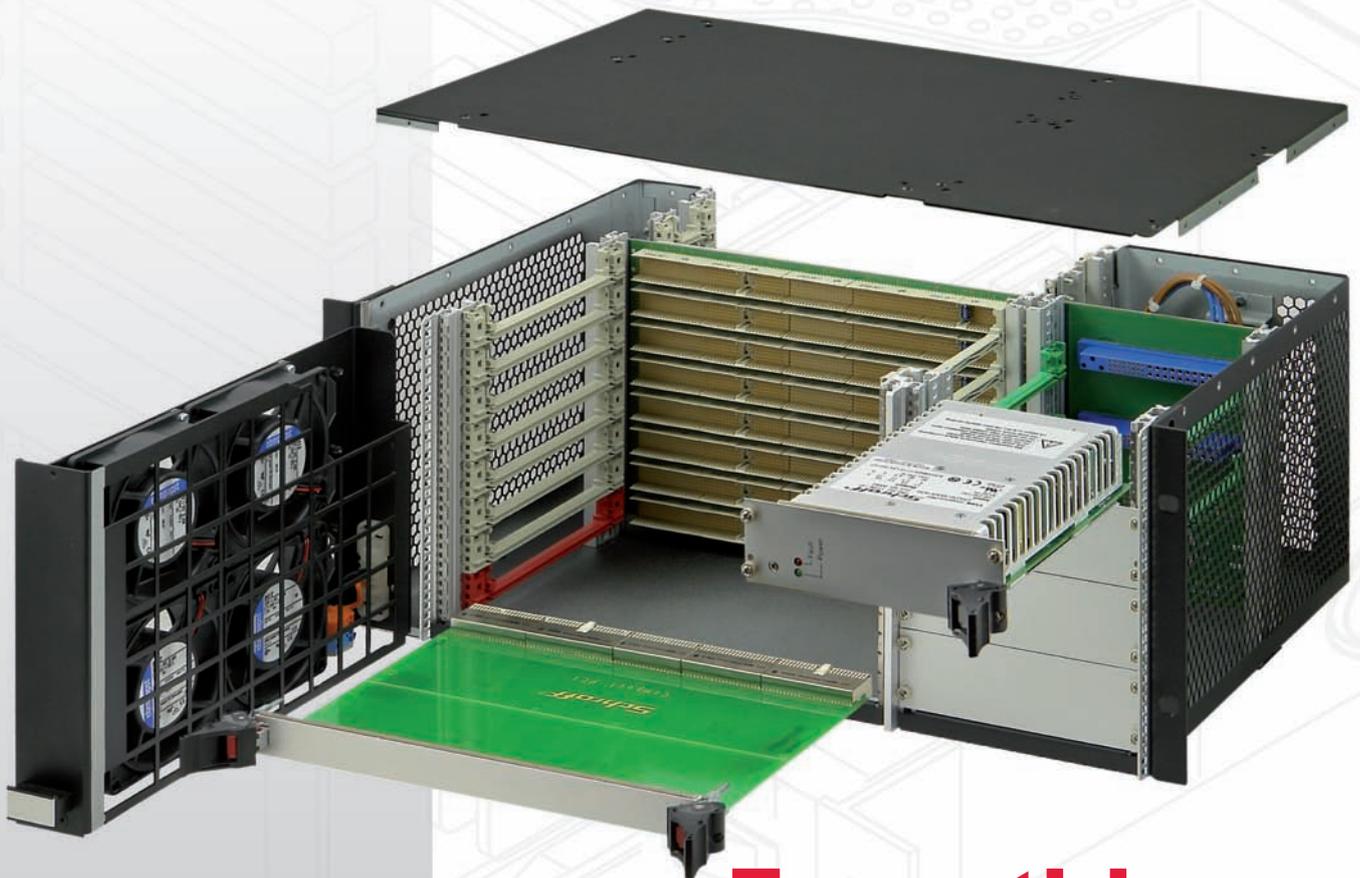


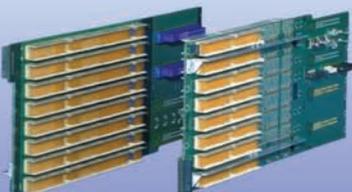
Electronic System Solutions



From the backplane to the system packaging platform –
highest technology from a single source



Everything
an enclosure system needs



Mechanics and electronics from a single source ...

