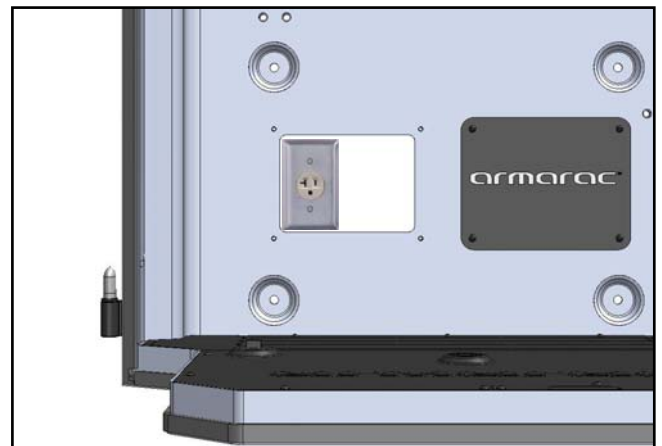
6.3   Grounding the enclosure

Grounding (Earth) points are provided on the chassis, Vertiblade panels and on both doors.

Please ground all metal panels as per the requirements of the facility you are installing the enclosure in to.

- Vertiblade panels have a clearly marked screw thread on the left hand side of each panel

- There is an earth stud located on the chassis in line with the Vertiblade grounding points

- Each door has a grounding stud located in front of the fans on the return lip of the door (marked on the outside with the ground symbol)

  If used, route your grounding conductor through the open door hinge slot beside the RJ12 fan power cable.
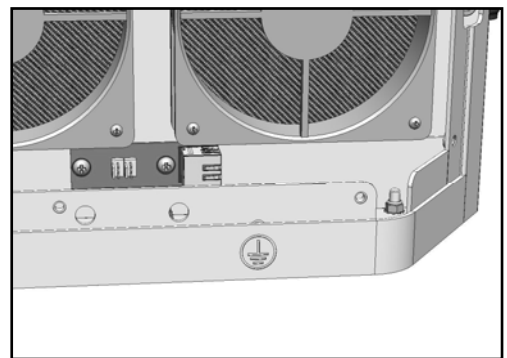
- Chassis grounding studs are provided on the rear wall of the chassis below the patch panel mounting tray for bonding the left and right doors.
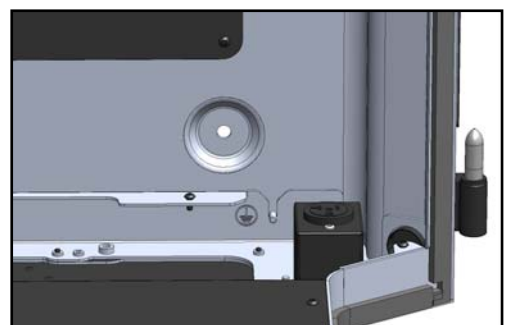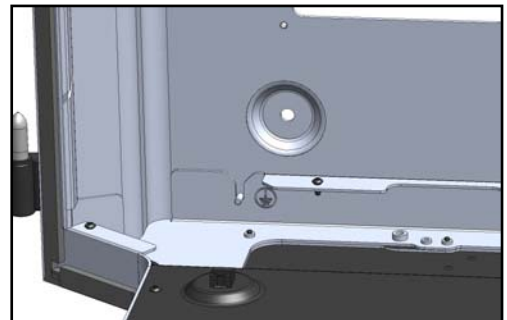
7. Installing Structured Cabling

Step 1 – Patch Panel Mounting Preparation

Determine whether your cable entry will be top-down, bottom-up or both. Determine how many 19-inch patch panels are to be installed inside the Armarac enclosure.

Using a mini hacksaw remove the required number of patch panel "knockouts" from the upper and/or lower *patch panel mounting trays*.
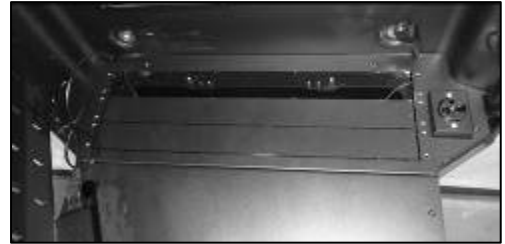
Step 2 – Install your patch panels

Any industry standard 19-inch patch panels can be installed within the Armarac.

