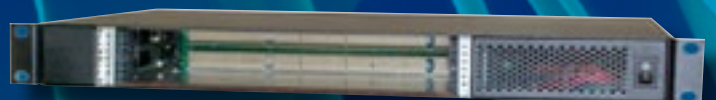
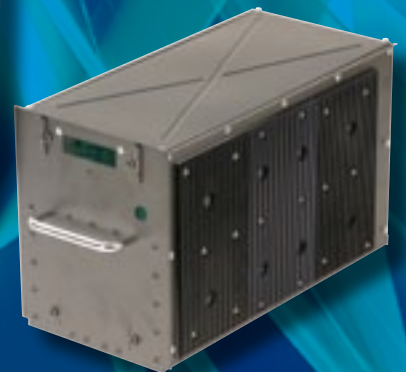
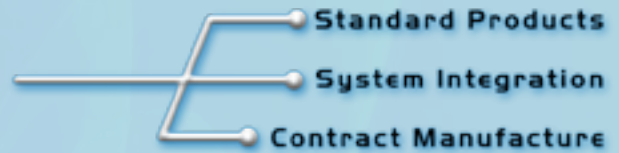


VEROTEC

Electronics Packaging



**Integrated
Systems**

INTRODUCTION

Verotec designs and manufactures a number of standard “electronics packaging” components and piece parts. These range from plastic guides to front panels, from subracks to enclosures and from backplanes to thermal control boards. They form a standard range of products that can be customized and assembled together to make an integrated system. This system can be a simple “low level” mechanical assembly such as a cardframe or a complex “high level” electro-mechanical assembly such as a VME chassis. The latter may include a backplane, power supply and cooling fans.

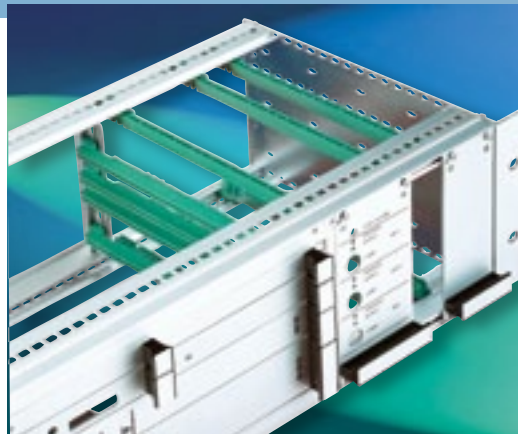
As the manufacturer of many system building blocks, and with our in house design and engineering expertise, Verotec is ideally placed to provide our customers with solutions to system requirements. The fact that we can modify and customize parts during the manufacturing cycle gives us a competitive edge in the market, which translates into a cost saving and reduced time to market for the customer.

Integrated systems can be “standard” by nature, adopting industry standard technologies and form factors, or they may be “custom” to suit application specific requirements. Either way, Verotec has the resources available to meet your demands.

This section provides details of our standard, bus-based product offerings as well as our design and manufacturing capabilities for modified, custom & bespoke integrated systems.

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Introduction	Page 2
Capability	Page 3
Standard Bus-Based Systems	
1U VME / CompactPCI Chassis	Page 4-5
2U VME / CompactPCI Chassis	Page 6-7
3U VME / CompactPCI Chassis	Page 8-9
6U VME / CompactPCI Chassis	Page 10-11
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Standard System Components	
Backplanes, Power Supplies, Fantrays and Enclosures	Page 13
Peripheral mounting adapters and Air baffle cards	Page 14
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Bar Handles	Page 16-17
ATCA and uTCA Chassis	Page 18-19
Industrial PC / Server Chassis	Page 20-21
Bespoke Integration	Page 22



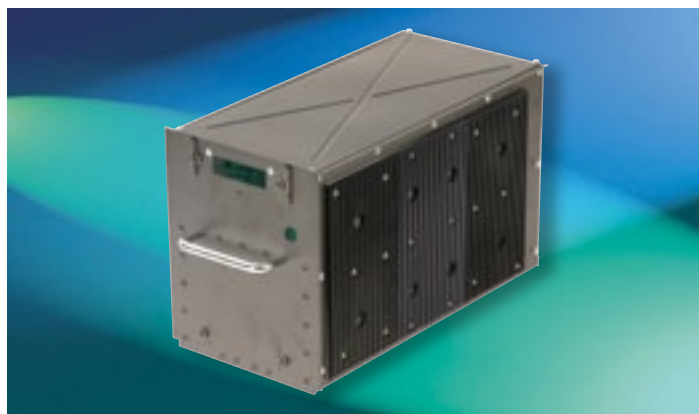
From basic cardframe assembly...



...to fully integrated systems...



...from standard C.O.T.S chassis...



...to bespoke custom enclosures.

DESIGN AND ENGINEERING

We use the latest 3D modelling CAD software to convert your unique system requirements into a viable design. Your direct involvement and use of our vast library of existing system elements will significantly reduce time spent in the design cycle. Extensive use of CAD ensures that future design revisions may be achieved with minimum effort.

Commercial, electro-mechanical, environmental and regulatory system requirements, will be discussed and considered during the design review process. Verotec's experience in system design will ensure a cost effective and compliant product for application and market.



EMC (Electro-Magnetic Compatibility) for radiated and conducted emissions.



Operational and non-operational requirements for shock and vibration.



Specification and selection of appropriate AC-DC or DC-DC converters and power supplies.



Operation and non-operational requirements for temperature and humidity.



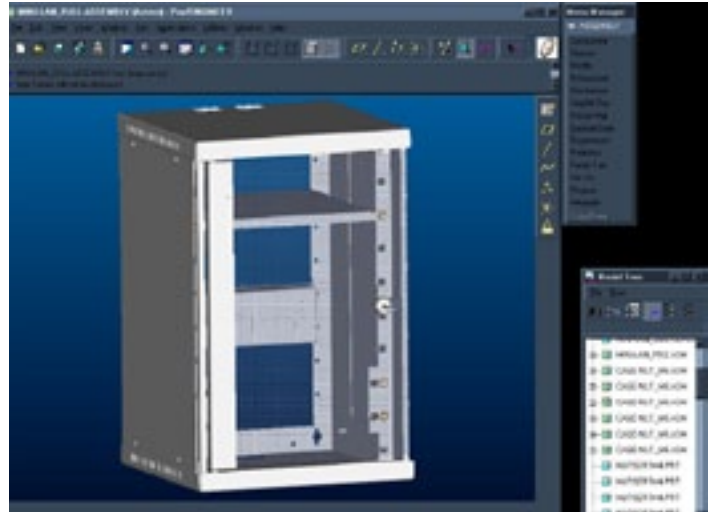
Optimised cooling schemes for efficiency and safe operation of equipment.



Design validation, from pre-compliance testing to certification, including safety for CE marking.



3D Models can be used to review concepts & ideas before manufacture



We're able to accept STEP, iges & dxf file formats

COST ENGINEERING

When designing a system, careful consideration is given to cost in terms of component selection and easy of manufacture and assembly to ensure the most cost effective design. During the product life cycle, cost reduction exercises may be undertaken to take advantage of low cost materials and processes.

COST ENGINEERING

When designing a system, careful consideration is given to cost in terms of component selection and easy of manufacture and assembly to ensure the most cost effective design. During the product life cycle, cost reduction exercises may be undertaken to take advantage of low cost materials and processes.

CAPABILITIES

Materials

- Plastic Moulding
- Metal Castings
- Aluminium Extrusions
- Formed sheet metal

Subassemblies

- Cable harnesses
- Power supplies
- PCBs & backplanes
- Fans
- Subracks
- Electro-mechanical

Finishes

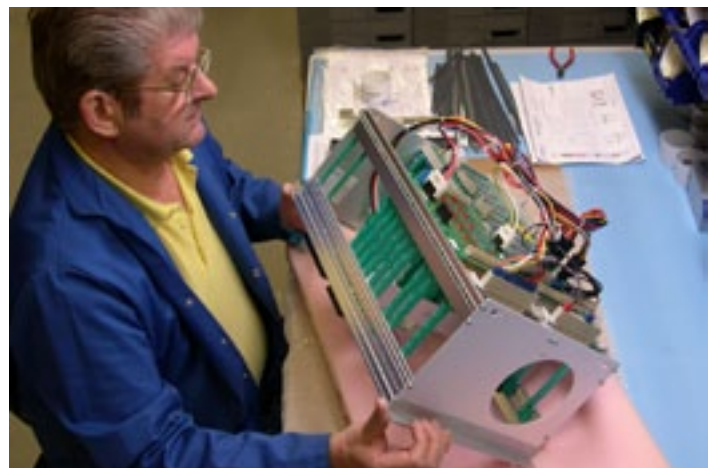
- Dry powder paint
- Wet paint
- Electro-plating (Anodise, Nickel, Iridite NCP)
- Screen printing
- Overlays
- Engraving
- Linishing

Manufacturing

- Drilling
- Turning
- Punching
- Machining
- Laser cutting
- Forming
- Welding



Backplane Assembly



System Assembly

INTRODUCTION

Designed for both 19" rack mount or desktop use, Verotec's slimmest horizontal system chassis is fully IEEE 1101.10/11 compliant, making it suitable for housing either VME64x or CompactPCI cards in low board count applications. Both deployable and development environments with limited space are catered for by the robust yet cost-effective design and its 1U formfactor. Chassis cooling is optimized for efficiency with enough airflow produced to dissipate the large amounts of heat generated by the latest CPU boards. A removable top cover provides safe working access to inside the chassis, which is especially useful in the testing and development of boards / systems.

COOLING

Provision is made for cooling air to flow from right to left through the unit by 3 fans mounted to the left hand side of the front and rear card cages and 2 fans at the front of the PSU assisting with airflow over the main and rear transition cards. Each fan is rated at 7.5cfm in free air and the resultant airflow is not required for PSU cooling which has a separate fan exhausting to the rear of the unit.

EMC

Good EMC shielding is provided by the chassis by adopting proven design practices. These include conductive fabric-over-foam gaskets on fixed seals, bare or tinned Beryllium Copper gaskets on the card cage apertures and 3.5mm round, 5mm triangular pitch hole pattern for airflow vents.

BACKPLANE OPTIONS

The chassis is fitted with either a CompactPCI or VME64 extensions backplane. The CompactPCI option is a 6U, 2 slot, 64Bit, PICMG2.0 R3.0 compliant backplane with a right-hand controller slot (top), rear plug connectors in P3, P4 & P5 and selectable coded I/O signalling environment. (default set to 5v). The VME64x option is a 6U, 2 slot, ANSI/VITA 1.1-1997 compliant backplane with active on-board termination and electronic auto bus grant and is fitted with the centre P0 connectors.