The future is system compete



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Schroff is one of the leading developers and manufacturers of electronics packaging components and systems worldwide.

In these times of global competition, you as our customer face the same challenge to optimise processes and reduce costs as we do ourselves. Our systems and complete solutions are based on globally standardised product platforms and thus support fast, sustainable and cost-effective development. From conception, project management, prototype construction, testing, certification and pre-production through to manufacture, plus comprehensive after-sales services, we take the responsibility for a key element of your processes. What is more, we remain your dependable partner throughout the entire lifecycle of your products. Worldwide.

Preface

... the best thing that could happen to your system!

nce

Electronics Packaging from Schroff: More dependability. More systems.

Mechanics and electronics from a single source.

From system solutions built to the latest standards or modified standard components to individual new developments, as experts in electronics packaging we can offer you everything your system needs. In developing and manufacturing backplanes, power supply units and system management solutions we are as innovative, competent and reliable as we are with our 19" mechanics. We can even help you with tailored cooling solutions and EMC-compliant design. The result? Your products are quicker to market, since you are able to concentrate entirely on your core competence.

Please find further information on pages 4 and 5.

Always at the cutting edge.

As a pioneer and trendsetter in electronics packaging solutions our name has been synonymous for over 40 years with competence in the areas of mechanics, electronics, climate control and system management. Accordingly, for decades we have been an active member of global standards committees such as IEC, IEEE, VITA and PICMG and taken a responsible role in the setting of new standards. This is because we, as an international enterprise with globally active customers, feel jointly responsible for the rapid and efficient realisation of technological advances and product innovations for our customers' benefit.

Please find further information on pages 6 and 7.

All resources under one roof.

Since developments are most effective when expertise in applications, development and manufacturing function smoothly together, at Schroff we bring all our resources together under one roof. The resultant short paths and short development times ensure that backplane, power supply, cooling and mechanics form an optimised unit. In short, with Schroff your system is in the right hands from the start.

Please find further information on pages 8 and 9.

The most modern way to the finished system.

Production at Schroff means manufacturing on the latest machines and using the most up-to-date production methods. Why do we place value on this? Because it allows us to reach the optimum solution for our customers, flexibly, fast, dependably and cost-effectively.

Please find further information on pages 10 and 11.



Our off-the-shelf products and custom design ...

All components from a single

Mechanical and electronic components and systems



WHAT WE CONSIDER TO BE A **SYSTEM**:

At Schroff we understand a system as being a combination of mechanical components such as a subrack or case with electronic components such as a backplane or power supply unit, a cooling unit where appropriate and a system management module.

WHAT WE OFFER:

- **Backplanes**
AdvancedTCA, MicroTCA, CompactPCI, CompactPCI Express, CompactPCI Plus, PXI, VMEbus, VME64x, VXS, VPX, H.110, PSB, universal and power backplanes and test adapters.
- **Mechanics**
Subracks, desktop and tower cases, chassis and cases with 19" compatible dimensions, AdvancedMC carriers, AdvancedMC modules, plug-in modules and front panels.
- **Cooling**
19" fan trays, 19" blower fans, air filtered fans, AC and DC fans, heaters, air conditioners and air/air or air/water heat exchangers.
- **Power supply units**
Plug-in equipment to the 19" standard, open frame and power systems, AC/DC and DC/DC converters, switched-mode and linear regulators.
- **System management**
Shelf managers, fan monitoring and power management.

Suitable for any requirement.

