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Schroff®

PRODUCT OVERVIEW

EQUIPMENT PROTECTION SOLUTIONS

ELECTRONICS PACKAGING

DESIGN WITH CONFIDENCE™



PACKAGING SOLUTIONS FOR CRITICAL ELECTRONICS PROTECTION

Pentair Equipment Protection's brand, Schroff®, is synonymous with the finest electronic packaging products, offering leading-edge, standards-based solutions for housing and protecting electronics systems. With a wide range of products, including basic components such as front panels, handles, subracks, cases, back planes and cabinets, to networking infrastructure and pre-assembled shelves for industrial computer systems, these platform components enclose, shield and cool electronics in a variety of applications. Recognized worldwide, Schroff enclosure systems meet all national and international standards for electronic packaging. In fact, Schroff pioneered the development of standardized packaging based on 19-in. equipment.

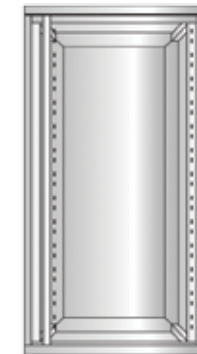
Schroff's broad portfolio of electro-mechanical packaging solutions includes CALMARK™ and BIRTCHER™ retainers, heat frames and formed component products. With manufacturing locations in the Americas, Asia and Europe, Pentair Equipment Protection uses seamless communications platforms throughout its global operation to design, manufacture, assemble, test and manage logistics throughout the supply chain.

Our solutions allow engineers to advance change in:

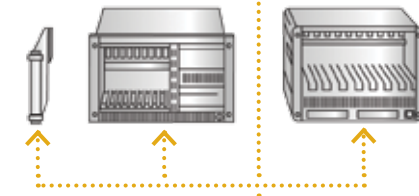
- Communications
- General electronics
- Test and measurement
- Security and defense
- Transportation
- Medical
- Energy



CABINETS/CASES



CompactPCI, VME, VME64X, AdvancedTCA SYSTEMS



SUBRACKS/CHASSIS



FRONT PANELS, PLUG-IN UNITS



BACKPLANES, ACCESSORIES



FOR MORE INFORMATION: SCHROFF.BIZ

CABINET PLATFORMS

OFFER VERSATILE PROTECTION FOR RACK-MOUNTED ELECTRONICS AND INSTRUMENTS



Schroff offers a complete line of electronics cabinets to meet diverse application and market requirements. Cabinets are available in a large selection of sizes in a variety of configurations, specifically engineered to deliver high-performance protection for sensitive electronic payloads versus challenging environmental conditions—including enhanced protection solutions, such as Electro-Magnetic Compatibility (EMC), shock, vibration and seismic configurations, Ingress Protection (IP) and NEMA rated solutions for sealing against water or airborne contaminants.

EURORACK™ general-purpose 19-in. cabinets are designed to protect sensitive components in a variety of electronic applications.

- Modular construction
- Stylish design and presentation
- Full range of accessories
- Service plus: assemble-to-order

TECNORACK™ cabinets provide a platform of options to protect mission-critical, rack-mounted electronics in demanding environments, including Zone 4 seismic applications subject to shock and vibration.

- Heavy-duty, adjustable 19-in. rack mount angles
- Secure, multi-point latching system
- Telecordia-Core-GR63
- EMC models available

NOVASTAR™ 19-in. aluminum cabinet platform offers a versatile, rugged, off-the-shelf protection solution for sensitive electronics in demanding environments.

- 46 standard models plus a full range of options and accessories
- Two load capacities: Slim-line for up to 440 lbs; Heavy-duty for up to 880 lbs
- Easy, tool-free assembly
- Secure support and multiple mounting options for easy access

