Schroff ®

AdvancedTCA® **µTCA™** **AdvancedMC™**
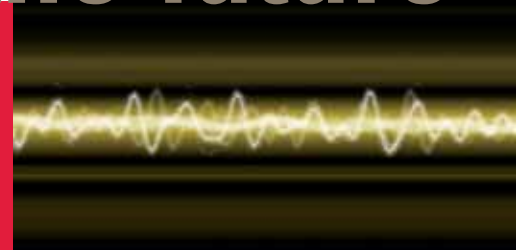
PACKAGING SOLUTIONS

2008 Edition

Pentair
Technical Products
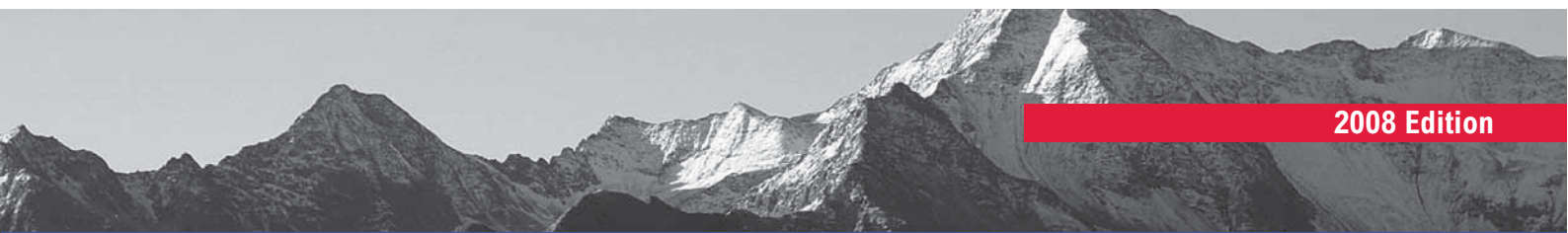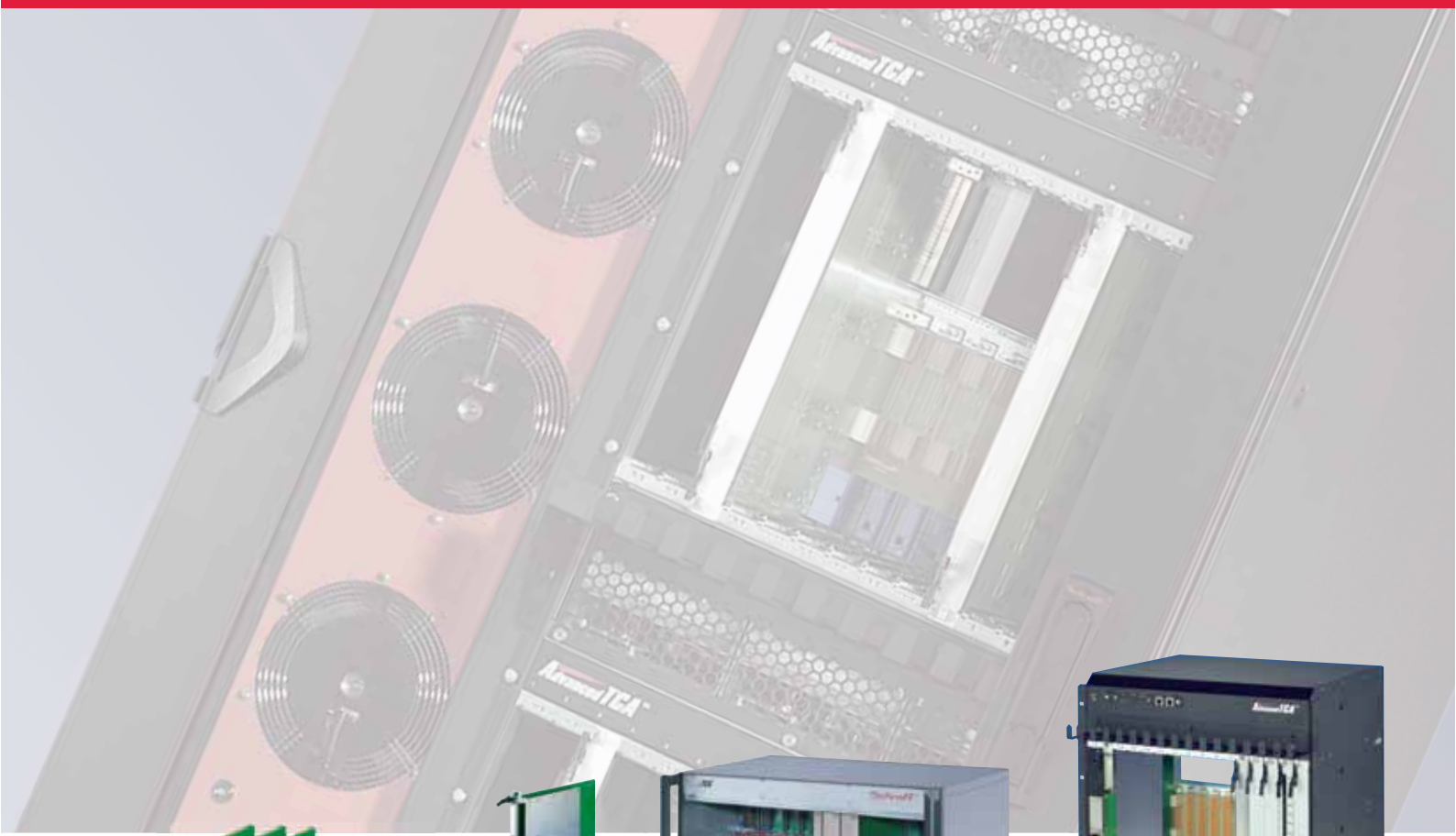
New technologies: in safe hands with the right partner

Programmed for the future

CONTENTS

AdvancedMC-carriers

AdvancedMC-modules

For over four decades Schroff has been a world leader among developers and manufacturers of electronics packaging components and systems. Whatever demands you have to meet, together we will find the right solution for you. Our products combine the know-how of our specialists in the integration of mechanical, electronic and climate-control systems with many years of experience with the most varied applications in all environments. As a provider of complete solutions we deliver fully-equipped and tested systems from a single source, and continue to do so in the way that you expect of us. Tailor-made to precisely suit your requirements.

In these times of global competition we are all under the same obligation to optimize processes and to reduce costs. Our systems and complete solutions are based on globally standardized product platforms that support fast, future-proof and cost-effective development. Through design, project management, prototype and model construction, testing, certification, pilot and production manufacturing, plus comprehensive after-sales services, we take responsibility for your processes. And that is not all: we remain by your side as your dependable partner throughout the entire life cycle of your products.