Our products are based on standardised components that can be matched quickly and simply to individual requirements. Based on modular building blocks, they ensure that even for the highest demands, functionality and security are maintained under all conditions. Whether you require a standard product, an individually designed single component or a customised system solution, our products will impress with their total reliability and quality.



... enable us to find the optimum solution for every need

source

Customised new developments



A robust standard range.

Our comprehensive and highly developed standard range offers you mechanical, electronic and thermal components with an all but unlimited choice of dimensions and performance specifications. Simply select a complete ready system or configure your system from our standard components, online or using the catalogue, to your exact requirements.

www.schroff.co.uk/configuration

Flexibility for modifications.

Frequently only small adjustments are necessary to create a perfectly-matched solution from a standard product. And we have made this fact into a priority. We can make modifications in accordance with your individual specifications - with our usual speed and reliability. Make the most of this advantage - give us a call!

Find your contact person at

www.schroff.co.uk/modification

Competence for new developments.

If your requirements cannot be met with standard products or modified standard solutions, our qualified and experienced team will create a customised solution for your system. We have all the necessary development and manufacturing competencies gathered under one roof, so making our processes fast and efficient.

www.schroff.co.uk/solution

Our active participation in international standards committees ...

Create the future and secure

Research and development ...



Our finger on the pulse.

Rapid introduction to market without costly development and testing processes – our teams of experts worldwide have worked in the international standards committees for decades with this aim in mind. Developing innovations and new technologies drive the need for standards, we have our finger on the pulse. Coupled with over 40 years of competence in electronics packaging, our customers profit doubly: from a product range that conforms to the standards and high-value technical solutions that are on the market earlier than many others.

WE BRING OUR KNOW-HOW TO BEAR IN THE FOLLOWING STANDARDS COMMITTEES:



International Electrotechnical Commission (IEC)

Our know-how as experts in electronics packaging has contributed to the forming and updating of the European standard "Mechanical structures for electronic equipment" for 30 years. Many of these standards have been based on proposals by Schroff and we have played a decisive part in their implementation.



Institute for Electrical and Electronics Engineers (IEEE)

Committees of this American institute are concerned with the standardisation of techniques, hardware and software. Schroff engineers presided over the development of, for example, the IEEE 11101.1 standard.



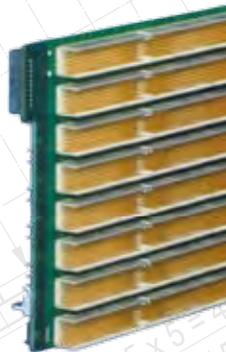
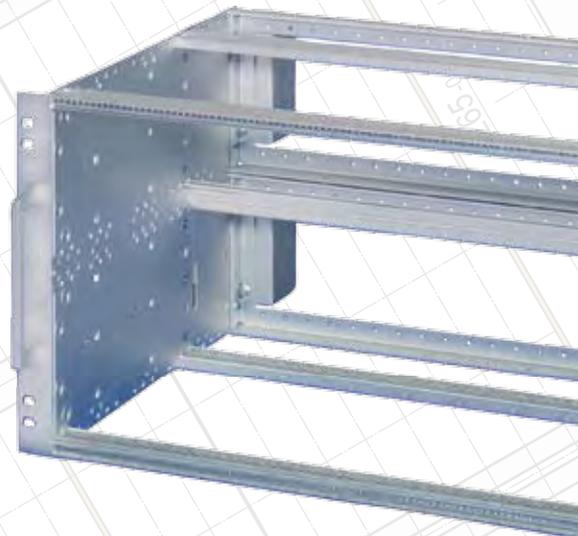
VMEbus International Trade Association (VITA)

For over 20 years we have also been an active member of VITA, whose focus is the specification of modular embedded real-time systems. Schroff has given formative impulses to such standards as VITA 47.



PCI Industrial Computer Manufacturers Group (PICMG)

We are at the forefront in the specification of telecommunications and industrial applications. Accordingly, we were and remain involved at a high level in the newly developed AdvancedTCA and AdvancedMC standards and have special responsibility for the mechanics component of the MicroTCA standards.