The patch panel(s) can be installed on to patch panel mounting tray using four M5 (10/32) fasteners for each patch panel.
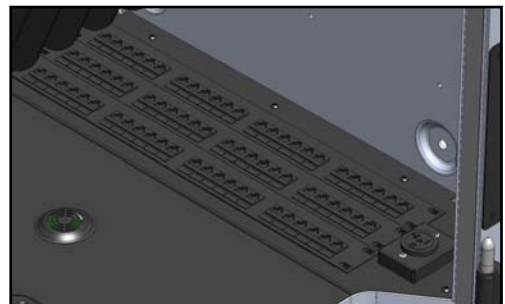
Step 2 – Structure Cabling Access

Structured cabling can feed through the 19-inch openings located on the top and/or the bottom of the Armarac chassis.

Remove the *conduit termination plate* with a 2.5mm hex key.

Step 3 – Terminating Conduit

If using conduit to run your cables to the Armarac enclosure then you can use the removable *conduit termination plate* to terminate your conduit to.

The *conduit termination plate* has indentations ready to assist in drilling the holes to fit the cable glands.
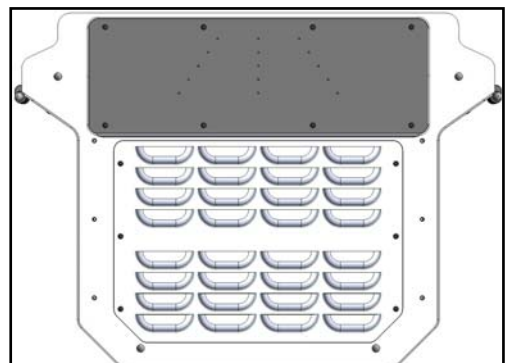
Step 4 – Using the Cable Shroud

If using the optional Cable Shroud:

1. Remove the upper (or lower) *conduit termination plate* from the outside of the chassis (use 2.5mm hex key on 8x screws).

2. Fit the cable shroud to the Armarac chassis using the supplied T-loop hex driver.

3. If using conduit, predrill the conduit gland holes in the termination plate prior to reaffixing.

Step 5 – Installing the Cable

At this point the structured cabling can be installed inside of the Armarac and can be terminated on to your 19-inch patch panel(s).

The patch panel(s) can then be installed on to patch panel mounting tray using four M5 (10/32) fasteners for each patch panel.

Section C – Equipment Mounting

8. Vertiblade Conversion

Armarac's Vertiblade system allows the user to configure the equipment mounting brackets for either 1 Unit (1U) or 2 Unit (2U) devices. Typically the MX.800 Armarac will arrive configured for TWO full-depth 1U devices at the front, FOUR full-length 2U devices at the rear (such as a UPS and a server).

Before installing your equipment you should configure the Vertiblade system to represent your equipment sizes.
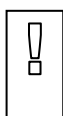
Note: The heaviest equipment such as Uninterruptible Power Supplies (UPS) and Battery Modules should be placed as far to the back of the Vertiblade system as possible.

Converting from Two 1-Unit (2x 1RU) brackets to One 2-Unit (1x 2RU) Bracket

Step 1 – Remove the left-hand Vertiblade latch body

Identify which two 1RU Vertiblade you wish to convert in to a single 2RU bracket.

Using a 2.5mm hex key unscrew the two (2) fasteners and remove the black plastic latch body from the FRONT Vertiblade panel.

Step 2 – Remove the Vertiblade panel from the left extrusion

Using a 2.5mm hex key unscrew the four (4) fasteners attaching the FRONT Vertiblade panel from the upper and lower extrusion spines.

Step 3 – Combine the two left-hand side extrusions.

Insert the supplied two-RU adapters into the bottom of both the upper and lower extrusion spines.

Using a hex key tighten the set screws until the adapters are firmly held within the extrusions.
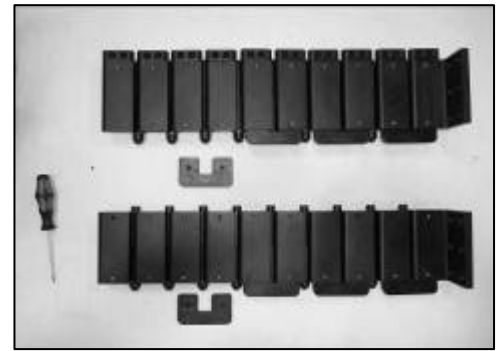
Step 4 – Combine the right-hand Vertiblade latch bodies

Place the two latch bodies together as shown.

Using the two supplied M6 cap screws and Nylock nuts bolt the two latch bodies together and tighten with a hex key.

This Vertiblade bracket is now ready to accept 2U devices.

Converting from One 2RU bracket to Two 1RU brackets

Is achieved by reversing the above procedure.