Foreword
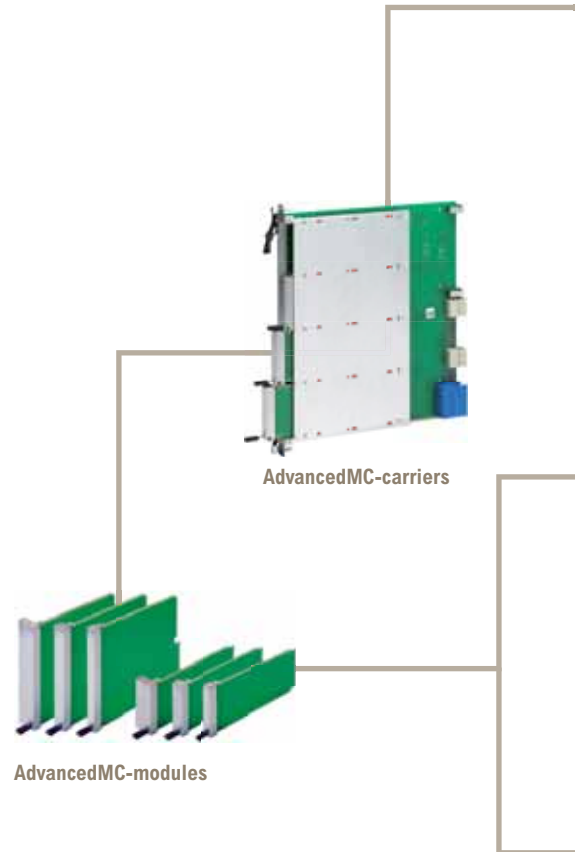
The yardstick for high-speed data traffic

AdvancedTCA, MicroTCA and AdvancedMC

AdvancedTCA

AdvancedTCA stands for Advanced Telecom Computing Architecture and is the first standard among manufacturers and applications for very high data traffic and new communications services in the telecommunications sector. AdvancedTCA was adopted in December 2002 by the PICMG (PCI Industrial Computers Manufacturing Group). AdvancedTCA boards are capable of transporting, processing and analyzing large volumes of data at the speeds required by today's applications.

μTCA

MicroTCA stands for Micro Telecom Computing Architecture and is a modular standard for small, flexible system solutions. Its high scalability allows the application to be perfectly adapted to various requirements. For this reason, MicroTCA is being used increasingly in both telecommunications and all other areas of application. MicroTCA was adopted by the PICMG in 2006.

MicroTCA

AdvancedMC

AdvancedMC stands for Advanced Mezzanine Card and is an important component of the AdvancedTCA platform. The specification was agreed by the PICMG in 2004. AdvancedMC modules are compact, versatile modules that extend the performance of AdvancedTCA systems and are installed using corresponding adapters, AdvancedMC carriers, to AdvancedTCA systems. AdvancedMC modules are also used in conjunction with the recently defined MicroTCA systems. Here, however, they are plugged in directly (without carrier) and are simultaneously boards for MicroTCA.

MicroTCA

Free resources for your core competencies

AdvancedTCA – one standar

The system platform for communications infrastructure

- **Standardized systems for rapid product introduction**
- **Highest flexibility and economy**
- **Future-proof: equipped for the future board generation**

AdvancedTCA – the PICMG 3.0 specification.

Advanced Telecom Computing Architecture – AdvancedTCA – is the first specification for scaleable network architectures (carrier-grade systems), standardized among manufacturers and applications, to employ the cutting-edge switched-fabric technology. Alongside the system platform, the mechanical specification, power supply, cooling, system management and backplane topologies are all defined.

Faster and more efficiently to market.

AdvancedTCA chassis and boards can be easily combined with one another, allowing you straight away to create the most diverse range of network configurations, flexibly, quickly and cost-effectively. The result? Your products reach the market faster, because you can concentrate completely on your real task: developing boards and software.

Flexibility on one platform.

The modular approach and support of the latest data transfer protocols allows the development of convergent telecommunications systems. This means that you can use the same case and/or the same backplane with multiple modules for different applications such as blade servers, media gateways or Internet security on the same platform. With this feature, AdvancedTCA makes available a standard-based architecture for many different applications.

THE STANDARD

- **Effective capacity for data transfers of up to 2.5 Tb/s**
- **Performance of data cables > 3.125 Gb/s**
- **Heat loss up to 200 W per board**
- **99.999 % system availability, equivalent to max. 5.3 minutes downtime per year**
- **Redundancy ensures highest failure safety**
- **Hot-swap capability gives uninterrupted operation**
- **Shelf management allows the administration and monitoring of system resources**
- **Perfect protection of boards with electronic coding (e-keying)**
- **Support for various protocols including Ethernet (PICMG 3.1), Infiniband (PICMG 3.2), Star Fabric (PICMG 3.3), PCI Express (PICMG 3.4) and Rapid I/O (PICMG 3.5) for fast interfaces**

Complete systems from Schroff – there is no greater variety.

Complete solutions from the experts

d makes it possible

The biggest choice of system: assembled and tested

- **Impressively fast: available worldwide from stock**
- **Safety: UL certified, prepared for NEBS examination**
- **Competent project support by experts worldwide**

Everything a system needs.

Schroff's AdvancedTCA systems make the development of new, forward-looking telecommunications installations with high data-processing rates as simple for you as possible. We offer everything on the basis of the AdvancedTCA specification that you have come to expect from a Schroff complete system: superb physical construction, optimal cooling, reliable power supplies, efficient data distribution and secure system management. Sometimes this is still not enough: our complete systems are, of course, also available in shock and vibration-proof versions with UL certification.

The full programme.

With Schroff you receive assembled and tested AdvancedTCA systems. You may choose from different height, cooling design and backplane topology options, two shelf management solutions and various numbers of slots. We offer a broad array of AdvancedTCA systems. Available worldwide.

Effortless integration.

We have decades of experience in the integration of mechanical, electronic and thermal components. If you wish we can also create a solution tailored to your individual requirements. This will ensure that the mechanical, electronic and thermal aspects are perfectly matched to suit your individual environment. You may rest assured that all components work together perfectly.

Developments with system.

We also offer small AdvancedTCA systems with a focus on development environments. In these compact 2 and 5 slot AdvancedTCA systems the boards are mounted horizontally. Hot-swap capable fan trays provide the necessary cooling. These systems have an AC power supply and thus are suitable for use in a laboratory and test environment.

WHY CHOOSE SCHROFF

- **Conformity to PICMG 3.0 AdvancedTCA specification**
- **Cooling capacity up to 300 W per board**
- **Performance of data cables already 6.25 Gb/s**
- **Comprehensive worldwide project support by experts**
- **Easily downloadable test reports and firmware from the Internet**
- **Optimal system cooling with FLOTHERM simulations and verification of data in climate laboratory**

High performance and availability in a small package

MicroTCA – a flexible syste

High performance with a small form factor!