Engagement and know-how from Schroff – performance creates the future.

... reduces our "time to market" and creates global market access

your advantage

... for your success in the market

Comprehensive product range - and products to meet our customers' needs.

Schroff customers can take advantage of one of the widest ranges of standardised products, which cover most of the IEC, IEEE, PICMG and VITA standard specifications. Many products also conform to UL, MIL, NEBS, Bellcore and Telcordia standards. And we implement other standards into market-leading solutions as well. Our extensive experience makes us your best partner for implementing even the most specific requirements. Try us!

All our products conform to the EMC and low-voltage guidelines of the European Union and the RoHS guidelines.

Declaration of Conformity.

On request we will issue a Declaration of Conformity for our products. This document confirms that a given product conforms to one or more standards and describes the way in which it does so. This document supports technology exports and facilitates you obtaining approval for international markets.

YOUR ADVANTAGES:

■ Quicker to market and at less cost.

Irrespective of the technology you choose, our standard product range and complete systems secure you decisive advantages. In addition to reduced development costs, you also profit from short development and manufacturing times. You can relax and concentrate entirely on your core competence. This incidentally also reduces your outlay for verification and testing to a minimum, as we have already conducted tests on many of our off-the-shelf products. The result: you get to market considerably faster and at less cost.

Test reports are available at www.schroff.co.uk/academy.

■ Dependable system function.

Despite rapid development times and low prices you can rely on the harmonious functioning of the system. Since we have leading expertise in both mechanics and electronics, with Schroff systems you can rest assured that the backplane, chassis, cooling, power supply and system management, including all interfaces, are optimally matched to one another. An invaluable advantage here are our short paths, with all resources under one roof.

■ Safety and protection.

Our off-the-shelf products are already capable of further security provisions such as EMC protection, shock and vibration resistance and even earthquake resistance. You can thus be sure that even in extreme situations your product will respond as planned. At no extra cost.



Reliability for your project planning

Professionalism for your su

Tailored solutions ...



BEFORE THE START OF THE PROJECT

Consultation from the outset.

Since we have made the requirements of our customers our central priority, we provide our customers with an individual team of specialists right from the consultation phase. This team accompanies a project for its entire lifetime - and beyond. Our engineers thus develop a custom system on the basis of your requirements - including replacement parts design and the disposal of old parts, as you wish.



COMMENCEMENT OF THE PROJECT

Development and layout: doubly competent.

The parallel development of the mechanical and electronic components ensures their perfect harmonisation and also short development times - the decisive factor for the trouble-free functioning of the overall system. For exactly this reason we have combined all our resources under one roof. Our experienced developers and modern design tools are the guarantee of our high standard of quality. To ensure that this remains the case in the future our engineers are constantly researching many areas including signal integrity, EMC, cooling, shock and vibration resistance and surface treatment.



Modelling, simulation and measurement: 100 % quality.

One thing remains top priority at every stage of development: the continuous assurance of one-hundred percent quality. Our engineers therefore always use the most up-to-date modelling and simulation tools, measuring instruments and in-house-designed, high-performance test adapters. In this way we can optimise the development process and ensure, from as early as the layout stage, that we are offering our customer the best and highest-performance products. For more advanced tests we work in co-operation with certified testing and examining institutes.



Strategic purchasing: intelligent procurement.

Our quality assurance begins with our choice of suppliers. We do business only with certified and globally active suppliers. From the development phase onwards our strategic purchasing department takes care of the buying of time-critical components. Thus we work hand in hand, with always the same goal in front of us: to deliver market advantages to our customers with minimum development time and on favourable terms.

Short development and manufacturing times

ccess

... fast and reliably implemented

PROTOTYPE MANUFACTURE

Prototype manufacture: quick and tested.