FEATURES

- 1U Chassis
 - Desktop or Rackmount (removable rack ears)
 - Removable top cover
- IEEE 1101.10/11 Cardframe
 - 6U x 8HP x 160mm Front area
 - 6U x 8HP x 80mm Rear transition area
- 6U, 2 Slot Backplane (VME64x or CompactPCI)
 - ANSI/VITA 1.1-1997 VME Extension B/Plane
 - PICMG 2.0 Revision 3.0 CPCI B/Plane
- 250W Embedded ATX Power Supply
 - 110-240v Auto ranging AC input
 - Active PFC
 - 110W @ +5v & 3.3v combined
- Optimized fan cooling
 - 6 x DC fans
 - 22 CFM Total chassis airflow

SPECIFICATIONS

Dimensions

Width	440mm / 17.33" desktop 19" with rack mounts
Depth	296.00mm / 11.65"
Height	1U / 44.45mm / 1.75"
Weight	4.47Kg / 9.86lbs

Material & Finish

Material	Steel
Finish	Black, powder coated

Environmental

Operation Temperature	0 Deg.C to +50 Deg.C
Non-operating Temperature	-20 Deg.C to +80 Deg.C

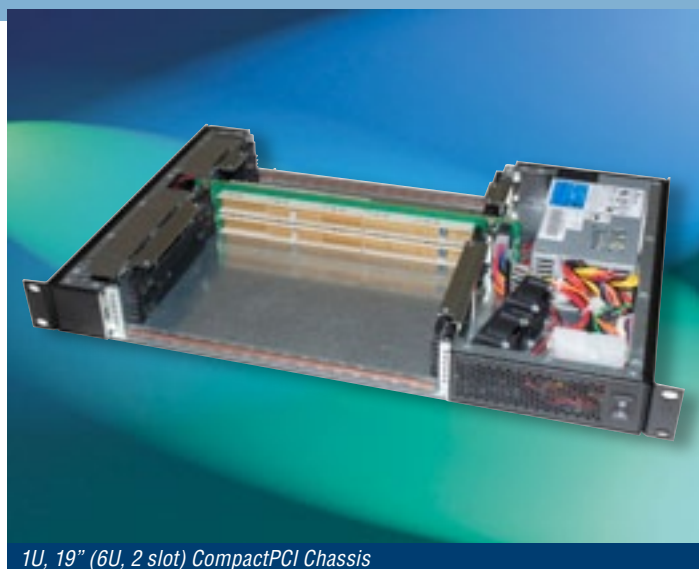
Power Supply

Input	110 to 240V @ 50-60Hz
Output	+5V @ 17A* +3.3V @ 14A* +12V @ 3A -12V @ 0.8A 110W combined

*Power

Cooling

Airflow	37.38M3/h / 22cfm
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1U, 19" (6U, 2 slot) CompactPCI Chassis



Front View



Rear View

ORDERING INFORMATION

Description	Part Number
1U VME64x Chassis	224-4001106
1U CompactPCI Chassis	447-4000359

CUSTOMIZING OPTIONS

Please note that it would be impossible to list every possible configuration available for this chassis in terms of backplane, cooling and power supply type. We have therefore listed our most popular, stocked item. Should your application require a slightly different specification, please contact us to discuss. Options include different backplanes, higher power ATX or hot-swap (pluggable) power supplies and higher power or removable / filtered fan trays.

LAYOUT

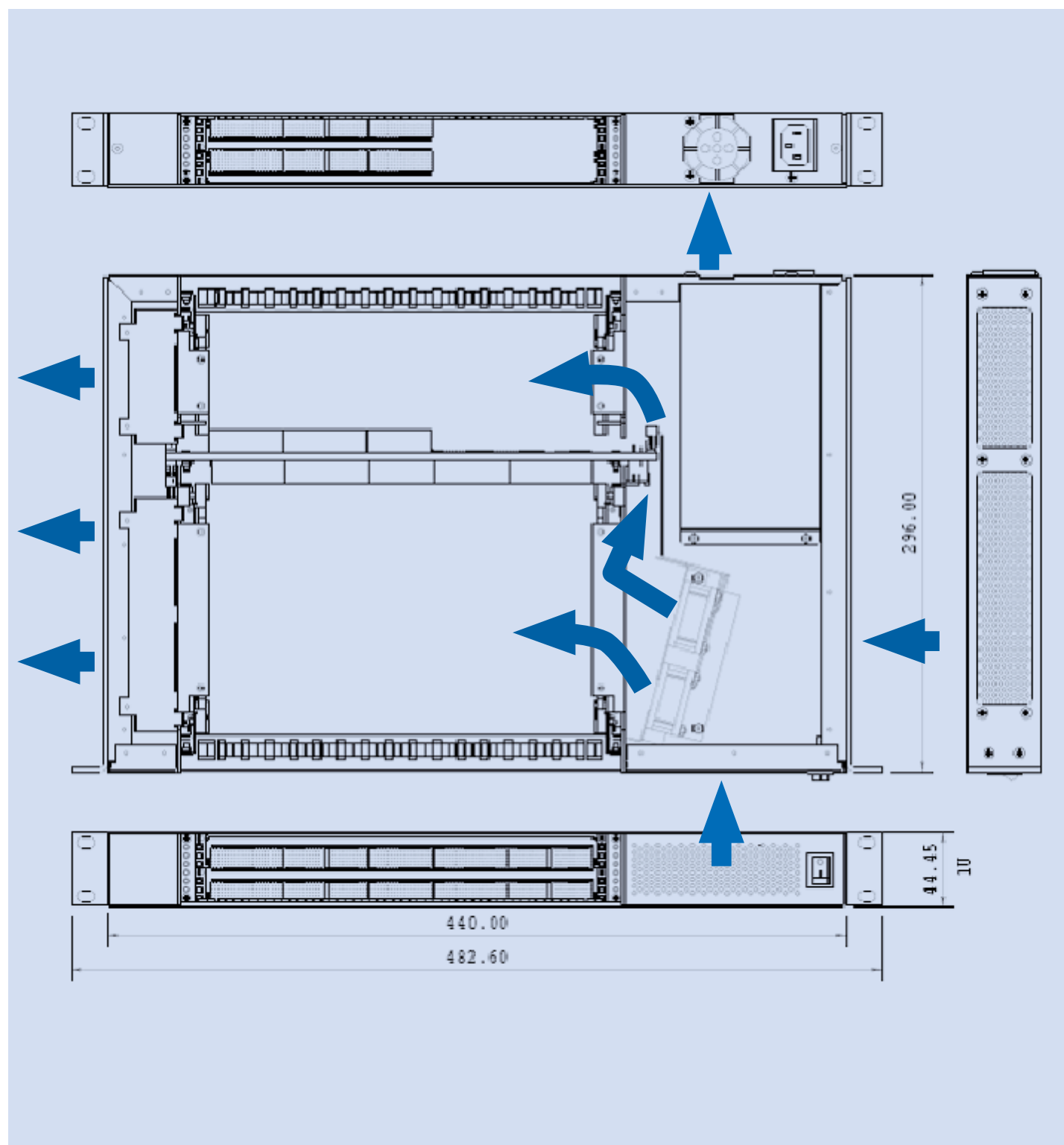
Typical layout of the 1U chassis is shown below. For more detailed drawings or engineering models, please contact your nearest Verotec sales office.

DIMENSIONS

Width	440mm / 17.33" (desktop), 19" (with rack mounts)
Depth	296.00mm / 11.65"
Height	1U / 44.45mm / 1.75"
Weight	4.47Kg / 9.86lbs

MATERIAL & FINISH

Material	Steel
Finish	Black, powder coated
Airflow	From right to left and front to rear (Shown with blue arrows)



INTRODUCTION

Designed for both 19" rack mount or desktop use, Verotec's 2U horizontal system chassis is fully IEEE 1101.10/11 compliant, making it suitable for housing either VME64x or CompactPCI cards in low board count applications. Both deployable and development environments with limited space are catered for by the robust yet cost-effective design and its 2U formfactor. Standard features include a provision for hot-swap, pluggable power supplies and a removable, filtered fan tray, making this unit suitable for high-availability applications. Chassis cooling is optimized for efficiency with enough airflow produced to dissipate the large amounts of heat generated by the latest CPU boards. A removable top cover provides safe working access to inside the chassis, which is especially useful in the testing and development of boards / systems.

COOLING

Provision is made for cooling air to flow from left to right through the unit by 3 fans mounted in a removable, filtered tray to the left hand side of the front and rear card cages. (See picture) Versions with embedded ATX PSU have an additional fan exhausting to the rear of the unit.

EMC

Good EMC shielding is provided by the chassis by adopting proven design practices. These include conductive fabric-over-foam gaskets on fixed seals, bare or tinned Beryllium Copper gaskets on the card cage apertures and 3.5mm round, 5mm triangular pitch hole pattern for airflow vents.

POWER SUPPLY OPTIONS

The system can be fitted with either an AC or DC, 250watt embedded ATX power supply or up to 2 x AC or DC, 3Ux8HP, PICMG 2.11 compatible (P47 interconnect) power supplies. (200W versions fitted as standard)

BACKPLANE OPTIONS

The chassis is fitted with either a CompactPCI or VME64 extensions backplane. The CPCI options include a 6U, 4 slot, 64Bit, PICMG2.0 R3.0 compliant backplane with a right-hand controller slot (top), rear plug connectors in P3, P4 & P5 and selectable coded I/O (default 5v) in both a standard and CT/H.110 (Computer Telephony) version, or a 6U, 4 slot PICMG 2.16 (packet switching) backplane. The VME64x option is a 6U, 4 slot, ANSI/VITA 1.1-1997 compliant backplane with active on-board termination, electronic auto bus grant and centre P0/J0 connectors fitted.