- Modular system concept with extremely high flexibility
- Future-proof platform for the development of new products
- Performance reserves for future processor generations

Small, flexible, high performance.

In order to provide a standard platform right to the access/edge areas of telecommunications networks, the PICMG® MicroTCA R1.0 specification for small, flexible system solutions was released in June 2006. MicroTCA is suited to the requirements for systems and services with high availability. MicroTCA systems also use AdvancedMC modules, which are connected directly onto the backplane.

On the advance in many markets.

MicroTCA systems are attractive for any situation in which an AdvancedTCA system would be overspecified. They are thus gaining popularity in industrial automation, image processing and medical and defence technology applications. Many versatile applications are possible using various system designs, from very small, simply equipped two-slot systems to systems with full redundancy and remote monitoring.

Simply change over to the technology of the future.

Today you can take advantage of a very large range of different AdvancedMC modules and save on costly new product developments. MicroTCA is also flexible with regard to the operating system. Whether you are running Linux or Windows-based applications, you can migrate them onto MicroTCA systems. With new projects in particular, a move to MicroTCA will prove cost-effective.

THE STANDARD

- Effective capacity for data transfer of up to 480 Gb/s (at 10 Gb/s per port)
- Data-cable performance > 10 Gb/s
- Heat loss up to 80 W per module
- 99.999 % system availability, i.e. max. 5.3 minutes down-time per year
- Redundancy ensures highest failure safety
- Hot-swap capability ensures uninterrupted operation
- Shelf and carrier management allow administration and monitoring of system resources
- Perfect board protection via electronic coding (e-keying)
- Support for all AdvancedMC protocols
- Standardized miniature boards

Schroff technology and know-how: always the first choice.

The right solution for every performance level

m with a bright future

Systems, components and the full range of accessories

- Highest performance in an extremely small form
- Comprehensive programme: the right solution for every requirement
- Competent consultancy worldwide

The best advice to help you achieve your goals faster.

As pioneers and worldwide trendsetters in MicroTCA and AdvancedTCA technologies, we combine know-how and engineering capacity under one roof. For you this means comprehensive, competent advice, efficient implementation and fast delivery. Nowhere is the way to a complete system simpler.

The driving force - from the start.

Our leading role in determining the mechanical aspects of the MicroTCA specification and our decades of experience in building custom solutions for our customers for the widest variety of applications ensure that Schroff MicroTCA systems are efficient from the word go.

Using our knowledge. Securing our lead.

Our custom-designed seminars on AdvancedTCA, MicroTCA and AdvancedMC allow us to provide an uncomplicated transfer of knowledge. Come to one of the events held at the Schroff Training Center in Straubenhardt or contact our experts to arrange a visit to your premises. And the highlight: we can offer you a fast, modern knowledge transfer using new media such as webinars, webcasts and white papers, with all the convenience of the Internet.

www.a-tca.com

WHY CHOOSE SCHROFF

- Conformity to PICMG MicroTCA.0 R1.0 specification
- Wide product spectrum from subracks through to finished systems and custom modifications
- Various versions (horizontal/vertical, with/without management, with/without redundancy, development systems)
- optimized cooling designs (improved air flow through FLOTHERM simulation and wind-tunnel tests by Schroff)
- Backplanes and electronic components: simulation, development, production and testing - all under a single roof.

Multiple functions, universally applicable

AdvancedMC modules – co

## Double application: modules for AdvancedTCA and MicroTCA

- Dedicated boards for the electronics market
- Added value: EMC shielding included
- Simple configuration using front panels with screwless interlocking

Onto the MicroTCA backplane direct.

With their six form factors, indispensable hot-swap capability, support for very fast serial protocols and intelligent module management, AdvancedMC modules are also designed for use with MicroTCA. On this likewise modular platform with its very small dimensions, AdvancedMC modules are plugged directly into the MicroTCA system. Carriers, such as for AdvancedTCA, are not required.

In carriers for AdvancedTCA.

The AdvancedMC specification is an important element of the AdvancedTCA platform. AdvancedMC modules are the smallest swappable unit in an AdvancedTCA system. Mezzanine modules are fitted into an AdvancedTCA system via suitable adaptors, AdvancedMC carriers, and therefore extend the function of an AdvancedTCA carrier board.
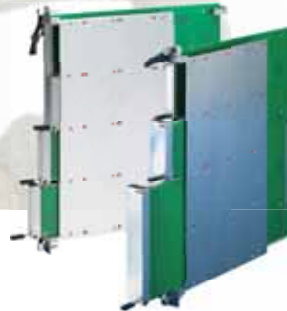
THE STANDARD

- Support for modern transfer protocols such as GBit and 10 GBit Ethernet, PCI-Express, Rapid I/O, Serial ATA/SAS and Advanced Switching
- Maximum heat loss 80 W/module
- Hot-swap capaility (insertion and removal during operation)
- Integrated module management
- System platform for e.g. telecoms, audio-video broadcasting, transport and defense technologies

Modular parts from Schroff: the easiest way.

Standard products and modifications for your special product requirements

mpact and capable

Proven mechanics and an impressive design!

- **Shock and vibration testing to MicroTCA.1 R0.6 (2 November 2007)**
- **Safety through thermal simulation and verification**
- **Individual services such as printing, cut-outs and assembly**

Fully developed and accurately matched.

As contributors to the PICMG AdvancedMC.0 specification we have brought years of experience in developing AdvancedTCA mechanics and translated the very high demands of the specification into products of high technical quality. Our AdvancedMC modules impress with their fully-developed components with excellent finish, high accuracy of matching and comprehensive accessories.

Multiple options.

Choose the module that best suits your application from our vast product offering. Modifications such as cut-outs or silk-screening make the module into your custom solution. As an additional option, we can also assemble your boards.

WHY CHOOSE SCHROFF

- **Conformity to PICMG® AMC.0 RC1.1 and PICMG® AMC.0 R.2.0 RC 1.2 specifications**
- **Modules in two heights (single or double), three widths and suitably matched AdvancedMC carriers**
- **Patented EMC gasketing**
- **For other sizes and special features please ask us**
- **Custom modifications e.g. cut-outs, silk-screening, overlays, painting, assembly and kitting on request**
- **Includes light-pipe for standard LEDs**
- **Module interlocking without screws**
- **Filler solutions also with adjustable air throughput**
- **Microswitch**

The future of communications platforms is modular

Focussed on data traffic

AdvancedTCA + AdvancedMC + MicroTCA = Complete telecommunication solutions

### AdvancedTCA: High data volumes. High availability.

AdvancedTCA applications are to be found in the core areas of telecommunications networks - situations in which extremely high data volumes must be processed with almost 100 % availability. Leading equipment manufacturers and service providers worldwide are now opting for platforms based on the open AdvancedTCA specification.