As soon as you have approved the development we begin manufacturing the prototypes. The benefit: they are produced using the same machines as will be used later for the serial manufacture of your products. This prevents deviations and protects against possible deviations in individual components that would otherwise be discovered only later and thus be far more costly to eliminate. What is more, only a securely functioning system can facilitate the test phase and fault identification for you in your own application. A further advantage, as you can make the final alteration requests .



PRODUCTION AND DELIVERY

Serial production: fast and efficient.

Once the prototypes have been tested successfully, the way is open for serial production. The large manufacturing depth and multiple processing options for both mechanical and electronic components allow us to control and monitor the production process ourselves at any point in time. You can rely on our qualified technicians and the modern technologies to ensure consistently high quality. Here again we set our own standards: with multiple manufacturing facilities we have a local presence in local markets.

Our manufacturing philosophy offers yet more benefits. Our modern machinery is reliable and allows fast, cost-effective production in both small and large batch sizes. We even carry out special processes in-house, such as the conformal coating of backplanes and power supply units required for certain applications. Thus you lose no time and profit from the highest quality and reliability. Simply, from a single source.

100 % final check and function testing: dependable quality.

As in all previous project phases, here again you benefit from our quality management that covers every stage of the process. And no product leaves our premises without 100 % inspection.

Shipping and logistics: safely to the destination.

Packaging is also important. Because electronic components are especially sensitive, our specialists will develop the perfect packaging and logistics solution for your product, and your goods arrive in good condition. We take the environment into consideration by using reusable packaging. You are free to select the carrier. More services are listed under ServicePLUS on pages 14 and 15.

After-sales services: an ongoing partnership.

After the product is installed on your premises our project managers will continue to advise you on any questions. We also offer specific after-sales services such as GuaranteePLUS or service and maintenance contracts - see page 15.

High-performance product design

Our competencies – an overview

Layout, simulation and production ...



PRODUCT CONFIGURATION

You can create the product you require with ease in any of the following ways:

- Configuration tables in the catalogue or online
- Interactive questionnaire forms online
- The configuration hotline

You can find further information at www.schroff.co.uk/configuration

LAYOUT

For the optimal design with maximum performance:

- Latest CAD software, simulation tools and measuring equipment
- Experienced developers
- Up-to-date layout tools, e.g. Mentor Graphics Board Station and PADS
- 3D files of the layout tools are used in the mechanical design

SIMULATION AND TESTING

For a rapid development process and high reliability:

- For interference emission and interference immunity: EMC/CE test location
- Circuit simulator: P-Spice
- For signal integrity measurements: backplane board simulation using Ansoft Designer
- For thermal simulations: Flowtherm
- For thermal tests: wind tunnel and climate cabinet
- Shock and vibration test
- IP protection test

MANUFACTURE OF MECHANICAL COMPONENTS

The best processes, assuring flexibility and high quality:

- Guillotining
- Power-press punching
- CNC punching
- Routing
- Bending
- Laser processing
- Joining techniques
- Steel and aluminium welding
- Galvanic surfaces for steel and aluminium parts
- Screen or digital printing

Machines developed in-house for still higher production efficiency:

- Fully-automated production lines for horizontal rails
- Production facility for threaded inserts
- Highly flexible punching facility for custom front panel manufacture



Flexible and versatile manufacturing

view

... the highest quality and viability

MANUFACTURE OF ELECTRONIC COMPONENTS

Economic solutions with the highest precision:

Solder paste printing

- High processing speed
- Fewer errors than with traditional screen printing
- No templates
- Economic even for small batches

Automatic SMD placement

- High-speed placement for large batches
- Flexible placement for small batches

Vapour-phase soldering

- Low temperatures and homogenous temperature distribution prevents overheating of components
- Suitable for all types of SMD components and carrier substrates

Wave soldering

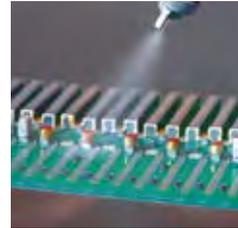
- For wired and SMD components
- High speed