FEATURES

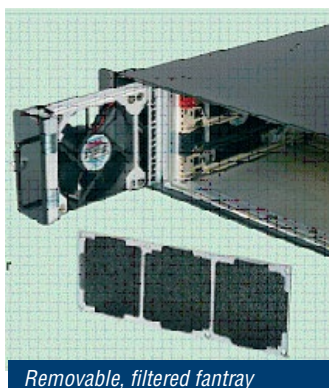
- 2U Chassis
 - Desktop or Rackmount (removable rack ears)
 - Removable top cover
- IEEE 1101.10/11 Cardframe
 - 6U x 16HP x 160mm Front area
 - 6U x 16HP x 80mm Rear transition area
- 6U, 4 Slot Backplane (VME64x or CompactPCI)
 - ANSI/VITA 1.1-1997 VME Extension B/P
 - PICMG 2.0 Revision 3.0 CPCI B/P
 - Optional CT/H.110 Bus (PICMG 2.5)
 - PICMG 2.16 Packet Switching B/P
- Various power supply options
 - 250W Embedded ATX Power Supply
 - Single or dual pluggable power supplies
 - AC or DC input pluggable power supplies
- Optimized fan cooling
 - Hot swappable, front loading, filtered fan tray
 - Optional fan fail indication
- Provision for mounting 3.5" drive peripherals



2U, 19" CompactPCI Chassis



2U, 19" VME64x Chassis



Removable, filtered fantray

ORDERING INFORMATION

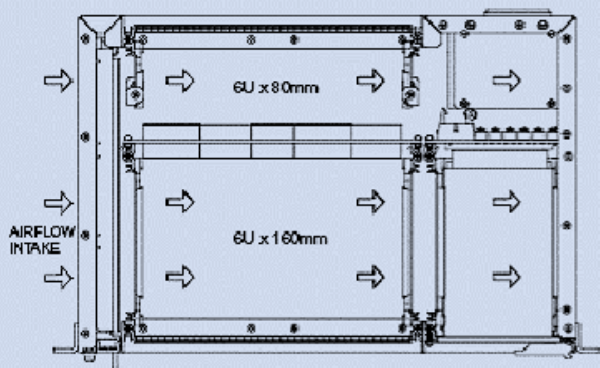
141	-	2	0	0	0	0	X	X
POWER								
Single AC 250w embedded								1
Single DC 250w embedded								2
Single AC 3U 200w pluggable								3
Single AC 3U 200w pluggable								4
Dual DC 3U 200w pluggable								5
Dual DC 3U 200w pluggable								6
BACKPLANE								
4 Slot VME64 Extensions (With P0)								1
4 Slot VME64 Extensions (Without P0)								2
4 Slot Standard CompactPCI (PICMG 2.0 R.3)								3
4 Slot CPCI + Computer Telephony H.110 (PICMG 2.5)								4
4 Slot CPCI + Packet Switching (PICMG 2.16)								5

CUSTOMIZING OPTIONS

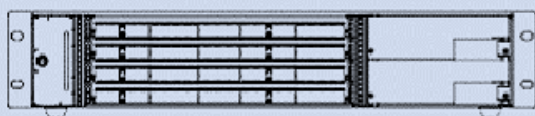
Please note that it would be impossible to list every possible configuration available for this chassis in terms of backplane, cooling, power supply type and peripherals. We have therefore listed the most common. Should your application require a slightly different specification, please contact us to discuss. Options include different backplanes, higher power ATX or hot-swap (pluggable) power supplies and higher power / intelligent cooling fans.

Layout

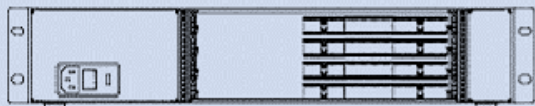
Typical layout of the 2U chassis is shown below for both embedded ATX and plug-in power supply versions. For more detailed drawings or engineering models, please contact your nearest Verotec sales office.



TOP VIEW
PLUGGABLE POWER SUPPLY



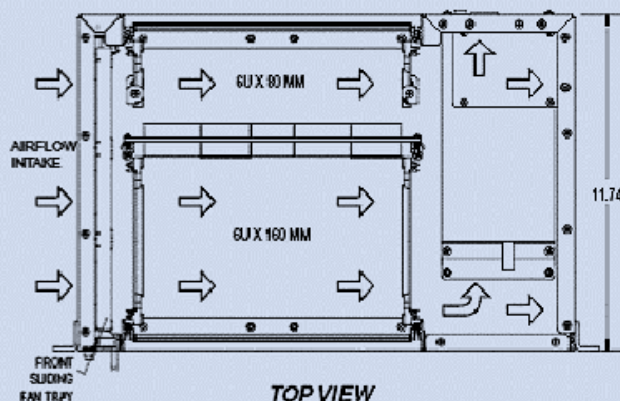
FRONT VIEW
PLUGGABLE POWER SUPPLY



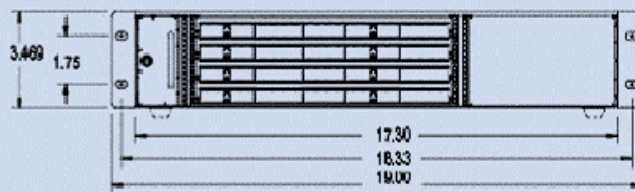
REAR VIEW
PLUGGABLE POWER SUPPLY



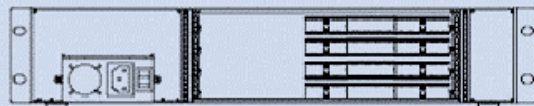
SIDE VIEW



TOP VIEW
EMBEDDED ATX POWER SUPPLY



FRONT VIEW
EMBEDDED ATX POWER SUPPLY



REAR VIEW
EMBEDDED ATX POWER SUPPLY

SPECIFICATIONS

Dimensions

Width	440mm / 17.33" desktop
	19" with rack mounts
Depth	296.00mm / 11.65"
Height	2U / 88.14mm / 3.47"

MATERIAL & FINISH

Material	Steel
Finish	Black, powder coated

ENVIRONMENTAL

Operation Temp.	0 Deg.C to +50 Deg.C
Non-operating Temp.	-20 Deg.C to +80 Deg.C

Power Supply	Embedded	Pluggable (each)
AC Input	110 to 240V @ 50-60Hz	90 to 264V @ 50-60Hz
DC Input	18-36V DC	18-36V DC
Output	+5V @ 17A*	+5v @ 25A*
	+3.3V @ 14A*	+3.3V @ 36A*
	+12V @ 3A	+12V @ 3A
	-12V @ 0.8A	-12V @ 0.5A

INTRODUCTION

Verotec offer a range of configured 3U bus-based systems that utilise our standard components and therefore have a proven design both electrically and mechanically. Further more, each product is value engineered, includes an optimised cooling scheme, efficient power supply and is designed to meet applicable environmental & regulatory standards.

Systems are specified using a simple configurator that enables users to select a product to meet their exact requirements in terms of enclosure, subrack, cooling, power supply and backplane.

A detailed datasheet for specific configurations is available upon request. Please contact your sales office.

Each unit is shipped fully assembled and tested.

Step 1 CHOOSE ENCLOSURE / STYLE

Choose from Eurotec, Diplomat or Verotec enclosures. Eurotec cases are simple and cost effective, manufactured mainly from sheet metal and, unlike the other two will allow 19" rack mounting. Diplomat and Verotec cases are more robust and aesthetically pleasing by incorporating die-castings, mouldings and extrusions into their designs. This makes them ideal for desktop & portable applications. Full details on these enclosures can be found in sections 3, 4 & 5 of the handbook.

141 - 3 X X X X X X

- 0 = Desktop Eurotec case
- 1 = Rackmount Eurotec case
- 2 = Portable Eurotec case
- 3 = Desktop Diplomat case
- 4 = Portable Diplomat case
- 5 = Desktop Verotec case
- 6 = Portable Verotec case



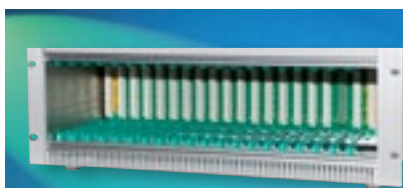
Product shown above is part 141-3420618. Portable Diplomat Case

Step 2 CHOOSE SUBRACK TYPE

Subracks are available in full width (84HP) and half width (42HP) in both IEEE 1101.10/11 (KM6-RF) and IEC60297 (KM6-II) versions. The former provides inject / extractor handle functionality, front panel coding and pre-location, ESD, EMC shielding and is designed for use with VME64x, VPX & CPCI backplanes. Both front plug and rear plug cards can be catered for. IEC60297 versions provide 160mm or 220mm card areas and are ideal for VMEbus and DIN41612 connector mounting applications. Full details on these subracks along with accessories can be found in sections 1 & 2 of the handbook.

141 - 3 X X X X X X

- 0 = IEEE 1101.10 - 3Ux160x84HP
- 1 = IEEE 1101.10/11 - 3Ux160/80x84HP
- 2 = IEC 60297 - 3Ux160x84HP
- 3 = IEC 60297 - 3Ux220x84HP
- 4 = IEEE 1101.10 - 3Ux160x42HP
- 5 = IEEE 1101.10/11 - 3Ux160/80x42HP
- 6 = IEC 60297 - 3Ux160x42HP
- 7 = IEC 60297 - 3Ux220x42HP



Rackmount Eurotec Case

Step 3 CHOOSE COOLING SCHEME

There are two main cooling schemes available; a fan tray (push) and rear fan panel (pull). Fan trays are positioned under the subrack drawing air from either the base or front panel and pushing it up through the cards and out through vented covers. Fan panels are located on the rear of the enclosure and pull air from either the enclosure base or front panel, up through the cards, exhausting out the rear. In both cases, ducting ensures optimum airflow. Also available for low power applications is a natural convection option in which case no fans are fitted. Further options include AC or DC fans and an intelligent controller which provides speed control and monitoring (fan fail) functionality.

141 - 3 X X X X X X

- 0 = Convection Only (No fans)
- 1 = Rear DC Fan Panel
- 2 = Rear AC Fan Panel
- 3 = Intelligent Rear Fan Panel
- 4 = AC Fan Tray
- 5 = DC Fan Tray
- 6 = Intelligent Fan Tray



Desktop Verotec Case



IEEE1101.10/11 KM6-RF Subrack



IEC60297 KM6-II Subrack



Rear fan panel / Fan Tray

Step 4 CHOOSE POWER SUPPLY

Eight system power options provide users with a choice of AC or DC supply voltages and a variety of power supply types to suit different applications.

Embedded (open frame) supplies are the most cost effective but are hard-wired providing no redundancy. The eurocard style supplies have a 3U x 8HP formfactor and use an H15 interconnect, meaning they are easily serviceable and provide limited redundancy. Pluggable style supplies have a Positronic P47 interconnect and use a power board to connect to. These are IEEE1101.10 & PICMG compliant making them ideal for VME64x and CPCI applications, providing hot-swap functionality and redundancy.