9.   Vertiblade Screw Adapters

Different equipment manufacturers often use different retention screw thread sizes to hold their equipment to the rack kits. The Armarac has a series of corresponding server *Screw Adapters* to suit each type of thread to ensure that all equipment is securely fastened to its Vertiblade.

Step 1 – Determine the correct thread requirement

Choose between the M4, M5 (10/32) and M6 Vertiblade *screw adapters* to match your equipment manufacturer's server retention screw thread size.

Step 2 – Remove the current thread adapters

Using a diameter 2.5mm hex key unscrew the set screw to remove the existing black nylon screw adapter on both sides of the Vertiblade mounting system and lift up to remove.

Step 3 – Install the correct thread adapters

Insert the new *Screw Adapter* in to the top of the Vertiblade bracketing, aligning the screw recess to face the direction of the set screw.

Using a hex key tighten the set screw until the new screw adapter is firmly held in place.

10.   Installing Your Equipment

It is recommended to start with the equipment at the rear of the Armarac and that the heaviest equipment should be installed at the rear e.g. Uninterruptible Power Supply (UPS).

Please configure your Armarac for the correct Rack-Unit sizes (refer Section C5 above) e.g. setting up 1U and 2U combinations to match the equipment you intend to install.
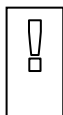
Please ensure the correct manufacturer specific retention thread *screw adapters* have been fitted (refer Section C6 above).

Step 1 – Open the rear Vertiblade

Open the front Vertiblade brackets to gain maximum access to the rear mounting space. Noting that the rear most equipment bay does not hinge.
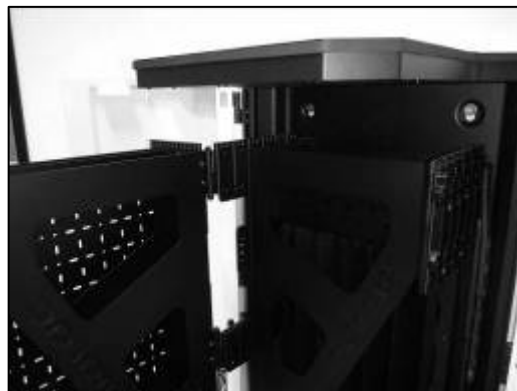
Step 2 – Install your first device

Carefully lift the device in to the 19-inch opening. Take care to align the manufacturers' retention screws with the holes in the *Screw Adapters* on both the left-hand and right-hand Vertiblade extrusions.
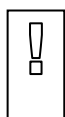
Note take care to ensure the "top" surface of the equipment faces outward. This will ensure easy access to server mainboards and DVD/CD drives.

Step 3 – Secure your first device

Install and fasten the manufacturers' retention screws securely in to the Vertiblade Screw Adapters on both sides of the 19-inch bay. Close the Vertiblade bracket in front of the device to ensure correct spacing has been achieved.

Step 4 – Install remaining devices

Repeat Steps 1 to 3 above for each device to be installed in your Armarac.

Step 5 – Vertiblade 6RU Patch Panel Mount panel

The Vertiblade network bracket is designed to provide housing for up to 144 ports networking equipment. (six 24-port 1U/19-inch Cat-5 or Cat-6 patch panels)

Install the six 24-port 1U patch panels vertically in the zigzag Vertiblade bracket using cage nuts.

The RJ45 ports should be to the front and number port number 1 to the bottom.

Use four appropriate sized screws to secure each patch panel in to cage nuts.

Step 6 – Vertiblade Multi-fit Panel

The multi-fit panel is ideal for mounting either two half-depth pieces of 19-inch equipment or a combination of smaller non-rackmount equipment.

Secure the equipment to the panel using very-high-bond double sided tape or the provided opening for rear mounting screws. Cable tie or Velcro cables in to place.
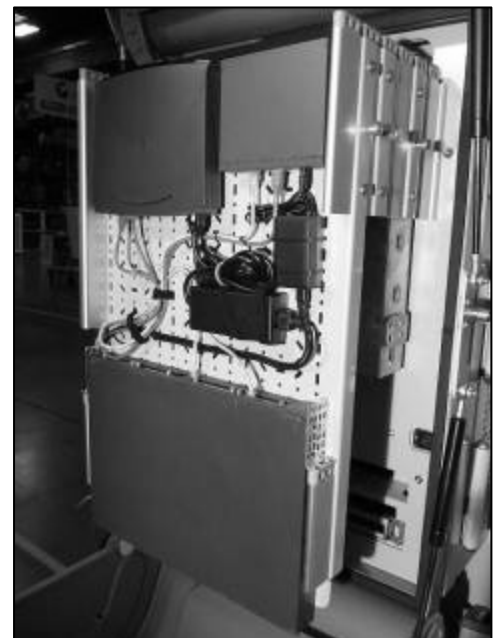
11.   Internal Cabling Guide

Armarac provides facility to install and correctly manage all of the cabling required for a full 10RU of equipment. To avoid excess cable clutter we recommend using cables that are 1.0m to 1.5m in length (3ft, 4ft, 5ft long).