Press-in operations

- Automated process with force-displacement monitoring
- Fully automatic feed of connectors

Conformal coating

- Protection from corrosion and fungal infestation
- Protective lacquer to MIL and UL specifications



QUALITY CONTROL

Striving for 100 % reliability:

FMEA

- Looks for potential weaknesses in product or production processes during the design and development phase

Automatic optical inspection

Testing of electronic sub-assemblies for manufacturing defects such as:

- Poor solder joints
- Wrongly-placed or missing components

In-circuit test

- Detects faults in the conductive path such as short circuits or discontinuities
- Isolates soldering errors and component faults
- Circuit block tests

Function and safety testing

- System functions
- Earthing test
- Insulation test (high-voltage test)

Fatigue/burn-in test

- Fatigue testing of power supply units under operating conditions
- Early-failure detection



The right solution for every requirement

Our know-how, our products,

Mechanics and electronics ...



MICROTCA SYSTEM FOR TESTING AMC MODULES

Requirements:

- Flexible to accept different module widths and heights
- Good accessibility of measurement points on the AMC modules when built into the system
- External data interface
- Meets the base specification of the PICMG MicroTCA.0 R1.0 standard

The solution:

- Off-the-shelf ratiopacPRO desktop system with tip-up feet
- Removable top cover including upper board cover allows insertion of double modules and facilitates access to measurement points
- 12 HP slot width for lateral access to AMC modules
- Connections for external measurement equipment allow access to test data
- Data cables are run to connectors on the rear of the backplane to allow external access to data



SIGNAL BOX COMPUTER IN AN ELECTRONIC SIGNAL BOX

Requirements:

- 19" subrack system with subrack, backplane, front panel and insertion and extraction aid
- Temperature range from -20 to +70 °C
- EMC shielding
- Conformity to the IEEE 1101.10/11 standard

The solution:

- Quick and economic to realise with off-the-shelf components from the europacPRO range of plug-in technology
- Specially developed CompactPCI backplane



System solutions from Schroff – capabilities that impress.

Complete and dependable from a single source

our capability

... matched and integrated

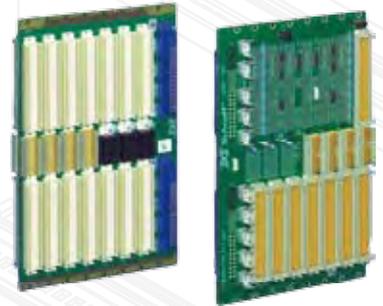
BACKPLANE FOR TESTING VME64X AND VXS BOARDS IN A TOWER CASE

Requirements:

- 7-slot backplane with slots for VME64x and VXS
- 3 VXS slots to be connected without switch card
- Construction in a tower case with plug-in power supply unit
- Conformity to the VITA1.1-1997 and VITA 41.0-2006 standards

The solution:

- Ring topology of VXS slots makes VXS switch card unnecessary
- P47 connector for power supply integrated onto backplane
- Low-cost solution that can be housed in an off-the-shelf Schroff tower case



BACKPLANE DESIGN TO CUSTOMER SPECIFICATIONS

Requirements:

- Restricted system depth
- Protection of backplane from environmental influences

The solution:

- Space-saving solution integrating the functionality of the rear transmission module onto the backplane
- Plug-in power supply unit
- Conformal coating to protect from environmental influences
- Design allows user-friendly access to all slots while system is running



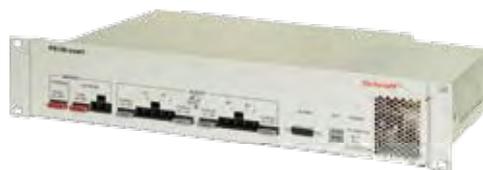
PS150 SMART POWER SUPPLY UNIT FOR MULTIPLEXERS

Requirements:

- Compatibility with the connected multiplexers
- Power backup function in case of power failure
- Status reporting
- External alarm input
- Variable mounting depth to suit cabinet dimensions

The solution:

- Power outlets and data transfer to multiplexers
- Integrated battery allowing a backup time of 2 hours with a 100 W load
- Alarm outputs for power failure, module failure and battery fault
- Cabinet door alarm
- Integrated slide rails for different mounting depths



Clearly structured service concept

More than service

High quality. Comprehensive. Clear.