90-264v AC power inlet is via a fused, IEC connector with a filter for interference suppression whilst 36-72v DC power inlet is via barrier protected screw terminals.

Step 5 CHOOSE BACKPLANE TYPE

A variety of standard Verotec backplanes conforming to the major bus architectures can be selected. Full specifications of the CompactPCI and VMEbus types can be found on the relevant page of the handbook as shown on the right hand side. PXI types are as per the specifications shown on page 12.13 and available in 8 and 14 slot widths only. VPX backplanes are designed to customer's requirements due to their application specific nature.

Step 6 CHOOSE BACKPLANE WIDTH

All backplanes are a true 3U eurocard height and are available in a number of preferred slot widths, although other widths are available upon request. Where "2 x" is shown, this refers to 2 x individual backplanes – allowing two systems to operate within the same housing, sharing power / cooling.

141 – 3 X X X X X X

- 0 = 550W Embedded, AC I/P
- 1 = 550W Embedded, DC I/P
- 2 = Single 200W Eurocard, AC I/P
- 3 = Dual 200W Eurocard, AC I/P
- 4 = Single 250W Pluggable, AC I/P
- 5 = Single 250W Pluggable, DC I/P
- 6 = Dual 250W Pluggable, AC I/P
- 7 = Dual 250W Pluggable, DC I/P



Pluggable / Embedded PSUs

SPECIFICATIONS

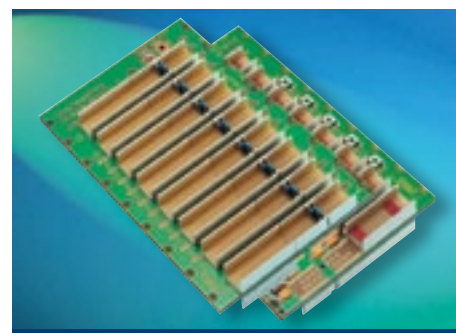
550W AC & DC Embedded supplies are TDK-Lambda Vega-Lite types, providing 5v@60A, 3.3v@50A, 12v@10A and -12v@6A.
200W AC Eurocard supplies are Verotec part: 925-4001527 (see pg.11.16 for spec.)
250W AC pluggable supplies are Verotec part: 925-4001442 (see pg.11.4 for spec.)
250W DC pluggable supplies are Verotec part: 925-4001448 (see pg.11.8 for spec.)

141 – 3 X X X X X X

- 0 = CompactPCI Verotec part: 927-58101XX (see pg.12.12 for spec.)
- 1 = CompactPCI + Rear I/O Verotec Part: 927-58111XX (see pg.12.12 for spec.)
- 2 = PXI See page 12.13 for specifications (8 or 14 slot only)
- 3 = J1 VMEbus Verotec part: 927-5411XXX (see pg.12.5 for spec.)
- 4 = VPX Designed to order

141 – 3 X X X X X X

- 0 = 4 Slot
- 1 = 2 x 4 Slot
- 2 = 6 Slot
- 3 = 2 x 6 Slot
- 4 = 8 Slot
- 5 = 2 x 8 Slot
- 6 = 10 Slot
- 7 = 16 Slot
- 8 = 17 Slot
- 9 = 21 Slot



CompactPCI Backplane

ORDERING INFORMATION

141-3	ENCLOSURE/ STYLE	SUBRACK	COOLING	PSU	Backplane Type	Backplane Slot Width
0	Eurotec Case Desktop	IEEE1101.10 3Ux160x84HP	No Cooling	550W Embedded AC Input	CompactPCI+ rear plug-up	4
1	Eurotec Case Rack-mount	IEEE1101.10/11 3Ux160/80x84HP	Rear DC Fan Panel	550W Embedded DC Input	CompactPCI No rear plug-up	2 x 4
2	Eurotec Case Portable	IEC 60297 3Ux160x84HP	Rear AC Fan Panel AC Input	Single 200W Eurocard AC Input	PXI	6
3	Diplomat Case Desktop	IEC 60297 3Ux220x84HP	Intelligent Rear Fans	Dual 200W Eurocard AC Input	J1 VMEbus	2 x 6
4	Diplomat Case Portable	IEEE1101.10 3Ux160x42HP	AC Fan Tray	Single 250W Pluggable AC Input	VME64x	8
5	Verotec Case Desktop	IEEE1101.10/11 3Ux160/80x 42HP	DC Fan Tray	Single 250W Pluggable DC Input	VPX	2 x 8
6	Verotec Case Portable	IEC 60297 3Ux160x42HP	Intelligent Fan Tray	Dual 250W Pluggable AC Input		10
7		IEC 60297 3Ux220x42HP		Dual 250W Pluggable DC Input		16
8						17
9						21

INTRODUCTION

Verotec offer a range of configured 6U bus-based systems that utilise our standard components and therefore have a proven design both electrically and mechanically. Further more, each product is value engineered, includes an optimised cooling scheme, efficient power supply and is designed to meet applicable environmental & regulatory standards.

Systems are specified using a simple configurator that enables users to select a product to meet their exact requirements in terms of enclosure, subrack, cooling, power supply and backplane.

A detailed datasheet for specific configurations is available upon request. Please contact your sales office.

Each unit is shipped fully assembled and tested.

Step 1 CHOOSE ENCLOSURE / STYLE

Choose from Eurotec, Diplomat or Verotec enclosures. Eurotec cases are simple and cost effective, manufactured mainly from sheet metal and, unlike the other two will allow 19" rack mounting. Diplomat and Verotec cases are more robust and aesthetically pleasing by incorporating die-castings, mouldings and extrusions into their designs. This makes them ideal for desktop & portable applications. Full details on these enclosures can be found in sections 3, 4 & 5 of the handbook.

Step 2 CHOOSE SUBRACK TYPE

Subracks are available in full width (84HP) and half width (42HP) in both IEEE 1101.10/11 (KM6-RF) and IEC60297 (KM6-II) versions. The former provides inject / extractor handle functionality, front panel coding and pre-location, ESD, EMC shielding and is designed for use with VME64x, VPX & CPCI backplanes. Both front plug and rear plug cards can be catered for. IEC60297 versions provide 160mm or 220mm card areas and are ideal for VMEbus and DIN41612 connector mounting applications. Full details on these subracks along with accessories can be found in sections 1 & 2 of the handbook

Step 3 CHOOSE COOLING SCHEME

There are two main cooling schemes available; a fan tray (push) and rear fan panel (pull). Fan trays are positioned under the subrack drawing air from either the base or front panel and pushing it up through the cards and out through vented covers. Fan panels are located on the rear of the enclosure and pull air from either the enclosure base or front panel, up through the cards, exhausting out the rear. In both cases, ducting ensures optimum airflow. Also available for low power applications is a natural convection option in which case no fans are fitted. Further options include AC or DC fans and an intelligent controller which provides speed control and monitoring (fan fail) functionality.



Product shown above is part 141-6434402 - Desktop Verotec Case



Product shown above is part 141-6324676 - Desktop Diplomat Case

141 - 6 X X X X X X

- 0 = Desktop Eurotec case
- 1 = Rackmount Eurotec case
- 2 = Portable Eurotec case
- 3 = Desktop Diplomat case
- 4 = Portable Diplomat case
- 5 = Desktop Verotec case
- 6 = Portable Verotec case

141 - 6 X X X X X X

- 0 = IEEE 1101.10 - 6Ux160x84HP
- 1 = IEEE 1101.10/11 - 6Ux160/80x84HP
- 2 = IEC 60297 - 6Ux160x84HP
- 3 = IEC 60297 - 6Ux220x84HP
- 4 = IEEE 1101.10 - 6Ux160x42HP
- 5 = IEEE 1101.10/11 - 6Ux160/80x42HP
- 6 = IEC 60297 - 6Ux160x42HP
- 7 = IEC 60297 - 6Ux220x42HP

141 - 6 X X X X X X

- 0 = Convection Only (No fans)
- 1 = Rear DC Fan Panel
- 2 = Rear AC Fan Panel
- 3 = Intelligent Rear Fan Panel
- 4 = AC Fan Tray
- 5 = DC Fan Tray
- 6 = Intelligent Fan Tray



Rackmount Eurotec Case



IEEE1101.10/11 KM6-RF Subrack



Rear fan panel / Fan Tray

Step 4 CHOOSE POWER SUPPLY

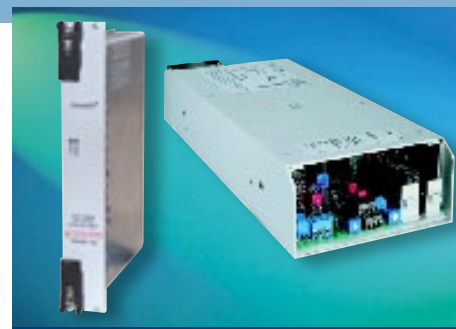
Eight system power options provide users with a choice of AC or DC supply voltages and a variety of power supply types to suit different applications.

Embedded (open frame) supplies are the most cost effective but are hard-wired providing no redundancy. The eurocard style supply uses an H15 interconnect, meaning it is easily serviceable and provides limited redundancy. Pluggable style supplies have a Positronic P47 interconnect and use a power board to connect to. These are IEEE1101.10 & PICMG compliant making them ideal for VME64x and CPCI applications, providing hot-swap functionality and redundancy. For VXI systems, only option 2 can be selected due to the unique power requirements.

90-264v AC power inlet is via a fused, IEC connector with a filter for interference suppression whilst 36-72v DC power inlet is via barrier protected screw terminals.

141 – 6 X X X X X X

- 0 = 550W Embedded, AC I/P
- 1 = 550W Embedded, DC I/P
- 2 = Single 200W Eurocard, AC I/P
- 3 = Dual 200W Eurocard, AC I/P
- 4 = Single 250W Pluggable, AC I/P
- 5 = Single 250W Pluggable, DC I/P
- 6 = Dual 250W Pluggable, AC I/P
- 7 = Dual 250W Pluggable, DC I/P



Pluggable / Embedded PSUs

SPECIFICATIONS

1000W AC & DC Embedded supplies are TDK-Lambda Alpha types, providing 5v@120A, 3.3v@120A, 12v@16A and -12v@16A.
 300W AC Eurocard supplies are Verotec parts: 925-4001530 / 35 (see pg.11.17 for spec.)
 500W AC pluggable supplies are Verotec part: 925-4001445 (see pg.11.7 for spec.)
 500W DC pluggable supplies are Verotec part: 925-4001451 (see pg.11.11 for spec.)