The processing of high data volumes calls for enormous computing power. The result is a high heat loss (specified in the standard as up to 200 W per board). We think ahead and offer our customers a high margin of safety, so our highly-developed cooling designs today achieve up to 300 W of cooling per board. This ensures that you are well positioned for the future.

TYPICAL APPLICATIONS INCLUDE:

- **Carrier-grade applications**
- **Media gateways**
- **Image processing**
- **Medical technology**
- **Video on demand**
- **Security and military applications**
- **Internet security**
- **3G, UMTS, WIMAX**
- **Scientific research projects, e.g. particle accelerators**

MicroTCA in telecoms applications: High computing power. Low system costs.

For the telecommunications periphery, high-power AdvancedTCA computers are "too powerful" and too overspecified, since data traffic in these areas of the network is lower. Even here, however, very high computing power is required, for example, to encrypt data and build firewalls. In telecommunications, MicroTCA is mainly deployed in the access areas, in base stations and the internal telecommunications networks of medium-sized and large companies.
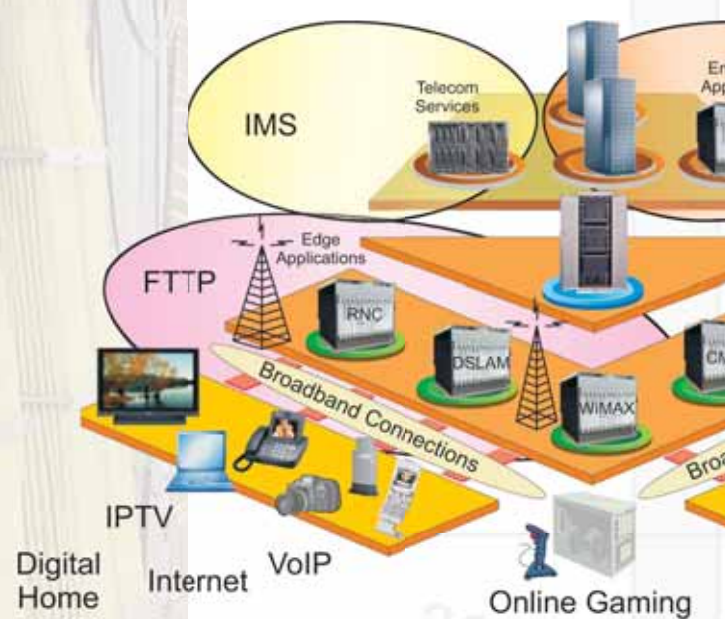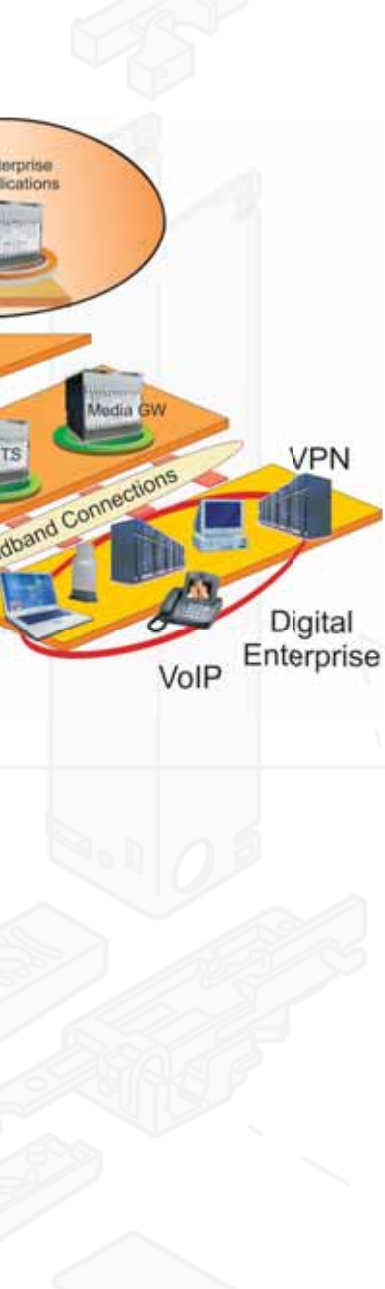
TYPICAL APPLICATIONS INCLUDE:

- **Base stations**
- **VoIP gateways**
- **WiMAX solutions**
- **IP telephony**
- **IP TV**
- **Media servers**

Applications know-how from Schroff - always good advice.

A new standard gathers momentum

AdvancedMC + MicroTCA = A revolution in many markets

Attractive for many applications.

High speed and high availability, scaleable infrastructure, a compact form factor with AdvancedMC modules, system management including remote diagnosis and robust construction make MicroTCA an attractive option for many areas of application beyond telecommunications.

- Medical technology
- Security technology
- Industrial automation
- Defence technology
- Transport applications
- Image processing

The MicroTCA Industry Cube.

A possible configuration for a MicroTCA-based industrial system comprises a CPU card, hard disk module, graphics card and two additional slots for application-specific plug-in boards. Here, data-transfer cards would be GBit Ethernet, PCI -Express and Serial ATA. The AC power input is situated on the rear of the unit. The 12 V supply required for the AdvancedMC module is provided via an open-frame power-supply unit in the rear section of the case. A powerful fan below the board cage provides the necessary cooling, drawing cool air upwards through the cage. What is surprising here is that the entire application fits into a case just 155 mm wide, 135 mm high and 250 mm deep.

Why our systems make a difference

Our commitment to quality

Everything from one source

- **Development of all components and system integration**
- **Short development times and fast manufacturing**
- **Security through tests and certification**

The measure of all things.

Hidden in each of our solutions is the knowledge gathered in over 40 years of development, manufacturing and integration of mechanical and electronic components into functioning systems. We continue to set standards by it worldwide - and to give new impulses. Why can we do this? Because we have made the needs and future of our customers into the measure of all things.

Responsibility for the future.

Our know-how as electronic packaging experts influences international standards. We have been actively involved since 1978 in the IEC standard "Mechanical construction for electronic devices". We have been a member of VITA (VME Industrial Trade Association) for over 20 years and active in the PICMG for more than 10 years. As an international company with globally active customers we feel jointly responsible for developments in standardization since we deploy the latest technologies, realizing them in standard product platforms.

Always one step ahead.

Short development times and rapid market introduction without costly development and testing processes - this has been the goal of our worldwide teams of experts as they participated actively in developing the PICMG AdvancedTCA specification. The result: a leading role in defining the mechanical section, and delivery of the first development systems even before adoption of the AdvancedTCA specification (PICMG 3.0, rev. 2.0) in December 2002.