Note due to the nature of the Vertiblade articulated hinging system all cabling is required to run on the left-hand side of the enclosure to ensure each bracket can open properly for full device access.

Step 1 – Main Power Supply

If used, connect the chassis power outlet to your UPS inlet or power distribution unit (PDU). **Do not turn your UPS on yet.**

Step 2 – Device Power Distribution

Continue to run AC power cables from your UPS (or PDU) to each device that you have installed in the Vertiblade brackets.

For each device open its Vertiblade bracket up to 90 degrees to ensure the correct length and positioning of the cable. Use the slots at the bottom of each Vertiblade panel to cable-tie the power cables in to position.

Once all of the cables are run, group them in to looms and cable-tie to the transverse cable management slots across each Vertiblade. Ensure each bracket, one by one, can fully open without pinching or pulling the cables.

Step 3 – Structured Cabling

Ensure the cable tails are long enough to fully open the Vertiblade zigzag to access the UPS in the rear mounting bay.

Terminate each loom on the appropriate patch panel in accordance with the cabling standard being adopted (Cat-5 or Cat-6).

Check that the Vertiblade brackets can open and close without causing strain on the structured cabling or interfering with the hinging mechanism.
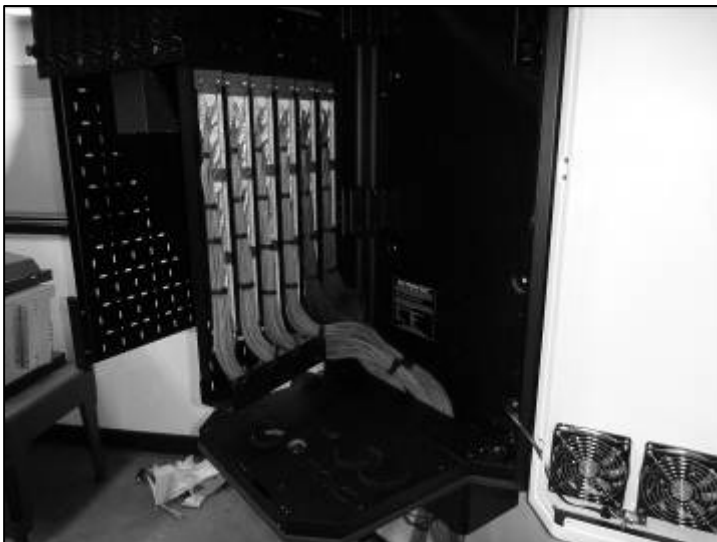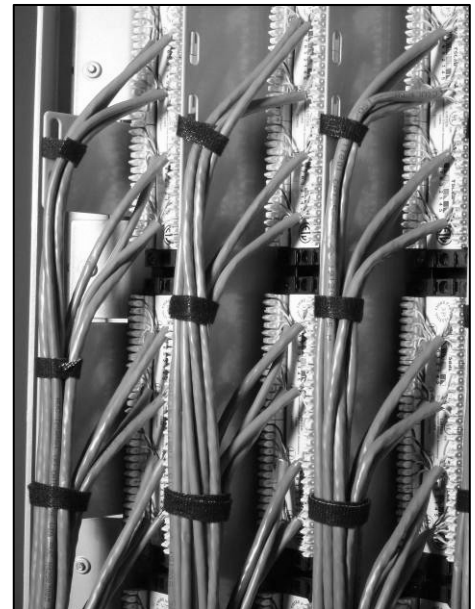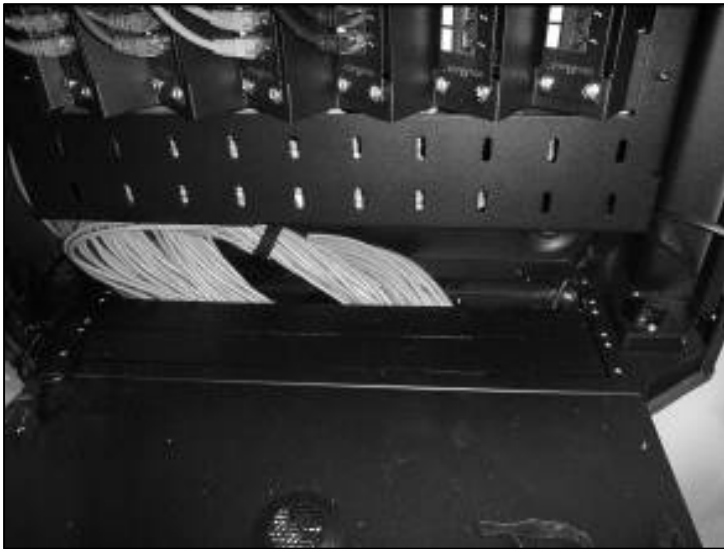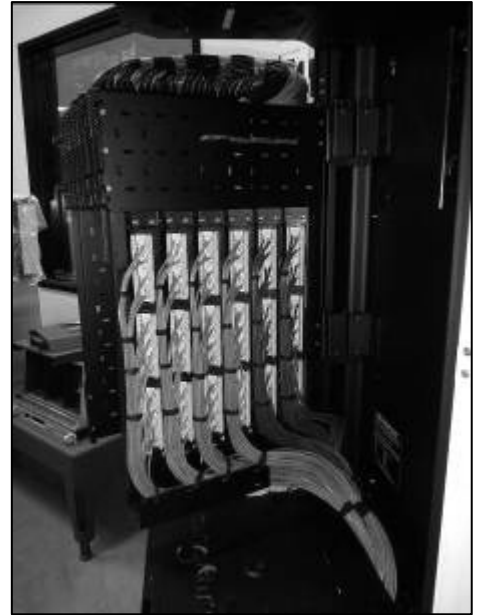
Step 4 –Patch Leads