Step 5 CHOOSE BACKPLANE TYPE

A variety of standard Verotec backplanes conforming to the major bus architectures can be selected. Full specifications of the CompactPCI, VMEbus, VXI and VME64x types can be found on the relevant page of the handbook as shown on the right hand side. VPX, VXS and PICMG2.16 backplanes are designed to customer's requirements due to their application specific nature.

Step 6 CHOOSE BACKPLANE WIDTH

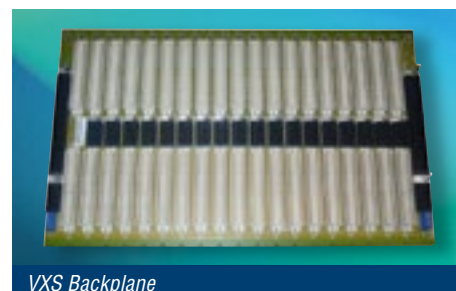
All backplanes are a true 6U eurocard height and are available in a number of preferred slot widths, although other widths are available upon request. Where "2 x" is shown, this refers to 2 x individual backplanes – allowing two systems to operate within the same housing, sharing power / cooling.

141 – 6 X X X X X X

- 0 = CompactPCI + Rear I/O Verotec Part: 927-58211XX (see pg.12.12 for spec.)
- 1 = CompactPCI + CT/H.110 Verotec Part: 927-58231XX (see pg.12.12 for spec.)
- 2 = CompactPCI + PICMG 2.16 Designed to order (see page 12.12)
- 3 = PXI 8 Slot only (see page 12.13 for spec.)
- 4 = J1/J2 VMEbus Verotec part: 927-54332XX (see pg.12.5 for spec.)
- 5 = VXI Verotec part: 927-40013XX (see pg.12.8 for spec.)
- 6 = VME64x (Without P0 conns) Verotec part: 927-54796XX (see pg.12.6 for spec.)
- 7 = VME64x (with P0 conns) Verotec part: 927-54706XX (see pg.12.6 for spec.)
- 8 = VPX Designed to order (see page 12.09)
- 9 = VXS Designed to order (see page 12.10)

141 – 6 X X X X X X

- 0 = 4 Slot
- 1 = 2 x 4 Slot
- 2 = 6 Slot
- 3 = 2 x 6 Slot
- 4 = 8 Slot
- 5 = 2 x 8 Slot
- 6 = 10 Slot
- 7 = 16 Slot
- 8 = 17 Slot
- 9 = 21 Slot



VXS Backplane

ORDERING INFORMATION

141-3	ENCLOSURE/STYLE	SUBRACK	COOLING	PSU	Backplane Type	Backplane Slot Width
0	Eurotec Case Desktop	IEEE1101.10 6Ux160x84HP	No Cooling	1000W Embedded AC Input	CompactPCI + rear plug-up	5
1	Eurotec Case Rack-mount	IEEE1101.10/11 6Ux160/80x84HP	Rear DC Fan Panel	1000W Embedded DC Input	CompactPCI With CT/H.110	2 x 5
2	Eurotec Case Portable	IEC 60297 6Ux160x84HP	Rear AC Fan Panel AC Input	1000W Embedded AC Input (For VXI only)	CompactPCI With 2.16	8
3	Diplomat Case Desktop	IEC 60297 6Ux220x84HP	Intelligent Rear Fans	Dual 300W Eurocard AC Input	PXI	2 x 8
4	Diplomat Case Portable	IEEE1101.10 6Ux160x42HP	AC Fan Tray	Single 500W Pluggable AC Input	J1/J2 VMEbus	10
5	Verotec Case Desktop	IEEE1101.10/11 6Ux160/80x 42HP	DC Fan Tray	Single 500W Pluggable DC Input	VXI	2 x 10
6	Verotec Case Portable	IEC 60297 6Ux160x42HP	Intelligent Fan Tray	Dual 500W Pluggable AC Input	VME64x Without P0 con.	16
7		IEC 60297 6Ux220x42HP		Dual 500W Pluggable DC Input	VME64x Without P0 con.	17
8					VPX	20
9					VXS	21

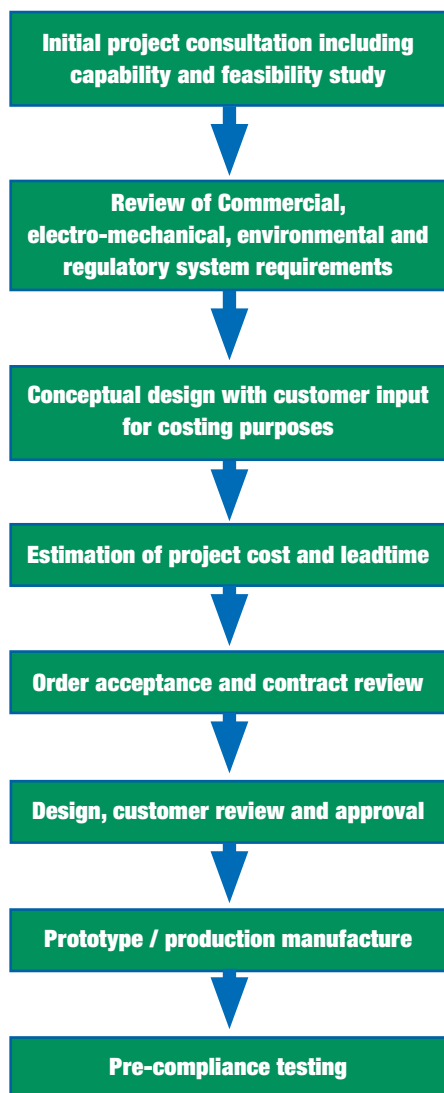
INTRODUCTION

Whilst we offer COTS (commercial off-the-shelf) bus based systems like the ones shown on the previous pages, 75% of the chassis we design and manufacture are done so to customer's specifications – they are custom. They will often contain the same standard building blocks (backplane, subrack, enclosure, power supply, fan trays etc.) but will be customized to suit a specific requirement or application.

3 REASONS TO PARTNER WITH VEROTEC

- 1) We have in-depth knowledge and experience in system design, open standards, environmental and regulatory requirements.
- 2) Our standard products provide a proven design platform to work from. Being based on open standards, they can be used as prototypes to get going with.
- 3) As the manufacturer of many system building blocks, we can modify and customize parts during the manufacturing process, giving us a competitive edge in the market. This translates into a cost saving and reduced time to market for the customer.

TYPICAL DESIGN & REALISATION PROCESS



EXAMPLE SYSTEMS

ATX
UL1950
EN60950
PICMG 2.0 R.3
ANSI/VITA 1-1994
ANSI/VITA 1.1-1997
PICMG 2.16
PICMG 3.x
VITA 46
IEEE 1000
IEEE1296
IEC60297-3
IEEE1101.10/11
IEEE 796 ISO9001
DIN 41612
DIN 41494-5
MIL HD-167
RoHS NEBS
EN55022
CE

INTRODUCTION

Four key parts to any integrated system are the power supply, fan tray, enclosure and backplane. As a manufacturer and supplier of these standard building blocks, Verotec are well placed in the market and have a competitive edge over other system integrators. Being able to modify and customize parts during the manufacturing process reduces cost and time to market for the customer.

POWER SUPPLIES

One of the prime functions of a system is to convert, filter, monitor and distribute AC / DC power to cards and peripheral product housed within. Verotec offers a range of eurocard-style power supplies which are both cost effective and efficient, whilst meeting applicable industrial and regulatory standards. For full details, please refer to the "Power Supplies" section.



Power Supplies

FAN TRAYS & THERMAL SOLUTIONS

Cooling, more than ever, is a crucial part of any system with power densities increasing and card sizes remaining the same. In addition to a range of standard and filtered trays, Verotec also offer intelligent solutions that provide monitoring, temperature sensing and control functions to a systems cooling scheme. For full details on the range, please refer to the "Thermal Solutions" section.



Fan Trays & Thermal Solutions

SUBRACKS & ENCLOSURES

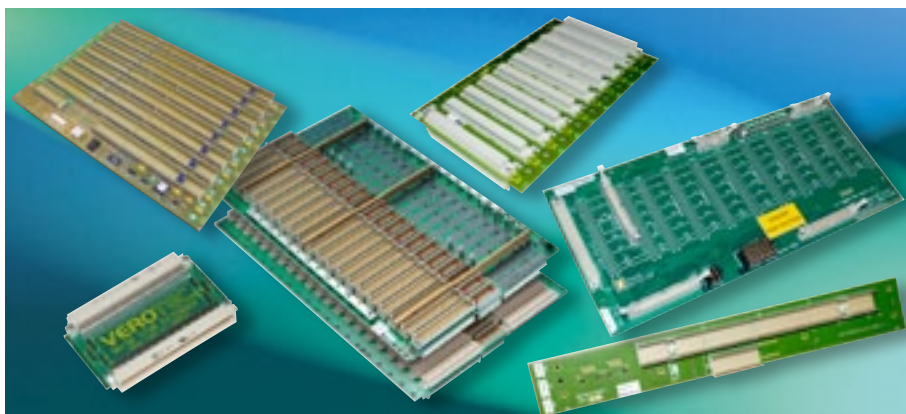
Verotec manufactures its own range of subracks and enclosures suitable for integrated systems. In addition, we have a wide range of front panels, plug-in units and accessories such as card guides and divider kits. For full details on these items, please refer to the "KM6", "Diplomat Case", "Eurotec Case" and "Verotec Case" sections.



Subracks & Enclosures

BACKPLANES AND PCBs

Backplanes are often considered to be the heart of any system, often defining the associated mechanics. Verotec designs and manufactures a comprehensive range of backplanes and is able to offer products that meet many of the common industrial computing standards such as VME, VPX, CompactPCI and uTCA. For full details, please refer to the "Backplanes and Extender boards" section.



Backplanes and PCBs

PERIPHERAL MOUNTING ADAPTERS (PMA)

Verotec's peripheral mounting assemblies (PMAs) are designed to comply with industry standard IEC60297 (for standard eurocard applications) and IEEE1101.10, for use in VME64 Extensions and CompactPCI systems. Standard eurocard types use a 3mm anodised aluminium front panel with fixed handles whilst VME64x & CPCI types have chromated (conductive) front panels with RFI gasket and fixed handles. Both are supplied with fixing hardware.