ServicePLUS

Schroff is there to help you even before you have selected a product. And stays with you long after we have delivered it to you. The various options and services of ServicePLUS accompany you through every single product phase of your customised complete solution.

configuration

Simple. Fast to the ideal product.

Fast, competent and straightforward - our support package to help you build up the specific product you require.

- Interactive online configurators, also for power supply units, backplanes, front panels, subracks, cases and systems
- Telephone configuration hotline
- Quick selection of off-the-shelf components with power search

www.schroff.co.uk/configuration

modification

Small changes. Large impact!

Schroff modifies off-the-shelf components to suit your requirements. This applies to

- Holes, cut-outs and drilling, e.g. for round holes for lamps and LEDs or cut-outs for connectors or switches
- Special colours and printing
- PSUs with different output voltages
- Backplanes with different numbers of slots
- Three-dimensional product views (3D PDF) and CAD data downloads by product order number

www.schroff.co.uk/modification

assembly

Assembled by professionals. Double benefit!

Fitting of all standard components by Schroff's technicians - mechanical, electrical and electronic - to your individual configuration. This includes:

- Fitting and cabling of power supply units, fans and drive units
- Fully assembled and tested systems

www.schroff.co.uk/assembly

solution

Simple. Everything. All from us.

Where it is not possible to employ off-the-shelf components we take care of customised special solutions - from the development and design of individual components through to a complete and functioning system that meets your requirements. The following are possible:

- Special sizes for mechanical components
- Individual, tested EMC designs
- Simulation and verification in our own testing laboratory

www.schroff.co.uk/solution

Customised service – for the entire life of the product.

Services to accompany your project

ServicePLUS

Simply unbeatable all-round!



express

When fast has to be faster.

Time is money - and this often applies to delivery time. Schroff customers can select from a range of express options concerning delivery times:

- Self-determined manufacturing times
- Express logistics
- Delivery on an agreed date

www.schroff.co.uk/express

academy

Knowledge. Sharing. Partnerships.

Schroff shares its knowledge with you. This is how you get straightforward access to our expert knowledge. Includes:

- Seminars in our training centre and on customers' premises
- Downloadable CAD drawings, test reports, technical details and user manuals
- User reports and applications
- Technical reports
- AdvancedTCA, AdvancedMC and MicroTCA packaging solutions
- Our expertise site: www.a-tca.com

www.schroff.co.uk/academy

support

Support. Solution. Availability.

Demands can often arise during the running of an application that had not been established when the product was developed. In such cases Schroff's specialists will assist you during the necessary alterations.

- Application optimising and compatibility testing
- Service level agreements with agreed response and fault-repairing times in case of faults, suited to customer requirements
- Software updates and fault diagnosis by remote access on request

www.schroff.co.uk/support

lifecycle

We accompany you. Over the lifecycle of a product.