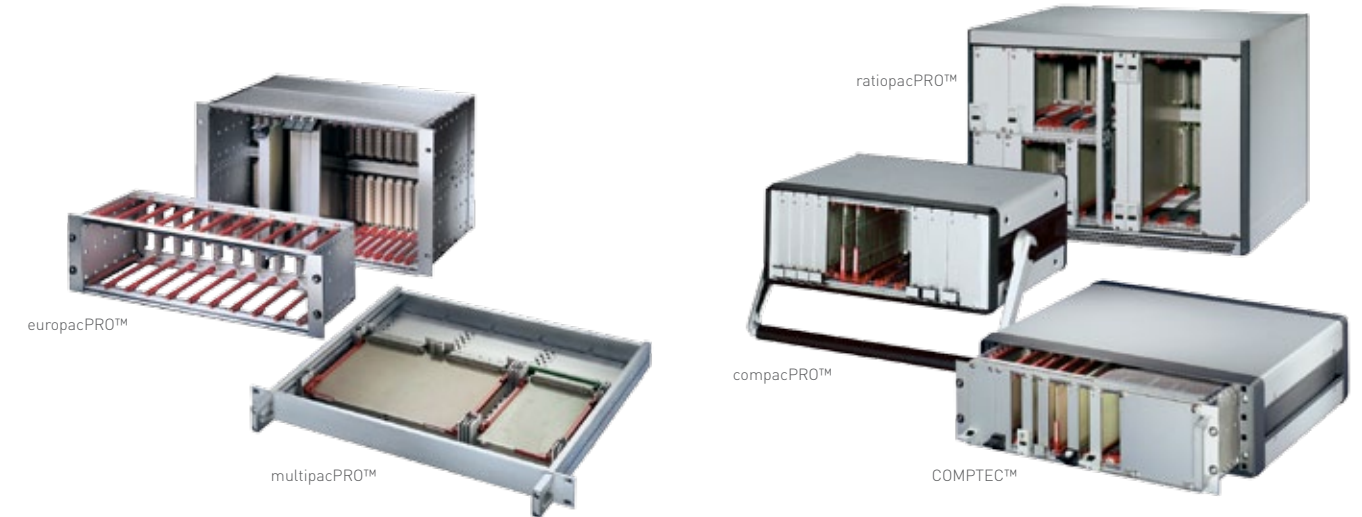
VARISTAR™ 19-in. cabinets provide robust, durable protection in environments subject to shock and vibration and high frequency interference.

- Static load carrying capacity up to 1800 lbs
- Comprehensive accessory range
- Active and passive cooling options
- EMC shielding



SUBRACKS AND CASES

PROVIDE FLEXIBLE, SPACE-OPTIMIZED PACKAGING SOLUTIONS



SUBRACKS

Schroff subracks ensure versatile and rugged protection for 19-in. and individual electronic assemblies. With modular construction, diverse combination capabilities and a wide range of standard, modified or customized options available, subracks satisfy a variety of applications ranging from standard industrial to robust transportation, light military use and rugged-level products. For enhanced protection, models are also available with shock and vibration resistance and EMC shielding.

europacPRO™ 19-in. subracks offer enhanced protection to accommodate the requirements of CompactPCI, VME, VME64x and EMC—all using standard catalog products.

- High flexibility
- EMC shielding upgradable
- In accordance with IEEE1101.1/.10/.11 for VME and CompactPCI applications

multipacPRO™ 19-in. subracks provide robust protection for sensitive electronic assemblies that require boards to be mounted horizontally in a fully enclosed case.

- Ideal for low-profile, rack-mounted chassis applications
- Aluminum or steel versions available
- EMC shielding

CASES

Schroff instruments/system cases provide fully functional, stylish enclosures for OEMs. Compatible with a vast range of accessories, cases can be configured to meet most applications using standard catalog components. Whether it is a CompactPCI, VME, or proprietary application, the Schroff case family has an off-the-shelf solution in portable, desk-mount or rack-mount configurations.

ratiopacPRO™/ratiopacAIR™ cases offer a versatile solution for space-optimized electronic packaging with integral EMC shielding and optional passive ventilation.

- In accordance with IEEE1101.1/.10/.11 for VME and CompactPCI applications
- Integral ventilation chambers for efficient thermal management
- Available in rack-mount, desktop and tower models
- Stylish paint finish RAL7016/RAL9006 (Charcoal Grey and Silver)

compacPRO™ cases deliver a rugged desktop enclosure solution for 19-in. components or individual electronics assemblies in medical, test or VME-based applications.

- Interior designed to IEC 60297-3
- Rugged diecast and extruded framework
- Top and bottom covers easily removed for access
- Adjustable tip-up handle
- Available in desktop or portable models

COMPTEC™ cases are ideal for housing 19-in. rack-mounted equipment in portable or desktop applications.