Two types are available; the first is for vertically mounting a single standard 5.25", front accessible peripheral such as a CD / DVD drive. The second is for mounting one standard 3.5", front accessible peripheral (such as a floppy disk) and one standard 3.5", embedded peripheral (such as a hard disk drive).

ORDERING INFORMATION

Standard IEC60297

Module Size	Drive Type	F/Panel Cutout	Ordercode
6U x 12HP	1 x 5.25"	1 @ 41 x 147mm	950-4001256
6U x 8HP	2 x 3.5"	1 @ 25 x 102mm	950-4001257

Shielded IEEE1101.10

Module Size	Drive Type	F/Panel Cutout	Ordercode
6U x 12HP	1 x 5.25"	1 @ 41 x 147mm	950-4001327
6U x 8HP	2 x 3.5"	1 @ 25 x 102mm	950-4001328

AIR BAFFLE CARDS

The air baffle card is designed to be used in vacant system slots to both close the front panel area and block airflow. In doing so, cooling air is diverted to active cards, thus maintaining the correct system airflow profile.

The air baffle card is available with or without handles, in standard 3U and 6U Eurocard heights, depths of 160mm and 220mm and is 4HP (one slot) wide. Customers also have the choice of either an unshielded (IEC60297) version or a shielded (IEEE 1101.10) version.

ORDERING INFORMATION

Standard (IEC 60297) versions:

Description	Ordercode
3U x 160mm, with handles	950-4001329
3U x 160mm, without handles	950-4001330
3U x 220mm, with handles	950-4001331
3U x 220mm, without handles	950-4001332
6U x 160mm, with handles	950-4001333
6U x 160mm, without handles	950-4001334
6U x 220mm, with handles	950-4001335
6U x 220mm, without handles	950-4001336

Shielded (IEEE 1101.10) versions:

Description	Ordercode
3U x 160mm, with handles	950-4001337
3U x 160mm, without handles	950-4001338
3U x 220mm, with handles	950-4001339
3U x 220mm, without handles	950-4001340
6U x 160mm, with handles	950-4001341
6U x 160mm, without handles	950-4001342
6U x 220mm, with handles	950-4001343
6U x 220mm, without handles	950-4001344



Standard 6U 12HP 5.25" peripheral mounting assembly



Standard 6U 4HP 160mm air baffle card with handles

GENERAL ENCLOSURE ACCESSORIES – FEET

Rubber self-adhesive feet

Supplied in packs of 4, these self-adhesive feet can be used on a wide variety of desk mounted enclosures and are available in 2 sizes; 16mm Dia. with a 4 mm height and 10mm Dia. with a 5mm height.

Kit comprises of: 4 self-adhesive feet

Tilt Foot Kit

Supplied as a kit, these are available in black or grey to complement many kinds of desk mounting enclosure. Two housings are fitted with tilt legs to raise the viewing angle of desk mounted equipment whilst the other two housings contain a non-slip insert to prevent the equipment sliding or damaging the work surface.

Kit comprises of: 4 Housings with inserts, 2 tilt legs, fixing screws

Adjustable Feet

These screw fixing feet allow alignment of racks, cabinets and smaller free standing enclosures whilst standing on uneven surfaces. They are secured with an M10 studs and have a foot diameter of 38mm. Supplied in a kit.

Kit comprises of: 4 Adjustable feet

Medium Duty Castors

Designed for use on rack cabinets where only light duties are expected, these plastic castors are secured using an M10 stud. 2 of the castors are braked allowing the unit to be temporarily held in position.

Kit comprises of: 2 Braked castors, 2 un-braked castors

GENERAL ENCLOSURE ACCESSORIES – HANDLES

Extruded Rack Handle

These one piece handles are extruded and formed from anodised aluminium. Five sizes are available providing an ergonomic and comfortable grip for cardframes and enclosures. Supplied singly.

Comprises of: 1 Extruded handle

Size	Overall length	Fixing centres
2U	73.0	63.7
3U	116.3	108.3
4U	160.8	152.8
5U	205.2	197.2
6U	249.7	241.7

Carry Handle

This handle is ideally suited to carrying an enclosure from above. The unit consists of a PVC strap with a steel brace. Fixings are concealed under chromed covers and are fitted to the enclosure with nuts bolts and washers through a pre-drilled hole.

Kit comprises of: Handle, 2 Chrome covers, fixing nuts and bolts

Rack Handles

Available in 3 heights and 2 colours these handles are designed to give a stylish appearance to any front panel mounted enclosures. The 1U version is a single piece moulding whilst the 2U & 3U versions have an aluminium centre extrusion with top and bottom moulding. The grey version is RAL 7035 colour and the black version is moulded in black material with a black painted aluminium extrusion. All versions are supplied as standard with a green adhesive trim with different colours available upon request. Supplied in a pair.

1U Comprises of: 2 Handle mouldings, 2 trims, fixings

2U/3U Comprises of: 4 Top/bottom mouldings, 2 extrusions, 2 trims, fixings



Rubber self-adhesive feet



Tilt foot kit



Adjustable feet



Medium duty castors

Description	Ordercode
Rubber self-adhesive feet (10mm x 5mm)	50-4001346
Rubber self-adhesive feet (16mm x 4mm)	50-4001069
Tilt foot kit (Grey)	50-2867
Tilt foot kit (Black)	50-2866
Adjustable feet	802-560002
Medium duty castors	802-560001



Extruded rack handles



Carry handle



1U rack handles



2U & 3U rack handles

Description	Ordercode
2U Extruded rack handle	50-10114
3U Extruded rack handle	50-10117
4U Extruded rack handle	50-10116
5U Extruded rack handle	50-10115
6U Extruded rack handle	50-10118
Screws for extruded rack handle (pk10)	173-10036
Carry handle	50-0848
1U Black rack handle	503-232978
2U Black rack handle	503-232980
3U Black rack handle	503-232982
1U Grey rack handle	503-232979
2U Grey rack handle	503-232981
3U Grey rack handle	503-232983

GENERAL ENCLOSURE ACCESSORIES – HANDLES

Extruded Handle – Style HGF

One piece extruded aluminium handles with a silver Anodise finish.
Supplied singly

Comprises of: 1 Extruded handle, 2 M5x12 screws, 2 flat washers

Extruded Handle – Style R2

One piece extruded aluminium handles supplied in 1U to 3U heights with a silver or black Anodise finish. Supplied singly

Comprises of: 1 Extruded handle, 2 M4x10 screws (for 8mm wide handles) or 2 M5x12 screws (for 12mm wide handles) 2 flat washers

ORDERING INFORMATION

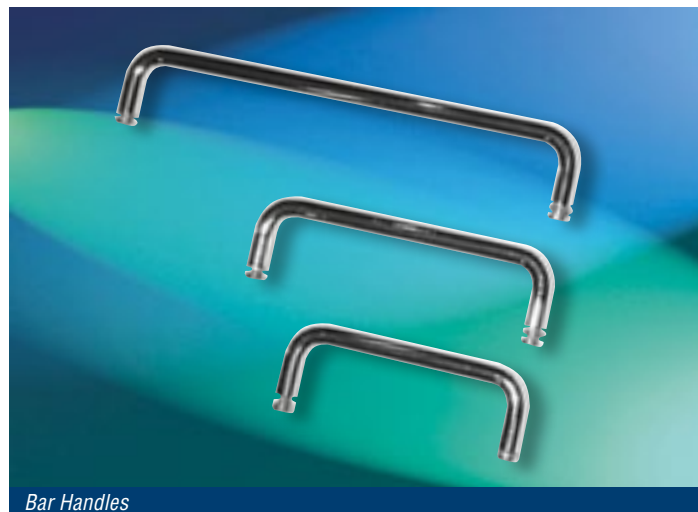
Description	Fixing Centres	Ordercode
HGF handle	88.9	549-10048
HGF handle	133.4	549-10049
R2 Handle – 8mm, Silver	32.0	549-10070
R2 Handle – 8mm, Silver	75.5	549-10072
R2 Handle – 8mm, Silver	120.0	549-10074
R2 Handle – 12mm, Silver	120.0	549-10053
R2 Handle – 8mm, Black	32.0	549-10071
R2 Handle – 8mm, Black	75.5	549-10073
R2 Handle – 8mm, Black	120.0	549-10075
R2 Handle – 12mm, Black	120.0	549-10054



HGF style handle



R2 style handle



Bar Handles

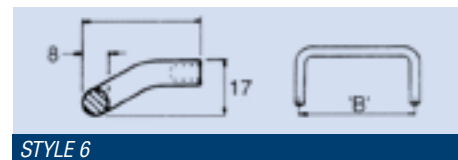
BAR HANDLES

STYLE 6 ■

Material : 7.9mm dia mild steel
Finish : Polished chrome
Fixings : ISO M4 x 10mm pan head screws and flat washers

ORDERING INFORMATION

B	Order code
98.4	549-10006E



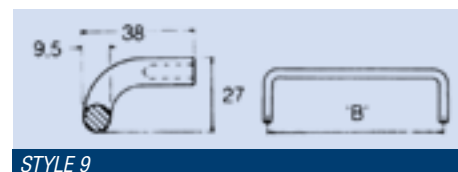
STYLE 6

STYLE 9 ●

Material : 7.5mm dia mild steel
Finish : Polished chrome
Fixings : ISO M5 x 10mm pan head screws and flat washers.