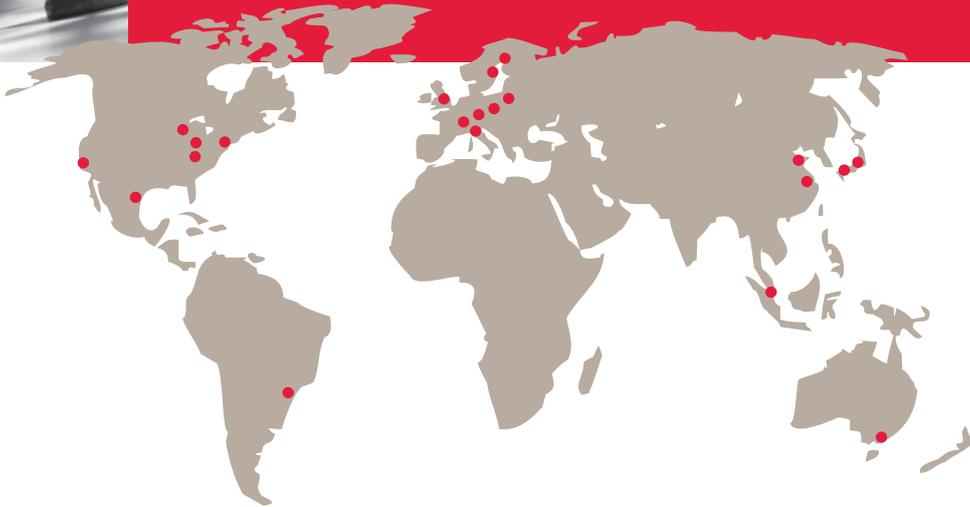
Schroff's experts stay on hand throughout the entire lifetime of your products. As well as setting them up professionally, they provide support in case of problems or newly arising demands. Benefits include:

- Repair of electronics components via our online RMA form (Return of Material Authorization)
- Replacement parts and devices
- Engineering change request upgrades, i.e. the modernising of your application
- An extension to the warranty period

www.schroff.co.uk/lifecycle

Established as one of the best

Worldwide market competence. Local to you.



As a partner for the global electronics industry we are established as one of the best.

As an international company, Schroff takes advantage of the opportunities offered by globalisation. Manufacturing and development locations in Europe, America and Asia make worldwide market competence possible in the first place. Decentralised marketing and distribution networks with over 50 representations worldwide guarantee both closeness to our customers and optimal satisfaction of local market demands.

Up-to-date, detailed contact information for all our branches and representations can be found on our web site:

www.schroff.biz

Pentair Technical Products Group and Representations

Schroff GmbH

Langenalber Straße 96-100
75334 Straubenhardt
Deutschland
Tel. +49 (0)7082 794-0
www.schroff.de

Schroff Scandinavia AB

Flygfältsgatan 11
P.O. Box 2003
12821 Skarpnäck
Sweden
Tel. +46 (0) 8 683 61 00
www.schroff.se

Schroff GmbH/

Sp.z.o.o./-oddzial w Polsce
ul. Marynarska 19A
PL-02-674 Warszawa
Poland
Tel. +48 (0) 22 607 06 16
www.schroff.pl

Pentair Electronic Packaging

170 Commerce Drive
Warwick RI 02817
USA
Tel. +1 (401) 732-3770
www.schroff.us

Schroff UK Ltd.

Maylands Avenue
Hemel Hempstead
Herts HP2 7DE
Great Britain
Tel. +44 (0)1442 240 471
www.schroff.co.uk

Schroff Scandinavia AB

Peräsimentie 8
FIN-03100 Nummela
Finland
Tel. +358 9 222 68 00
www.schroff.fi

Schroff K.K.

Nisso No.13 Bldg. 4F
2-5-1 Shinyokohama, Kohoku-ku
Yokohama-shi
Kanagawa 222-0033
Japan
Tel. +81 (0)45 476 02 81
www.schroff.co.jp

Pentair Technical Products China

Shuangyuan Rd. South, Liuting,
Chengyang District (Airport Ind. Zone)
Qingdao, PC 266108
PR China
Tel. +86 532-8771 6101
www.schroff.biz

Schroff SAS

Z.I. 4, rue du Marais
Boîte Postale 16
67660 Betschdorf
France
Tel. +33 (0)3 88 90 64 90
www.schroff.fr

Schroff S.r.l.

Via Brughiera 1
20010 Pregnana Milanese (MI)
Italy
Tel. +39 02 932 714-1
www.schroff-italia.it