All components working optimally together.

Members of the AdvancedTCA/MicroTCA Working Group meet regularly for so-called Interoperability Workshops (AIW/MIW) to test the interaction of their products, such as boards, software, chassis and shelf management systems and to gain new knowledge that can be used to refine the standard. Schroff hosted one of these workshops in the USA and the first European workshop took place at Schroff's premises in Germany.

System Integration.

What our customers want is electronics packaging as a complete solution. We understand system integration as building the basic elements of electronics packaging, such as cabling, climate control and power supply, into one cabinet or case. And this may be at the most varied levels of integration. Users thus obtain a plug-and-play product for their 19" systems from a single supplier, avoid interface problems and profit from being able to concentrate more intensely on their own core competencies.

INTEGRATED SYSTEMS FROM SCHROFF

- **Chassis**
- **Backplane**
- **Shelf management**
- **Thermal management**
- **Voltage supply**
- **Fully wired, tested and certified**

Electronics Packaging from Schroff – simply one step ahead.

Why our system chassis make a difference

is driven by passion

Globally, standardized mechanical components

- **Flexible and economical: modular building blocks**
- **Proven over the years: high quality, robust construction**
- **Safe: solid construction elements for a demanding electronics environment**

Market-leading product programme.

The first AdvancedTCA systems began service in early 2004. Today Schroff offers the 4th generation of AdvancedTCA systems in various versions, along with all accessories such as front panels, Advanced MC carriers, Advanced MC modules, filler panels, shelf managers and backplanes.

It is no coincidence that we now have a comprehensive and highly-developed mechanical parts programme for AdvancedTCA and MicroTCA. All FRUs (Field Replaceable Units) for standard systems are available from stock. Telecoms equipment manufacturers worldwide count among our customers.

Standardized components.

Our products are based on standardized components. Within modular building blocks they allow highly economical solutions - that nevertheless make full demands for the security of the overall system. Our products are further distinguished by durability owing to high quality, high failure safety and low weight.

WHY CHOOSE SCHROFF

- **Global availability of a broad product offering - from stock, naturally**
- **Wide range of accessories**
- **Project support worldwide**
- **Complete service worldwide**
- **Flexibility, to our customers' advantage**

Why our backplanes make a difference

Brilliant communicators

Backplanes: Functionality with efficiency

- Experience and competence in development and manufacturing
- In-house simulation and testing
- Custom modifications

The core of data transmission.

The backplane is the core of data transmission in the system. The performance of the system overall is only as good and as "fast" as the beat of its "pulse". Serial, packet-orientated transfer protocols and point-to-point connections allow exceptionally high transfer rates of up to several terabits per second within the system.

Efficient and future-proof.

Schroff backplanes have proved their quality for decades - in many types of applications. Since demand on backplanes are growing more and more complex, our engineers - aided by modern simulations technology - are continually researching innovations in backplane technology. Our backplanes thus have, for example, fewer layers than comparable products and are already designed for transfer rates of up to 10 Gbit/s.

AdvancedTCA – your individual solution.

The basic AdvancedTCA specification defines various backplane topologies and the physical characteristics of the conductors. The forming of the connections and thus performance and cost vary according to the backplane topology selected (Dual Star, Dual Dual Star or Full Mesh). Schroff supports these current AdvancedTCA topologies of up to 10 Gbit/s with 1, 2 or 4 ports between the slots according to the design. This lets you remain flexible; you pay only for the performance that your application requires.

MicroTCA - high-performance specialists.

Independent of protocol and with transfer rates of up to 10 Gbit/s per port, our MicroTCA backplanes are future-proof. The complex star topology, involving only a space of some 1.5 U on the board, calls for excellent know-how in backplane design in order to accommodate the large number of conductors on the smallest possible number of layers without detriment to performance. Precisely this is why Schroff MicroTCA backplanes are among the best on the market.
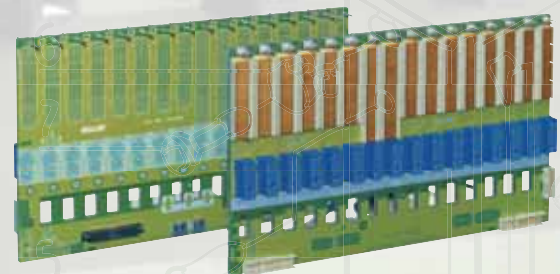
WHY CHOOSE SCHROFF

- Conformity with PICMG 3.0 AdvancedTCA or PICMG MicroTCA.0 R1.0 basic specifications
- Data transfer of up to 10 Gbit/s - thus future-proof
- Wide product spectrum supports star, network and ring topologies plus bussed and radial IPMI (intelligent platform management interface)
- Development design and the latest simulation in-house
- Customization, manufacturing and assembly service
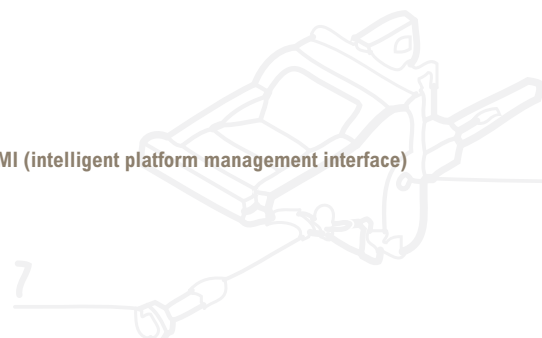
Innovations from Schroff – performance that inspires.

Why our shelf management solutions make a difference

Intelligent sentinels

Shelf management with brains

- E-keying to protect boards and system
- Redundancy to maximize security
- Radial and bussed IPMI

AdvancedTCA: Everything under control.

The task of AdvancedTCA shelf management is known as "low-level hardware management". This monitors the basic functioning of the components on the chassis, ensures by means of electronic coding (e-keying) that only those AdvancedTCA boards may communicate with one another that have mutually compatible interfaces, monitors power distribution and may intervene appropriately in the event of problems. A further important function for shelf management is control of the fans in the chassis. Here the aim is to optimize the cooling of the components while minimizing the noise level generated by the fans. To ensure high availability, AdvancedTCA systems can be redundantly equipped with two shelf managers.

Bussed or radial: your choice.

Schroff shelf management is based on Pigeon Point Systems technology, well-known around the world. This technology supports both bussed and radial IPMI (intelligent platform management interface). With radial IPMI the shelf manager is separately linked via a point-to-point connection with each AdvancedTCA board, whereas in bussed IPMI all AdvancedTCA boards are connected to a common bus. Our product specialists can help you decide which version is better suited to your needs.

MicroTCA management structure.