- Interior dimensions in accordance with IEC 60297-2
- Rugged diecast and extruded frame
- Stylish paint finish RAL7016/RAL9006 (Charcoal Grey and Silver)
- Available in portable or desktop models

RETAINERS

DELIVER SECURE, RELIABLE PROTECTION



RETAINERS

Schroff CALMARK and BIRTCHEr retainers are designed to provide a secure clamping force to avoid damage to printed circuit boards (PCBs). Offering a wide range of retainers, Schroff can provide a reliable protection solution for diverse applications, including cold wall, sheet metal or non-machined cold wall, low-cost sheet metal, metal and plastic designs.

CONDUCTION-COOLED ASSEMBLIES (CCAs) deliver high thermal conductivity while ensuring sufficient structural support. CCAs also assist in avoiding exposure of critical electronics to dust or contaminants.

- Direct thermal path to the cold wall
- Stiffer module for improved resistance to shock and vibrations
- Card-Loks or Wedge-Loks deliver high-clamping force
- Extractors offer ample force to disengage board connectors
- Frame customization in 3U or 6U configurations
- Versatile material options
- Modifications and engineering services available

CARD-LOK™ AND WEDGE-LOK™ retainers offer the highest locking force available for cold wall applications.

- High resistance to shock and vibration
- Torque-limiting design
- Mounting via screws, rivets or adhesive bonding
- Maximum thermal transfer

CHANNEL-LOK™ retainers are designed for heavy shock and vibration, and for effective heat dissipation in sheet metal chassis/heat sink applications.

- High resistance to shock and vibration
- Torque-limiting design
- Chassis-mounted housing

METAL RETAINERS offer a low-cost, spring-action PCB retention design.

- Protection against shock and vibration
- Torque-limiting design
- Mounting via screws, rivets or adhesive bonding
- Grounding characteristics

PLASTIC CARD GUIDES are ideal for low-cost metal applications

- Patented plastic guide entry
- Tool-less installation
- Snap guides available

INSERTERS AND EXTRACTORS are available in a wide selection for use in both sheet metal and cold wall applications.

- Metal and plastic designs
- High-density backplane interconnects



FRONT PANELS, ENCLOSURE HARDWARE AND ACCESSORIES

FOR EASY MODIFICATIONS

FRONT PANELS

Schroff offers a variety of front panels manufactured from both extruded and flat stock. All are supported by the Schroff Front Panel Express service, which can provide customized panels in five working days. With high-speed milling machines, turret and stamping presses, Schroff can support low- to very high-volume front panel projects quickly.

AdvancedTCA FRONT PANELS

- Designed to meet the PICMG ATCA specifications
- Seamless integration of ATCA boards into systems
- ATCA panels are available in stainless steel and extruded aluminum

AdvancedMC MODULES

- Carrier mechanics for Mezzanine modules stainless steel (EMC shielded)
- Configured in accordance with PICMG AdvancedTCA RC 1.1
- Insertion and extraction mechanics designed for micro switch operation (hot-swap)
- Dimensions available up to 8 U height and 6 HP width to accommodate AMC boards
- AMC modules are available in stainless steel and extruded aluminum

CompactPCI AND VME64X FRONT PANELS

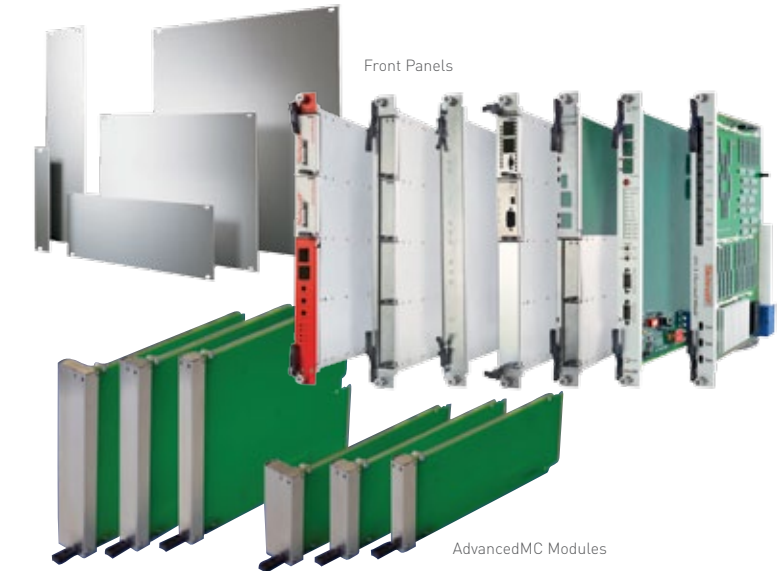
- In accordance with IEEE1101.10/.11
- Front panels are available in:
 - a) Shielded and unshielded versions
 - b) Flat aluminum or extruded aluminum versions with various surface treatment
- Front panel assemblies include all needed parts per standard requirement or available as individual pieces