ORDERING INFORMATION

B	Order code
152.4	549-10045C



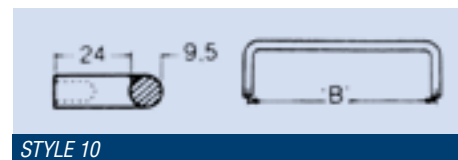
STYLE 9

STYLE 10 ●

Material : 9.5mm dia mild steel
Finish : Polished chrome
Fixings : ISO M4 x 10mm pan head screws and flat washers. ISO M5 Nyloc hexagon nuts, flat washers

ORDERING INFORMATION

B	Order code
101.6	549-10007B
127.0	549-10008K
152.4	549-10009G
203.2	549-10010H



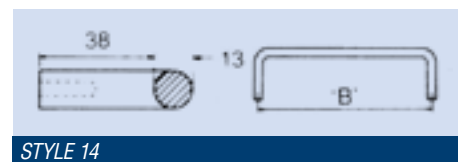
STYLE 10

STYLE 14 ■

Material : 12.7mm dia mild steel
Finish : Polished chrome
Fixings : ISO M4 x 12mm pan head screws and flat washers

ORDERING INFORMATION

B	Order code
98.4	549-10046L



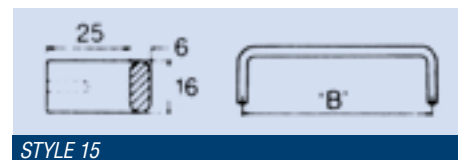
STYLE 14

STYLE 15

Material : Brass
Finish : Polished chrome
Fixings : ISO M4 x 10mm pan head screws and flat washers

ORDERING INFORMATION

B	Order code
101.6	549-10012B
152.4	549-10013K



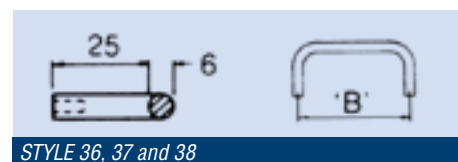
STYLE 15

STYLE 36,37 and 38 ▲

Material : 6.4mm dia brass
Finish : Polished chrome
Fixings : ISO M4 x 10mm pan head screws and flat washers

ORDERING INFORMATION

B	Order code
31.8	549-10061G
48.3	549-10062D
76.2	549-10063A



STYLE 36, 37 and 38

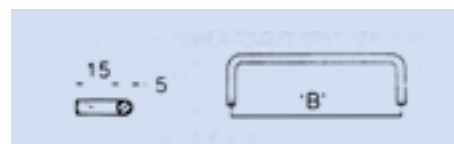
BAR HANDLES

STYLE 48

Material	: 4.8mm dia mild steel
Finish	: Polished chrome
Fixings	: ISO M3 x 8mm pan head screws and flat washers

ORDERING INFORMATION

B	Order code
31.8	549-10017J
48.8	549-10018F
76.2	549-10019C



STYLE 48

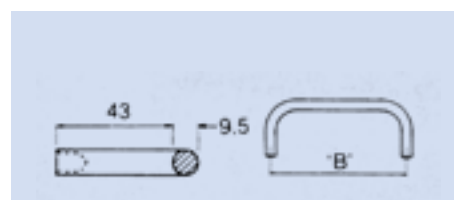
STYLE HAF

These handles are provided with two alternative sets of fixings to enable either a male or female version to be used.

Material	: 9.5mm dia mild steel
Finish	: Polished chrome
Fixings	: ISO M6 x 12mm pan head screws and flat washers. ISO M6 Nyloc hexagon nuts, flat washers and studs.

ORDERING INFORMATION

B	Order code
101.6	549-10021A
127.0	549-10022J
152.4	549-10023F
222.3	549-10025L
266.7	549-10026H



STYLE HAF

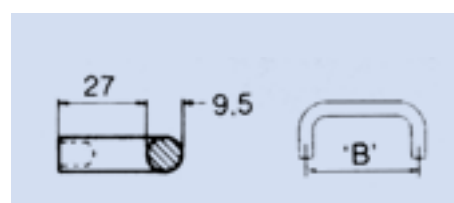
STYLE HBF

These handles are provided with two alternative sets of fixings to enable either a male or female version to be used.

Material	: 9.5mm dia mild steel
Finish	: Polished chrome
Fixings	: ISO M12 x 12mm pan head screws and flat washers. ISO M6 Nyloc hexagon nuts, flat washers and studs.

ORDERING INFORMATION

B	Order code
76.2	549-10028B
101.6	549-10030L
127.0	549-10031H
152.4	549-10033B
177.8	549-10034K



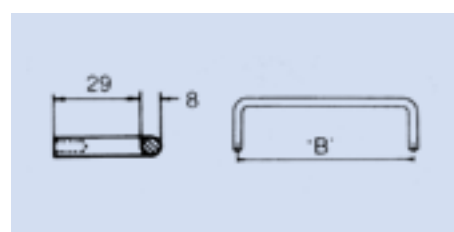
STYLE HBF

STYLE HDF

Material	: 7.9mm dia mild steel
Finish	: Polished chrome
Fixings	: ISO M5 x 10mm pan head screws and flat washers

ORDERING INFORMATION

B	Order code
44.5	549-10047H
76.2	549-10036D
88.9	549-10037A
101.6	549-10038J
127.0	549-10039F
133.0	549-10040G

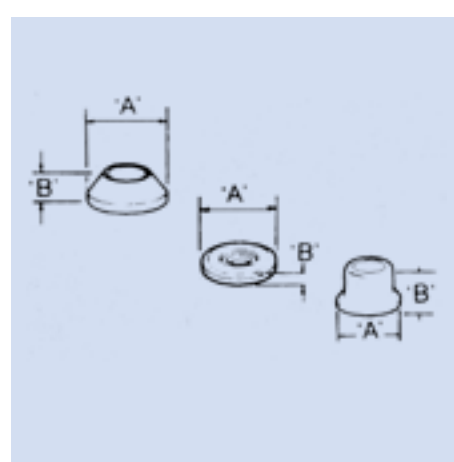


STYLE HDF

HANDLE SHOES

Chrome plated shoes suitable for use with bar handles. The symbols indicate which handles they can be used with - see previous bar handles

Material	Type	Dimensions		Use on	Order code
		A	B		
Plastic	1	15.9	4.8	■	549-10082G
	3	12.7	1.6	▲	549-10089H
	3	19.1	2.7	●	549-10090J
Brass	1	19.1	6.4	●	549-10083D
	1	15.9	4.8	■	549-10084A
	3	12.7	1.6	▲	549-10091F
	3	19.1	2.7	●	549-10092C
	2	19.1	12.7	●	549-10088L



HANDLE SHOES

INTRODUCTION

ATCA stands for “Advanced Telecommunications Computing Architecture” and is defined under PICMG 3.x. It is designed to offer high bandwidths as well as improved reliability, availability and serviceability. Although originally designed for next generation “carrier” grade communications equipment, it is often considered in other markets & applications such as military and medical. Verotec can assist in the design and supply of both ATCA components and configured chassis’ to customer’s requirements.

MECHANICS

Unlike VME and CPCI, the Eurocard form factor is not adopted in ATCA; instead, cards (or “blades”) are 280mm deep and 322mm high to allow higher component counts and hence more processing power on each card. The chassis itself is referred to as a “shelf” and can be either 19” or ETSI rack mount.

SHELF MANAGEMENT

A big advantage ATCA has over other platforms is its system management functionality which is controlled by the shelf manager. System components such as fan trays, power supplies and power entry modules are collectively known as “Field Replaceable Units” or “FRUs”. Each FRU, Blade and Shelf Manager contain Intelligent Platform Management Controllers (IPMC) that communicate with each other through the Intelligent Platform Management Interface (IPMC) via a redundant pair of I2C buses.

BACKPLANE

The ATCA backplane provides point to point connections (rather than a data-bus) for board to board communication. It is split into 3 zones; zone 1 at the bottom provides power and shelf management signals, zone 2 provides the connections to the base and fabric interfaces and zone 3 is for user defined signals and providing connectivity to the rear transition boards.

BOARDS (BLADES)

ATCA blades can be Processors, Switches, or Carriers. Carriers support both PCI Mezzanine Cards (PMC) and Advanced Mezzanine Cards (AMC), the latter form the basis of the uTCA architecture described on the next page. Blades are 6HP wide meaning 14 can be fitted in a 19” shelf and 16 in an ETSI mounting shelf.

FEATURES

- Fully PICMG 3.0 Revision 2 compatible
- 14 & 16 slot “Carrier” grade vertical ATCA shelves
- 2-6 slot “Enterprise” grade horizontal ATCA shelves
- Dual, dual-dual & full mesh backplane topologies
- Redundant shelf managers
- 2 x Shelf manager options (Motorola / Pigeon Point)
- Proven push-pull cooling configurations
- Hot swap, redundant fan trays
- Dedicated cooling for rear transition area
- Dual redundant EMC filtered power entry modules
- Designed for NEBS/ETSI compliance

ORDERING INFORMATION

Due to the custom & application specific nature of ATCA, Verotec's approach is project based. We have at our disposal a number of products ranging from 16 slot vertical shelves to 2 slot horizontal shelves, all with proven cooling schemes and designed for NEBS compliance. A choice of backplane topology, shelf manager controller, power entry and level of redundancy means countless possible shelf configurations. Also available are a range of accessories including load boards, front panels and replacement filters. Please contact our technical sales team to discuss your requirements and obtain a quotation.



AdvancedTCA



19", 13U, 14 Slot ATCA



19", 5U, 5 Slot ATCA



19", 2U, 2 Slot ATCA



FAN TRAYS

- Controlled by shelf manager
- Fan speed monitors
- Local temperature sensing
- Predicted failure alerts

SHELF MANAGERS

- Pigeon Point IPM Sentry M500
- Motorola M100

POWER ENTRY MODULES

- Staggered feeds for redundancy
- Critical, major & minor alarm o/p
- Senses input voltage, current, power surges & contact closures.
- Class B+ EMC filter

INTRODUCTION

uTCA stands for “Micro Telecommunications Computing Architecture” and is defined by PICMG. It is complementary to ATCA, but is optimized for smaller scale and more price sensitive applications. The AdvancedMC card is considered powerful enough that there are situations where the processing functionality is the only requirement. The uTCA standard is targeted at supplying a COTS chassis that will allow AMC cards to plug directly into a backplane and function without any ATCA carrier card. The functions of the ATCA carrier board and of the ATCA shelf manager are concentrated on one board, which is called the uTCA Carrier Hub (MCH). Versions of MicroTCA with fewer AMC card slots are informally known as NanoTCA and PicoTCA.

SPECIFICATIONS

AMC.0 is the “base” or “core” specification. The AMC definition alone defines a protocol agnostic connector to connect to a carrier card. An AMC card can use proprietary LVDS-based signaling, or one of the following AMC specifications:

- AMC.1 PCI Express
- AMC.2 Gigabit Ethernet and XAUI
- AMC.3 Storage
- AMC.4 Serial RapidIO

FORM FACTOR

There are six AMC module sizes available in three heights:
 Compact-size (2HP), allowing 8.18mm component heights
 Mid-size (3HP), allowing 11.65-14.01mm component heights
 Full-size (6HP), allowing 22.25mm component heights
 Each size is available in either single (2.9”) or double (5.86”) widths.