In MicroTCA, systems management is divided among various components: the MicroTCA carrier hub (MCH), the power module (PM) and the cooling unit (CU). The central point is the MCH. This contains the logical carrier manager and in some versions also the shelf manager. Additionally, the MCH takes on the hub function in the system. The PM is the power supply unit in the MicroTCA chassis. It supplies power to each AdvancedMC module via its own separate connection controlled by the MCH. The CU is the fan unit; the rotational speed of the fan is controlled by the shelf manager.

Not only have Schroff MicroTCA systems with cooling units performed favorably in tests with all MCHs available on the market; they also serve as a reference design for the writing of MCH firmware by leading MCH manufacturers. In certain cost-sensitive industrial applications, however, it is possible to do without MCH altogether.

WHY CHOOSE SCHROFF

- Global project support
- Supports various topologies: radial and bussed IPMI
- Shelf management is based on worldwide-established Pigeon Point Systems technology

Why our air-cooled systems make a difference

Cooling capacities

Performance far above the norm

- Cooling capacity of 300 W per board in complete AdvancedTCA systems
- Push or pull air cooling depending on application
- Optional air/water cooling

300 W per board: performance far above the norm.

Our systems are designed for a wide range of operating environments including enterprise applications. These applications often require high performance boards - pushing the slot requirements to 300 W - far beyond the ATCA specification. Schroff solutions can support up to 300 W per board (assuming a temperature rise of not more than 10 K) - under a broad range of operating conditions. Two distinct air-cooling methods exist, known as push cooling and pull cooling, each with different advantages, and our systems are available with either type - so always ensuring the most suitable cooling system for your application.

Competence in the climate-control laboratory

We have decades of experience in the developing and cooling of complete systems. Whatever requirements you have to fulfill, we will provide you with the requisite cooling concept. Experienced air-conditioning specialists will support you from the start with comprehensive know-how and the latest technology. We create simulations for a cooling design optimized specially for your chosen physical structure and the planned heat loss from the installed components.

Push cooling

Pull cooling
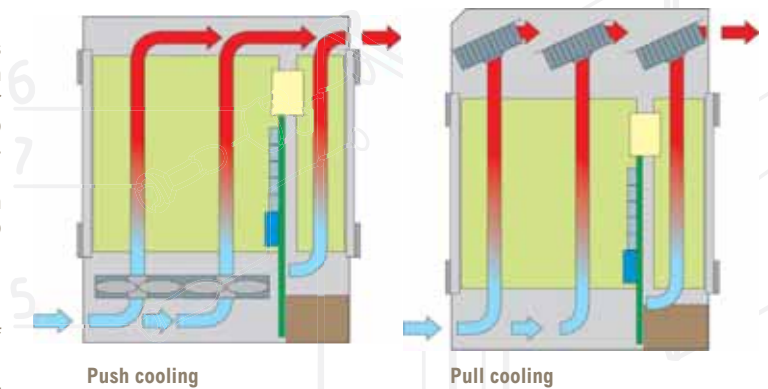
Thermal simulation

We use FLOWTHERM simulation software to analyze cooling concepts at the outset. This allows us to spot any heat pockets or problem areas at the design stage.
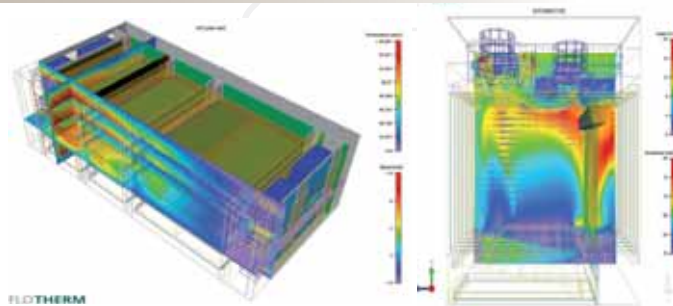
Testing in the laboratory

In our testing laboratories we perform professional examinations of cooling performance and noise levels and establish precise air volume flows and resistance curves. We check and verify the data gained from the simulation and thus hone our design by an iterative process.

Climate-control technology from Schroff – assured design.

Why our liquid-cooled systems make a difference

Technology for the most demanding environments

- Fully-designed complete cabinet solution with integrated cooling concept
- Remote monitoring via Ethernet Gateway
- Hybrid cooling (air/water) for boards in MicroTCA systems

Air and water: impressively cool.

For special applications in which pure air cooling is no longer sufficient, water cooling may also be used. This combination of cooling via fans and additional heat removal with water is known as hybrid cooling. It has the advantage that the hot processors (responsible for some 65 % of the heat produced) can be cooled by water, whose specific heat capacity is 4000 times greater than that of air by volume. All remaining components may be fan-cooled, the latter running at substantially slower speeds, resulting in lower air speeds and volumes.

Perfectly matched to each other.

Where two or three AdvancedTCA systems are built into a cabinet, air cooling reaches its limit. This is where our Varistar LHX 20 cabinet platform scores. With its integrated air/water heat exchanger, it can safely and efficiently remove up to 20 kW of heat per cabinet without warming the ambient air. Cabinet dimensions match exactly the AdvancedTCA installation dimensions and the air guides. The performance data is evaluated by the AdvancedTCA shelf manager. Varistar LHX 20 gives you a fully-elaborated total solution from a single source, one in which all components work together perfectly.

WHY CHOOSE SCHROFF

- System cooling optimized by air measurements and heat simulations in a climate laboratory
- Comprehensive analyses eliminate possible problems at a preliminary stage
- Competent advice and planning increase the efficiency and economy of your climate-control solution
- Air cooling: Push and pull types
- Combined air/water (hybrid) cooling solution for critical high-power components
- Redundancy of cooling concept ensures maximum availability
- Conforms to NEBS (Network Equipment Building Standard) and ETSI (European Telecom Standard Institute) specification

AdvancedTCA

12707010

All AdvancedTCA systems and components are developed and produced by Schroff. Everything from a single source means the perfect interaction of all components.

Our development team creates individual solutions and can respond very quickly to new requests.

The compact design of AdvancedTCA systems and the immense performance of the AdvancedTCA and AdvancedMC modules place high demands on the cooling systems.

Cooling systems have a redundant design to ensure uninterrupted operation even in the case of a fan failure.
The fans in the systems are more than edequate such that the 200 W heat loss per board can be safely dissipated in conformance with the AdvancedTCA Specification.

The 14 and 16 slot systems are designed for heat dissipation of up to 300 W per board without modification. Customers may choose between push and pull cooling to meet their requirements.