VME FRONT PANELS

- In accordance with IEEE1010.1
- VME inject/eject and static handles
- Vast range of panel sizes
- Front panel kits with hardware and handles
- Removable handle identity plates

FILLER PANELS

- From 2HP to 84HP
- Variety of surface finishes
- EMC and non-EMC models
- Extruded and flat-stock



ENCLOSURE HARDWARE/ACCESSORIES

Schroff provides a complete range of enclosure accessories, including equipment case handles, tilting feet and rugged aluminum feet, in addition to a range of specialty enclosure metric hardware (M2.5, M3, M4, M5 and M6).

- Vertical cable managers
- Horizontal cable managers
- Network vertical tie down cable manager
- D-ring cable managers
- Velcro™ cable wrap
- Fans
- Handle options
- Shelves
- Drawers
- Trays
- Slides
- Keyboard compartments for 19-in. racks
- Rack-mount adjustable shelf
- Rack angles
- Blanking panels
- Universal mounting systems
- Mounting bracket kits
- Pole mounting kits
- Ganging kits
- Supports
- Door stop kit
- Assembly hardware
- Screw and cage nut kits
- Ground buss
- Grounding kits
- Fiber patch panel compartment
- Fiber management spool
- Fiber splice tray
- Splitter chassis
- PDUs
- 15A single circuit strip
- 20A dual circuit power strip

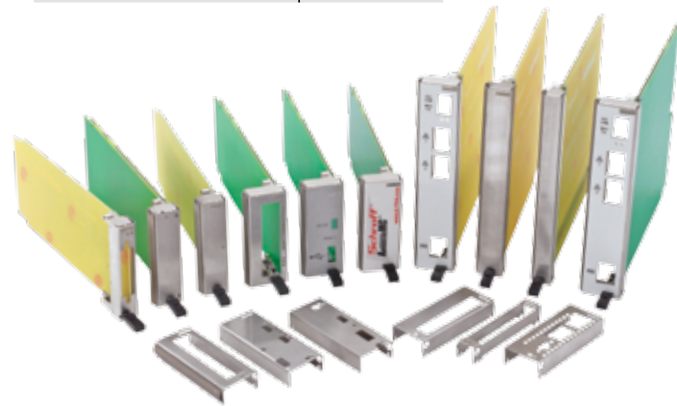


EXPRESS SERVICES

WHEN YOU NEED IT FAST

FRONT PANEL EXPRESS LEAD TIME

Panel Type	Total
VME, cPCI, PMC (Pre-plated)	5 days
VME, cPCI, PMC (Plating required)	10 days
ATCA & AMC (Stainless Steel)	7 days



SCHROFF SOLUTIONS

Schroff Express services provide rapid delivery turnarounds for solutions engineered to meet your design requirements – in a matter of days. With local capabilities backed by an extensive global network, Schroff products overcome diverse design challenges to get your business up and running even faster.

FRONT PANEL EXPRESS – AVAILABLE IN 1 WEEK

Front Panel Express combines quality with speed to deliver fast prototype-to-production cycle time.

- 5-50 modified panels available in as few as five working days
- 51-100 modified panels available in as few as ten working days
- Broad range of products support CompactPCI, AdvancedTCA, VME, AdvancedMCT™, VME64x, PMC, VXS and VPX systems
- Modifications include custom cut-outs, handle option, EMC gaskets, silk screening, hot-swap microswitch installation and assembly and kitting

SUBRACK EXPRESS – AVAILABLE IN AS FEW AS 2 WEEKS

Subrack Express provides rapid delivery turnarounds on subracks to accommodate exact application requirements with minimal lead time.