CONNECTOR STYLES

The pinout of the AMC connector is fairly complex, with up to 170 edge-connection traces. There are four different lengths the traces can be, which allows hot swapping by knowing in advance which traces will become active in which order upon insertion. Cards may only require the traces on one side (pins 1 to 85), which with various height combinations, results in four different connector types that are available on the carrier card:

CONNECTOR

Style	Pins	Mating Card Type
B	85	One module that only needs pins 1-85
B+	170	One module card that uses all available pins (1-170)
AB	170	Two adjacent modules that each only need pins 1-85
A+B+	340	Two adjacent modules that use all available pins (1-170)

ORDERING INFORMATION

The design of uTCA in terms of module sizes & function, carrier hubs, power requirements and size means there are countless possible shelf configurations. Due to this and the custom & application specific nature of uTCA, Verotec's approach is project based. Please contact our technical sales team to discuss your requirements and obtain a quotation. Also available are a range of accessories including load boards, front panels and replacement filters.



MICROTCA DEVELOPMENT CHASSIS

Available from stock, our uTCA development chassis is designed to provide customers with the ability to test a mix of AMCs.

FEATURES

Formfactor:

- 8U high x 8.8” wide x 10” deep
- Backplane for MCH, AMCs, power, fans and EEPROM
- Power distribution for 60W+ per compact AMC slot
- 2 x independent front access intelligent fan trays
- Push-pull or only push cooling
- Air filter
- Front cable tray
- Dedicated slot for two PM each with 16x12v and 16x3.3v
- Dedicated slot for 1xMCH and JTAG controller board

Backplane

- Supports AMC.0, AMC.1, AMC.2, AMC.3 & AMC.4
- Supports JTAG connector for debug and test
- 2 x Gigabit Ethernet on Port 0+1 (via MCH)
- 2 x SATA/SAS on Port 2+3 (Point to point)
- 4 x PCI Express on Port 4,5,6,7 (via MCH)
- Synchronization clocks
- Programmable fan trays

Configuration

- Single width full height (80%) (full size)
- Single width half height (10%) (compact)
- Double width full height (5%) (double full size)
- Single width 1/3 height (5%) (mid size)

Environmental

- Designed to meet NEBS

INTRODUCTION

Verotec's range of Industrial PC / server chassis are designed for applications where standard PC (ATX) computing architectures are adopted in industrial environments. The range consists of a 2U, 3U and 4U chassis in a standard 19" rack mounting form factor for ease of mounting. They have been designed to offer IP and EMC protection, resistance to shock and vibration and also security, making them an ideal housing for computers in rugged & hazardous environments.

Designed to meet the requirements of IP21, the overall chassis offers protection against solid objects over 12mm (e.g. fingers) and protection against vertically falling drops of water. The front panel is designed to offer additional protection to IP51 with the use of a PVC seal on the hinged door (3U and 4U versions) and a filtered fan inlet. This ensures protection against ingress of dust.

Good design practices have been adopted to offer an element of EMC protection, including an overall steel & aluminium construction with earth bonding.

Resistance to shock and vibration is assured by the strong and robust metal design. Rubber anti-vibration pillars are used on all models to support the disk drive bays (See figure 1) and 4U chassis are fitted with a card retainer for added strength and support.

Security is maintained by a lockable hinged front panel on the 3U and 4U versions and limited access on the 2U version.

IPC / Server chassis are supplied as housings only, including fans and front panel switches / indicators with associated wiring. (i.e. no motherboard, PSU & drives etc.)

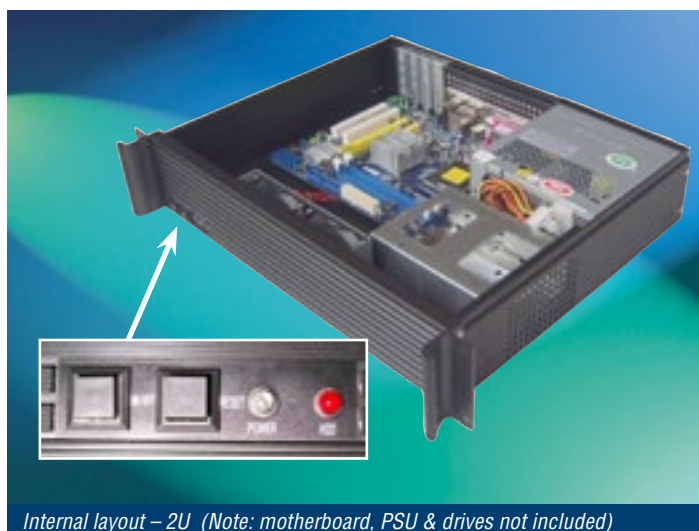
The 2U chassis differs from the 3U & 4U versions in that it has no hinged front panel, 5.25" drive bays or front USB access. It simply has an on/off & reset button plus status LEDs on the front panel as shown, making it a cost effective option.

2U IPC / SERVER CHASSIS SPECIFICATION

Hight	2U
Width	19"
Depth	350mm
Material	Front Panel – Aluminium Top & Base – Steel
Finish	Black paint
Drive Bays	2 x 3.5" HDD
Motherboard	Supports a 9.6" x 9.6" ATX
Power Supply	Supports a standard ATX PSU
Cooling	2 x filtered DC fans + standard loom / header
Part Number	145-4001308



2U IPC / Server Chassis



Internal layout – 2U (Note: motherboard, PSU & drives not included)

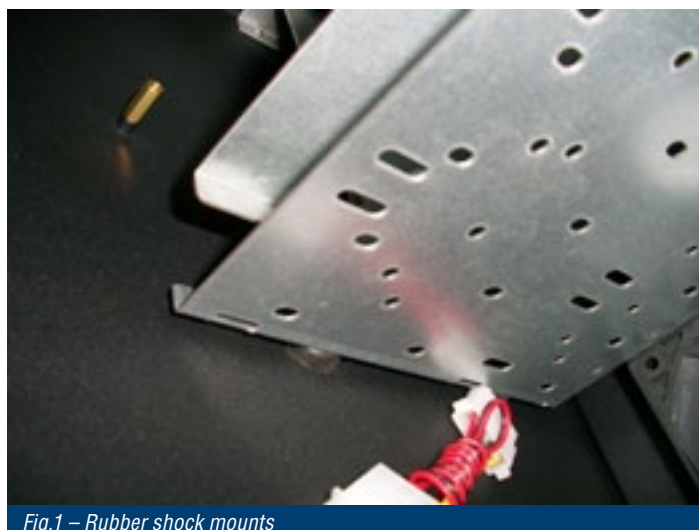


Fig.1 – Rubber shock mounts

3U & 4U IPC / SERVER CHASSIS SPECIFICATION

	3U Version	4U Version
Height	3U	4U
Width	19"	19"
Depth	450mm	450mm
Material	Front Panel – Aluminium Top & Base – Steel	
Finish	Black paint	
Drive Bays	8 x 3.5" HDD 2 x 5.25" CD/DVD	8 x 3.5" HDD 3 x 5.25" CD/DVD
Motherboard	Supports a 12.0" x 9.6" ATX	
Power Supply	Supports a standard ATX PSU	
Cooling	2 x filtered DC fans + standard loom / header	
Part Number	145-4001309	145-4001310

3U and 4U chassis have an on/off & reset button plus status LEDs and a USB connection behind the hinged front door as shown on the right.



On/off & reset button plus status LEDs and a USB connection



3U IPC / Server Chassis



4U IPC / Server Chassis



Internal layout – 3U (Note: motherboard, PSU & drives not included)



Internal layout – 4U (Note: motherboard, PSU & drives not included)

DESIGN

Should you require an enclosure that does not fall within our standard range of products, VEROTEC can design, engineer and manufacture a special packaging solution for you. Using the latest in 3D Pro CAD software, we've worked with our customers to successfully bring to market a number of complex electro-mechanical products.

MATERIALS & COMPONENTS

Such products often require the integration of moulded plastics, metal castings, formed sheet metal and a variety of electronic components such as PCBs, fans and PSUs. Our design engineers have many years of experience and a wealth of knowledge when it comes to material / component selection and manufacturing techniques. They work closely with the supply chain to ensure a cost effective and well engineered product.

MARKETS & INDUSTRY STANDARDS

Our products are used in domestic, commercial and industrial applications and serve many different markets including military, medical, aviation, railway, telecoms, broadcast & electronics to name but a few. Each has a number of regulatory standards; knowledge of which is key in bring to market an industry compliant product. Verotec's design team and in-house compliance engineers can provide valuable information during the design and prototyping phases as well as undertaking pre-compliance safety testing for CE marking.

ENVIRONMENTAL

Our manufacturing and engineering expertise in thermal management, EMC and power conversion means we can meet the most demanding design specifications whilst rising to the challenges of modern day environmental issues.

MANUFACTURING & INTEGRATION

Verotec has fully equipped integration and test facilities that are ESD protected. Our skilled technicians provide a high degree of workmanship and quality.

EXAMPLES

Some examples of products we have designed and manufactured are shown on this page.

PHONE CHARGING KIOSK (BOXBRANDS)

This is a fairly large kiosk aimed at the commercial market which allows customers to charge their mobile devices. The manufacture & integration included:

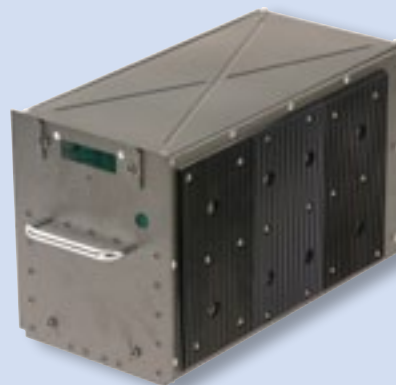
- Heavy duty, vandal-proof, formed steel construction
- Secure, key lockable hinged compartments
- Overlays for graphics
- Coin accepting & storage devices
- PCB with GSM antenna
- ATX Power Supply
- Cable assemblies and management



ICE SENSING UNIT (AIRBUS)

This product was designed and manufactured for a specific application onboard an Airbus aircraft. The design, manufacture and integration included:

- Very lightweight riveted aluminium construction
- Very tightly controlled tolerances
- Applicable aviation industry standards & specifications
- EMC and shock & vibration considerations
- Integrated IEC60297 subrack



SPECIAL FANTRAY (ERICSSON)

This product was designed and manufactured for a telecoms application. The design brief included:

- Cost engineered for high volume manufacture
- 19" applicable standards
- Removable fan functionality for serviceability



MEDICAL CADBOX (AGFA)

This product serves as a PC enclosure for the medical market. The design and manufacture included:

- Custom moulded plastic parts
- ATX applicable standards
- Low cost engineering
- Specific packaging requirements