Open the Vertiblade to 90 degrees to access the zigzag bracket with the six patch panels.

Using 1.0m (3ft) approved patch leads, connect from Port 1 on the front LAN switch to Port 1 on the left most patch panel.

Repeat for all 24 ports. Carefully loom the 24 cores together adhering to cabling standards.

Step 5 – Check for Interference

Ensure that each Vertiblade bracket can fully open without cables pinching or pulling on any device or patch panel.

Ensure that the Armarac doors can close without causing interference with any cables or the *ventilation fans.*
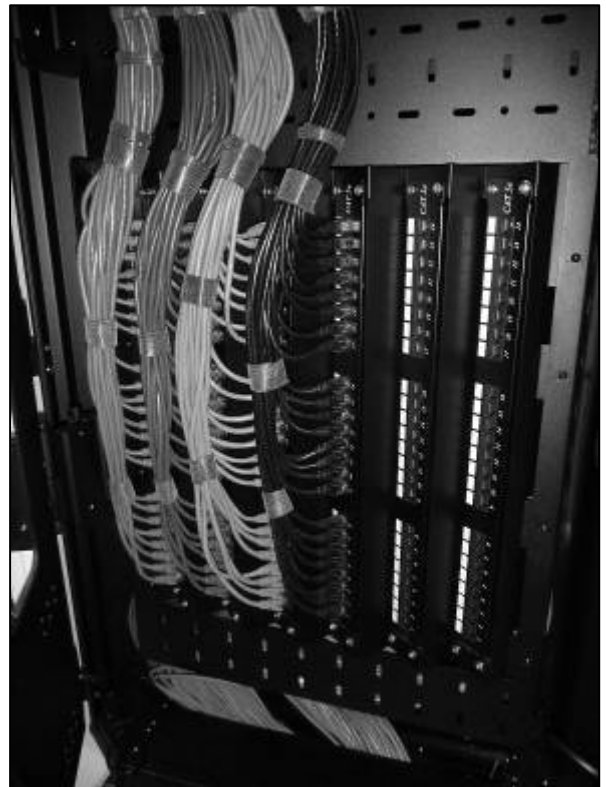
Section D – Armarac EcoSys Environment Controller

12. EcoSys setup and configuration

Each Armarac comes with an EcoSys intelligent environmental control microprocessor.

Factory defaults enable the EcoSys to operate the fans to provide optimum cooling for your equipment without changing any settings.