Schroff can supply fully-developed products in a wide variety of versions:

■ Dimensions from 2 to 13 U

■ Assembly of 2 to 16 slots

■ Cooling designs (push, pull cooling)

■ Backplane topologies (Dual star, Full Mesh)

■ Shelf manager based on Pigeon Point technology, optionally for shelf manager with Intel NetStructure® MPCMM0002 (chassis management module)
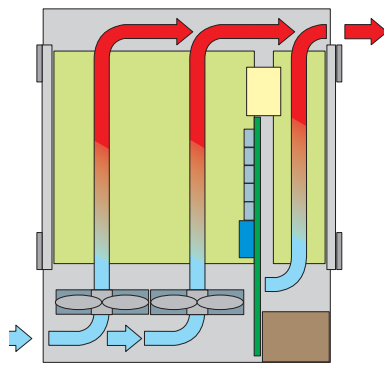
12706053

Push cooling

The fan is situated at the air inlet and pushes air through the system.
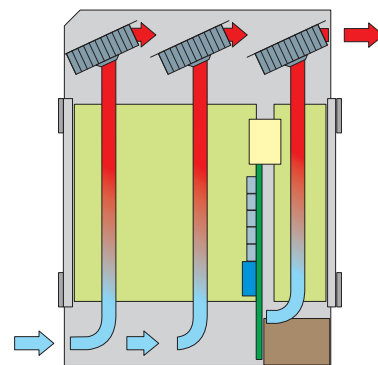
12706055

Pull cooling

The fan is situated at the air outlet and sucks air through the system.

12606007

Backplane

Backplanes with Full Mesh and Dual Star topology are available from stock, Replicated Mesh and Dual Dual Star, as well as customized topologies are available on request. The backplanes are designed for transmission rates of up to 10 GBit/s. To-date they already conform to the speed requirements of the next-but-one AdvancedTCA generation.

Systems and components available world-wide

- **Very large product range with regard to dimensions, number of slots, cooling designs, backplane topologies and shelf managers; all completely assembled and tested**

- **NEBS prepared, UL recognized**

- **For assembly into ETSI, 19" or 23" cabinets**

- **Cooling of up to 300 W per board**

PICMG®
Open Modular
Computing Specifications

12705005

AdvancedTCA systems

- 12 and 13 U; 14 and 16 slot

- Backplane with Dual Star or Full Mesh topology, bused or radial IPMB

- Push or pull cooling

- Shelf manager based on Pigeon Point technology

12705006

- 2 ... 6 U; 2 ... 6 slots

- Backplane with Dual Star, Triple Replicated Mesh topology or node/node configuration

- Push cooling (heat dissipation from right to left)

- Shelf manager based on Pigeon Point technology

12705007 12706023

AdvancedTCA accessories

- Shelf manager based on Pigeon Point technology

- AdvancedMC carriers

- Front panels and handles

- Backplanes

www.schroff.biz/serviceplus/
30407004

ServicePLUS (more details see page 82)

- configuration: Simple. Fast. To the ideal product.

- assembly: Assembled by professionals. Double benefit!

- modification: Small changes. Large impact.

- solution: Simple. Everything. From one source.

- support: Support. Solution. Availability.

- academy: Knowledge. Sharing. Partnerships.

- lifecycle: Bespoke service. For the entire life of the product.
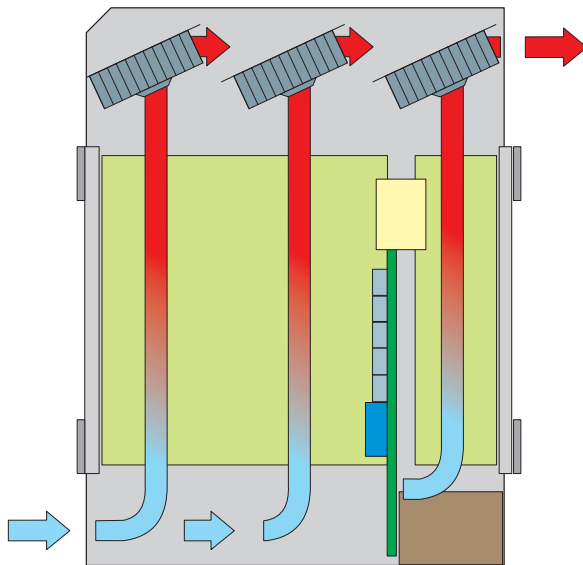
AdvancedTCA

12705004

- In accordance with AdvancedTCA Standard PICMG 3.0 Rev. 2.0

- 16 slot backplane with Dual Star or Full Mesh topology

- Assembly of 16 boards, 8 U, 6 HP (front) and 16 rear I/O boards, 8 U, 6 HP (on the rear)

- Two redundant power entry modules (PEM) for supply voltage -48 V_{DC}/-60 V_{DC}, plugged in on the rear

- Top fan shelf with three redundant hot-swap fan trays inserted at rear, for cooling of up to 300 W per board (see FRUs)

- Provisions for two shelf managers with Pigeon Point ShMM 500 for bused or radial IPMB topology

- Shelf alarm panel (SAP)
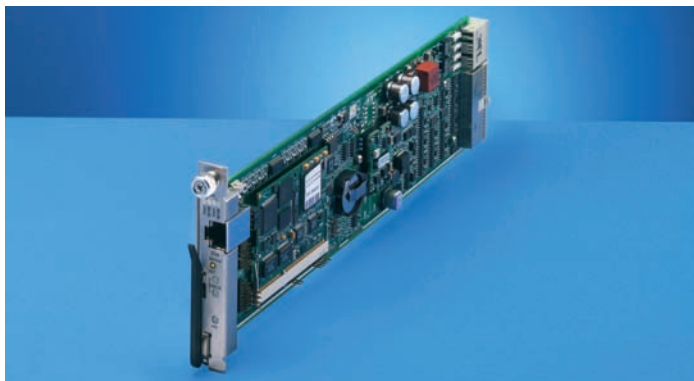
- Shelf alarm display (SAD)

Delivery comprises (completely assembled, wired and tested)