- Shielded and unshielded models available
- Shipped, operation-ready subracks in as few as ten days
- Integrate with CompactPCI, VME64x, VME and VPX systems

SYSTEM EXPRESS – AVAILABLE IN AS FEW AS 2 WEEKS

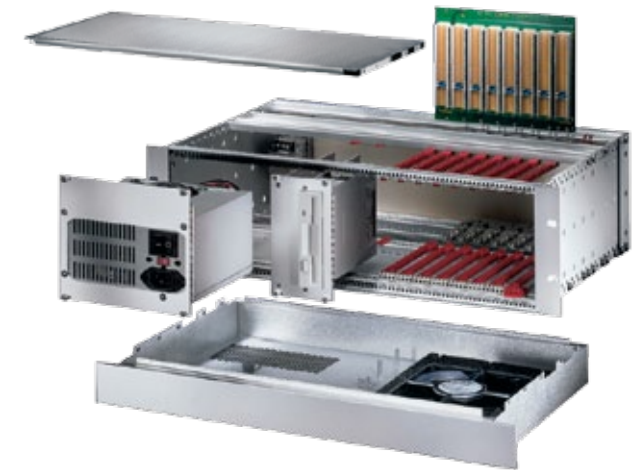
Systems Express offers 60 standard systems available to ship within two weeks.

- Broad range of systems available, including AdvancedTCA, MicroTCA, CompactPCI, VME64x and VME
- Modifications include cut-outs, screen printing, assembly and more



CompactPCI

STANDARD AND CUSTOMIZED SYSTEMS AND BACKPLANES



Schroff is a major provider of standard and customized integrated enclosure solutions and front panels for CompactPCI applications. Building upon its success in the CompactPCI market, Schroff offers a complete line of new CompactPCI systems and backplane products.

STANDARDS/APPROVALS

- Inner and outer dimensions in accordance with IEEE 1101.1 and IEEE 1101.10/11 – IEC 60297-3-101, IEC 60297-3-102 and IEC 60297-3-103
- Ingress protection IP 20 in accordance with IEC 60529
- EMC testing in accordance with IEC 61587-3
- Designed in accordance with PICMG 2.0 rev. 3.0, PICMG 2.16 and PXI 2.0



CompactPCI SYSTEMS provide robust mechanics and effective heat dissipation for reliable operation.

- Standard range of IEEE1101.10/.11 catalog systems products
- Full range from 1U x 2-slot 64 bit system through 7U x 8-slot 64 bit systems with backplanes to PICMG rev 3.0
- PICMG 2.16, 10U x 16-slot (14 node and 2 fabric slots) with packet switched backplane (Ethernet)
- Plug-in modular power supplies
- PICMG 2.6 bridge
- 3U and 6U 32 and 64 bit backplanes, very high MTBF
- PXI backplanes and bridge



CompactPCI BACKPLANES are available in standard and custom options for diverse applications.

- CompactPCI backplanes from 1 to 16 slots
- 3U and 6U backplane heights
- 32 and 64 Bit
- CPSB (PICMG 2.16) available
- H.110 available
- CompactPCI Bridges
- CompactPCI Express
- Custom backplane expertise
- RoHS compliance

VME/VME64x/VITA31/VITA41

FULL RANGE OF SYSTEMS AND BACKPLANES



A pioneer during the creation of the VME specification in the early 80s, Schroff supported the early VME technology adopters with systems and backplane products. Today, Schroff continues to be part of VME's evolution by creating concept products for the VITA34 VME specification. Schroff offers a full range of VME systems and backplanes, including VME64x COTS products to IEEE 1101.11.

STANDARDS/APPROVALS

- Inner and outer dimensions in accordance with IEEE 1101.1 and IEEE 1101.10/11 – IEC 60297-3-101, IEC 60297-3-102 and IEC 60297-3-103
- Ingress protection IP 20 in accordance with IEC 60529
- EMC testing in accordance with IEC 61587-3
- Designed in accordance with VITA 1-1994 and VITA 1.1-1997



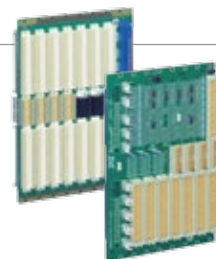
VME SYSTEMS are inclusive of backplane and power supply for a complete system solution.