Step 1 –Accessing the EcoSys board

DHCP is enabled by default, but where no DHCP is found the board will have a TCP/IP address of:

IP Address	192.168.1.50
Subnet mask	255.255.255.0
Gateway	192.168.1.1

Access to the onboard webserver is available through the LAN port provided above the console panel in the bottom of the Armarac. The web management interface is available from HTTP://192.168.1.50

If you are unable to locate the EcoSys controller on your network a software tool is available from Thureon to identify the IP address, contact support@thureon.com

Step 2 –Logging in to the EcoSys controller

Two user accounts are set up on the controller:

Username	Password	Access
Admin	admin	Read/Write
User	user	Read only

Step 3 –Current Status page

The current status page displays the current environment and alert status of the Armarac enclosure.

Armarac EcoSystem

					GMT +12.0
					01/01/1970
					12:04:20

Building	Room	Asset ID	Contact		192.168.1.50
Building	Room	123456789	Joe Boggs		

| Current Status | Manual Control | Device Setup | Settings | Logs | About |

Alert Status	None		Filter Warning	None	
Door Position	Closed		Fan Fail Alerts	0	
Temp Inlet	23.1	°C	Fan Spd: Inlet	39	%
Temp Outlet	22.1	°C	Fan Spd: Outlet	39	%
Humidity	0.0	%	Smoke	No	
Heater State	Off				

Step 4 –Manual Control page

The ADMIN user can use this page to override the automatic settings to remotely control;

- Inlet fan speed

- Outlet fan speed

- Door "unlock" (if MXO-ELOCK option is fitted)

- Low Ambient Heater control (if MXO-LAH option is fitted)

- Silence the alarm buzzer

Armarac EcoSystem

GMT +12.0

01/01/1970

12:05:07

Building	Room	Asset ID	Contact
Building	Room	123456789	Joe Boggs

192.168.1.50

| Current Status | Manual Control | Device Setup | Settings | Logs | About |

Manual ☑
Inlet Speed 50% ▼
Outlet Speed 50% ▼
[Save]

Alarm Buzzer [Silence] Note: You can disable the local alarm buzzer in Device Setup

Door Control [UnLock]

Heater Control [On] [Off]

Step 5 –Device Setup page

The Device Setup page is where the ADMIN user can change the networking and device informational settings.

Armarac EcoSystem

GMT +12.0
01/01/1970
12:05:40
192.168.1.50

Building	Room	Asset ID	Contact
Building	Room	123456789	Joe Boggs

Current Status | Manual Control | Device Setup | Settings | Logs | About

TCP/IP	☐DHCP	192.168.1.50
Subnet Mask		255.255.255.0
Default GW		192.168.1.1
DNS Server		192.168.1.1
SMTP Server		mail.server.com ☐Use Authentication
Username		
Password		
NTP Server	☐NTP	pool.ntp.org Note: Update can take up to 10 minutes
Set Time	☐Edit	12 : 00 : 00 HH:MM:SS Note: Time & Date in GMT
Set Date		01 / 01 / 11 DD/MM/YY
Set Timezone		(GMT +12:00) Auckland, Wellington, Fiji, Kamchatka ▼
Temp. Display	○ °F ◉ °C	
Local Alarm Enabled	☐	

Location:

Building	Building
Room	Room
Asset Number	123456789
Contact Person	Joe Boggs

Password:

Admin Password	●●●●●
User Password	●●●●

Email Alerts:

Critical Alerts E-Mail address	user@domain.com
Info Alerts E-Mail address	user@domain.com

Armarac Options Fitted:

Electric Door Lock	☐
Heater	☐

Save

Reset to Defaults

Step 6 – Settings page

The settings page is where the ADMIN user can set the control values and alert thresholds;

- Min Fanspd Temp – the temperature at which the fans will spin down to their lowest value for minimum airflow.

- Max Fanspd Temp – the temperature at which the fans will spin up to their highest value for maximum cooling effect.

- Heater On Temp – the temperature at which the Low Ambient Heater (if fitted) will turn on.

- Heater Off Temp – the temperature at which the Low Ambient Heater (if fitted) will turn off.

- Humidity Wet – the percentage of max. humidity at which an alert is generated.

- Humidity Dry – the percentage of min. humidity at which an alert is generated.

- Inlet Max. Temp – the inlet temperature at which an alert is generated.

- Outlet Max. Temp – the outlet temperature at which an alert is generated.

Note: Temp values can be entered as °F if the "temp display" field in Device Setup has been set to °F

Armarac EcoSystem

					GMT +12.0
					01/01/1970
					12:06:31

| Building | Room | Asset ID | Contact | |
| Building | Room | 123456789 | Joe Doggs | 192.168.1.50 |

Current Status | Manual Control | Device Setup | Settings | Logs | About

Input Control Values **Alert Thresholds**

Min Fanspd Temp	15	°C	Humidity Wet	95	%
Max Fanspd Temp	45	°C	Humidity Dry	40	%
Heater On Temp	10	°C	Inlet Max. Temp	45	°C
Heater Off Temp	15	°C	Outlet Max. Temp	45	°C

Save

Step 7 – Logs page

The Logs page displays the latest status and alerts of EcoSys controller.

A full diagnostic download in CSV format is available by right-clicking the "download full log file" link, choose "save file as" and if required send to Thureon for analysis.

Armarac EcoSystem

GMT +12.0

01/01/1970

12:06:56

Building	Room	Asset ID	Contact	
Building	Room	123456789	Joe Boggs	192.168.1.50

Current Status │ Manual Control │ Device Setup │ Settings │ Logs │ About

Download full log file

Last 20 logs, oldest first, time/date in GMT +12.0:

```
Date,Time,Log,Alert Status, Alert Sent,Door,Smoke,Heater,Filter,Rack#,tIn,tOut,Hum,fanIn,fanOut,Fans Failed
00\00\00,00:00:00,21,16,48,Closed,No,On,No,0,-100,-100,0,20,20,10 00\00
\00,00:00:00,26,16,48,Closed,No,On,No,0,-100,-100,0,20,20,10 00\00
\00,00:00:00,7,0,0,Closed,No,On,No,0,800,800,0,48,1,0 00\00
\00,00:00:00,35,0,0,Closed,No,Off,No,0,-100,-100,0,50,50,0 00\00
\00,00:00:00,5,0,0,Closed,No,Off,No,1,235,-100,0,50,0,1 00\00
\00,00:00:00,21,16,0,Closed,No,Off,No,0,-100,-100,0,50,50,1 00\00
\00,00:00:00,9,16,16,Closed,No,On,No,0,-100,-100,0,50,50,10 00\00
\00,00:00:00,10,16,16,Closed,No,Off,No,0,225,-100,0,20,20,10 00\00
\00,00:00:00,34,16,16,Closed,No,Off,No,0,225,-100,0,40,40,10 00\00
\00,00:00:00,26,16,16,Closed,No,Off,No,0,231,-100,0,38,38,9 00\00
\00,00:00:00,23,16,16,Closed,No,Off,No,0,225,-100,0,40,40,2 00\00
\00,00:00:00,23,16,16,Closed,No,Off,No,0,227,-100,0,40,40,2 00\00
\00,00:00:00,12,16,16,Open,No,Off,No,0,236,-100,0,40,40,2 00\00
\00,00:00:00,21,48,16,Open,No,Off,No,0,236,-100,0,20,20,2 00\00
\00,00:00:00,13,48,48,Closed,No,Off,No,0,230,-100,0,20,20,2 00\00
\00,00:00:00,21,16,48,Closed,No,Off,No,0,230,-100,0,40,40,2 00\00
\00,00:00:00,21,0,48,Closed,No,Off,No,0,227,-100,0,42,42,0 00\00
\00,00:00:00,26,0,48,Closed,No,Off,No,0,227,218,0,40,40,0 00\00
```

13.   Upgrading EcoSys Firmware

Prerequisites

- tftp client installed on a pc or mac (comes standard with most windows versions)
- The IP address of the EcoSys to upgrade. (in this document, 192.168.1.50 is used as an example)
- Access to the network where the EcoSys is connected to.

Upgrade steps

1. Copy the firmware file to the PC. The firmware file should have the following naming convention: Armarac-vXX.YY.ZZ.hex. XX.YY.ZZ indicates the version number of the firmware.

2. Verify the current firmware of the Armarac EcoSys by checking its webpage. The version can be read on the "About" tab.

   Only upgrade the Armarac EcoSys if the version of the firmware file is higher than the current version of the Armarac EcoSys.

3 Open a "CMD" prompt and change the folder to where the firmware file is located.

4 Execute the following command to start the upgrade process:

   ```
   "tftp 192.168.1.50 put Armarac-vXX.YY.ZZ.hex"
   ```

   The upgrade process takes about 30 seconds. Note that the tftp application provides no feedback until the process is finished.

   Note that during the upgrade the EcoSys should in **no way be turned off or reset**.

5 The firmware upgrade is now complete. Verify the new version in the "About" tab of the Ecosys web page.

Failed load recovery

If the upgrade process gets interrupted inadvertently, the EcoSys will become inoperable. It is possible to recover from this by restarting the upgrade process. However, as no valid firmware is loaded, the EcoSys will assume 192.168.97.60 as it IP address. Therefore, ensure the PC using to load the EcoSys is on the same subnet.