- Standard range of catalog system products
- 2U x 4-slot J1/J2 monolithic backplane
- 3U x 5-slot J1/J2 monolithic backplane
- 4U x 8-slot J1/J2 monolithic backplane
- 7U x 12-slot J1/J2 monolithic backplane
- 8U x 21-slot J1/J2 monolithic backplane
- Rear transition card options
- Power factor corrected power supplies
- Speed controlled cooling fans
- EMC subrack options
- Backplane options:
 - Mechanical or electronic automatic daisy chain
 - Active/passive switchable termination



VME64x SYSTEMS are completely wired and tested to offer a dependable system solution.

- Standard range of IEEE1101.10/.11 catalog systems products
- 4U x 8-slot backplane
- 7U x 12-slot backplane
- 10U x 21-slot backplane
- Power factor corrected power supplies
- Speed-controlled cooling fans
- EMC shielded subracks
- Rear I/O transition cards
- ESD clips installed in card guides
- Backplanes are compliant with VITA 1.1-1997 VME64x, VITA31, VITA41 and VITA38 system management
- Electronic automatic daisy chain
- Very high MTBF (ceramic capacitors)



VXS (VITA 41) SYSTEMS are available in standard models to meet application requirements.

- Backplanes available
- 12-slot and 20-slot VXS
- 7-slot VME64x + VXS hybrid



AdvancedTCA/MicroTCA

COMPLETE LINE OF SYSTEMS AND BACKPLANES



AdvancedTCA SYSTEMS

Schroff offers a complete line of AdvancedTCA PICMG 2.0 Rev 2.0 compliant systems in a variety of configurations, from low-profile 2- to 6-slot chassis to large-capacity 14- and 16-slot models. System advantages include 99.999% availability, redundant operation, hot-swap capability, high-speed data transfers, 400W per slot cooling capability and system monitoring via Shelf Management.

AdvancedTCA STANDARD SYSTEMS provide a cost-effective, reliable solution with 10GB and 40GB Series for high-speed data rates, AC power and superior cooling.

- Dimensions from 2U to 14U
- 2 to 16 slot configurations
- AC and DC power options – including optional Integrated AC input
- Dual Star or Full Mesh Backplane topologies
- Three cooling schemes available, Push Cooling, Pull Cooling or Push-Pull Cooling
- Common Shelf Alarm Panel (SAP) through most configurations utilizing Pigeon Point ShMM 500 for bused or radial IPMI topology
- Power Entry Modules and redundant hot-swap fan tray modules
- Custom engineered solutions designed to meet your specific requirements

AdvancedTCA BACKPLANES are available in standard and custom options for diverse applications.

- Dual Star, Full Mesh and Triple Replicated Mesh topologies
- IPMI (Intelligent Platform Management Interface) bused or radial
- Redundant power design divided into up to 4 independent segments
- Custom routing or Zone 3 backplanes available
- Direct interface with shelf alarm boards, power entry modules and fan tray modules

MicroTCA SYSTEMS

SCHROFF MicroTCA SYSTEMS provide high flexibility, maximum performance and full redundancy — all in a small form factor. MicroTCA systems are available in a variety of configurations to meet diverse applications that AdvancedMC modules fit, including telecom, enterprise, defense, laboratory (e.g. physics), medical and automation.

MicroTCA SYSTEMS AND BACKPLANES are available in development and customizable systems.

- Development systems for table-top lab use, various sizes and backplane topologies, AC plug-in power supplies
- Very wide product range in terms of dimensions, number of slots, cooling principles, backplane topologies
- Systems for MicroTCA.0, MicroTCA.1 and MicroTCA.4
- Backplanes with different topologies in the Fat Pipe area and direct connects, in accordance with PICMG MicroTCA.0 R1.0
- 3U horizontal system with up to 10 x AdvancedMC slots, 2 x MCH (6HP) and 2 x PM (12HP) including redundant cooling
- Cube systems with integrated AC power supply (+12V output) and power distribution on backplane
- Ruggedized AdvancedMC and MicroTCA capabilities