Then use the same process as a normal firmware upgrade, but use 192.168.97.60 as the IP address:

   ```
   "tftp 192.168.97.60 put Armarac-vXX.YY.ZZ.hex"
   ```

Downgrading

Normally an EcoSys should never be loaded with a version lower than its current version. Should for some reason be required, the EcoSys has to be reset to its factory defaults after the downgrade has taken place.

Factory reset the EcoSys by turning off the power, press the "load" button and repower the EcoSys whilst still holding the "load" button for at least 5 seconds after the repower.

A Factory erase clears the log files and web pages, and reverts all settings to the default values. Note that DHCP is used by default and thus the EcoSys could have a different IP address after the reset. Use the discovery tool available from Thureon to find its IP address.

Section E – Maintenance

14.   Replacing Cooling Fans

The ventilation fans inside the Armarac enclosure may reach the end of their 60,000 hour (6.5 years) life-cycle and need to be replaced.

This replacement can be carried out without interrupting the power or equipment operation. The Armarac can continue to provide power to the remaining fans as these fans are powered by 12Volts DC.

Step 1 – Identify the fan which has failed

Unlock and open the doors. Take note of which fans are not spinning. Or that are spinning more slowly than the rest.

Step 2 – Remove the faulty fan

Door Outlet Fans: disconnect the fan power supply cable from the PCB and then remove the fan.

Chassis Inlet Fans: remove the hex head screws holding the top fan tray in place. Disconnect the 12V DC supply and the RJ45 control cable from the fan tray assembly.

Step 3 – Fit the replacement fan

Position the new fan so that the four mounting holes align with the fan mounts.

Fit the grill and mesh if fitted.

Reconnect the fan's power feed to the *fan control* PCB board.

15.   Replacing EcoSys Power Supply Unit

If the *EcoSys power supply* inside the Armarac enclosure reaches the end of its life-cycle it will need to be replaced.

Note this power supply also provides 12V power to the cooling fans if fitted.

Step 1 – Remove the Console Cover

Remove the console cover off the bottom tray in the Armarac enclosure using a 2.5mm metric hex key.

Step 2 – Disconnect power input from UPS

Remove the power cord from the end of the faulty power supply.

Remove the faulty power supply's output 2.5mm DC plug from the EcoSys controller board.

Step 3 – Remove the faulty Power Supply

Remove the Velcro straps from the faulty power supply. Retain the Velcro to re-install the replacement power supply.

Dispose of the faulty power supply in an appropriate manner and in accordance with local legislation and regulations.

Step 3 – Fit the replacement Power Supply and Reconnect

Install the new power supply in the same place and orientation on the console tray. Secure with Velcro straps.

Reconnect the output cable of the power supply in to the 2.5mm DC socket of the EcoSys controller board.

Reconnect the power cable to the UPS.

Section F – General Arrangement Reference Drawings

16.   Armarac MX.800 Fan – Orthographic Views [next page]

Top View

720mm / 28.3in
566mm / 22.3in

Bottom View

766mm / 30.1in
573mm / 22.5in

Isometric View *(Shown with optional cable shroud)*

Front View

720mm / 28.3in
1130mm / 44.5in

Rear View

95mm / 3.7in
400mm crs / 16in crs
270mm / 10.6in
410mm / 16.1in
270mm / 10.6in
108mm / 4.2in
220mm / 8.6in
85mm / 3.3in

Side View

566mm / 22.3in

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Armarac MX.800 Fan	
Doors Closed - Orthographic Views	

SIZE	MODEL	DWG NO	REV
A3	**2140-B**	**2140-B-MX.800.Fan-General-Arrangement**	**A**

DRAWN	**Ross Vincent**		
ISSUED	**July 2012**	SCALE **NTS**	SHEET **1 OF 2**

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NOTES
All dimensions in millimetres unless otherwise stated.
Subject to change without notice.

465mm
18.3in

720mm
28.3in

465mm
18.3in

570mm
22.4in

Top View

1650mm
65.0in

1130mm
44.5in

Front View

Isometric View
(Shown with optional cable shroud)

Armarac MX.800 Fan
Doors Open - Orthographic Views

SIZE	MODEL	DWG NO
A3	2140-B	2140-B-MX.800.Fan-General-Arrangement

DRAWN	Ross Vincent	REV
		A

ISSUED	July 2012	SCALE	NTS	SHEET	2 OF 2

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