Item	Qty	Description
1	1	Shielded 19" subrack, St, 13 U, 96 HP, powder coated, black, RAL 9005
2	16	Front slot; guide rails for vertical boards (8 U, 280 mm deep)
3	16	Rear slot; guide rails for vertical boards (8 U, 70 mm deep)
4	1	Backplane, 16 slot
5	2	Redundant -48 V_{DC}/-60 V_{DC} power entry module (PEM), plugged in on the rear, with 4 pairs of lines each per input (8 fuses, 30 A)
6	1	Fan unit at top; 3 redundant fan trays with 390 m^3/h (230 cfm) each, with 2 radial fans each to cool the front and rear I/O boards
7	1	Filter mat, removable from front
8	1	Shelf alarm panel (SAP)
9	1	Shelf alarm display (SAD)
10	1	Cable ducting at front and rear of system
11	2	Mounting bracket, for assembly in ETSI racks
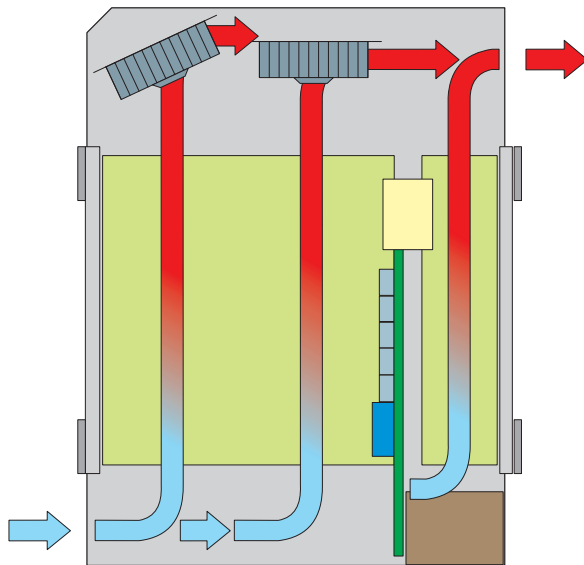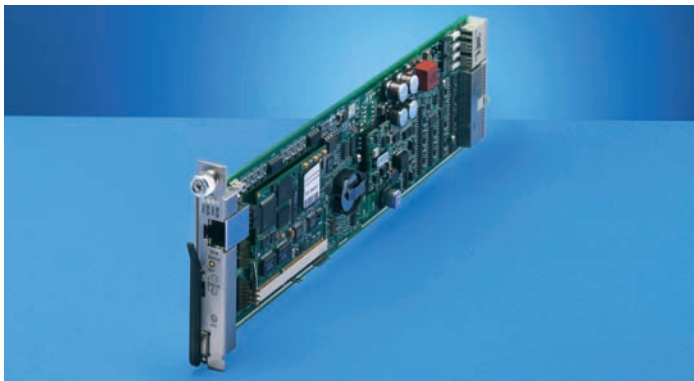
Top fan shelf, pull cooling

12706054

Order Information

Height U	Width HP	Depth mm	AdvancedTCA system, black Type	Order no.
13	96	383	Dual Star, bused IPMB	**11592-500**
13	96	383	Dual Star, radial IPMB	**11592-501**
13	96	383	Full Mesh, bused IPMB	**11592-502**
13	96	383	Full Mesh, radial IPMB	**11592-503**
Shelf manager (bused) 1 piece				**21593-375**
Shelf manager (radial) 1 piece				**21593-376**
Air filter for 16 slot AdvancedTCA system 1 piece				**21594-144**
Fuse 30 A/80 V for power entry module, PU 10 pieces				**21191-207**
Mounting bracket 13 U, RAL 9005, from ETSI to 23", PU 1 kit				**21596-327**

Shelf manager

12705007

- User manual: Please enter order number under www.schroff.biz/oneclick/
- Front panels, air baffles see page 37
- Replacement parts (FRUs) see from page 38

ServicePLUS see page 82

System 13 U, 14 slot, 84 HP

12707005

Top fan shelf, pull cooling
12706055
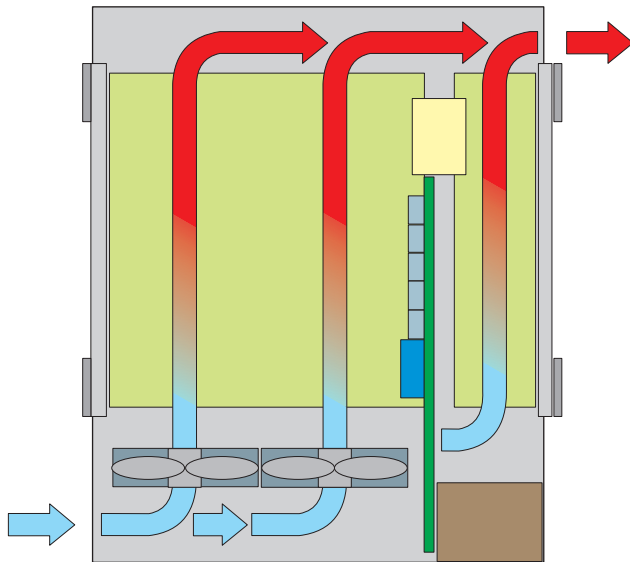

Shelf manager
12705007

ServicePLUS see page 82

- In accordance with AdvancedTCA Standard PICMG 3.0 Rev. 2.0

- 14 slot backplane with Dual Star or Full Mesh topology

- Assembly of 14 boards, 8 U, 6 HP (front) and 14 rear I/O boards, 8 U, 6 HP (on the rear)

- Two redundant power entry modules (PEM) for supply voltage -48 V_{DC}/-60 V_{DC}, plugged in on the rear

- Top fan shelf with three redundant hot-swap fan trays inserted at rear, for cooling of up to 300 W per board (see FRUs)

- Provisions for two shelf managers with Pigeon Point ShMM 500 for bused or radial IPMB topology

- Shelf alarm panel (SAP)

- Shelf alarm display (SAD)

NEW

Delivery comprises (completely assembled, wired and tested

Item	Qty	Description
1	1	Shielded 19" subrack, St, 13 U, 84 HP, powder coated, black, RAL 9005
2	14	Front slot; guide rails for vertical boards (8 U, 280 mm deep)
3	14	Rear slot; guide rails for vertical boards (8 U, 70 mm deep)
4	1	Backplane, 14 slot
5	2	Redundant -48 V_{DC}/-60 V_{DC} power entry module (PEM) plugged in on the rear, with 4 pairs of lines each per input (8 fuses, 30 A)
6	1	Fan unit at top; 3 redundant fan trays with 300 m³/h (175 cfm) each, with 3 radial fans each to cool the front and rear I/O boards
7	1	Filter mat, removable from front
8	1	Shelf alarm panel (SAP)
9	1	Shelf alarm display (SAD)
10	1	Cable ducting at front and at rear of system
11	2	Mounting bracket, for assembly in 19" cabinets

Order Information

Height U	Width HP	Depth mm	AdvancedTCA system, black Type	Order no.
13	84	383	Dual Star, bused IPMB	**11596-100**
13	84	383	Dual Star, radial IPMB	**11596-101**
13	84	383	Full Mesh, bused IPMB	**11596-102**
13	84	383	Full Mesh, radial IPMB	**11596-103**
Shelf manager (bused) 1 piece				**21593-375**
Shelf manager (radial) 1 piece				**21593-376**
Air filter for 14 slot AdvancedTCA system 1 piece				**21596-138**
Fuse 30 A/80 V for power entry module, PU 10 pieces				**21191-207**
Mounting bracket 13 U, RAL 9005, from 19" to ETSI, PU 1 kit				**21596-277**
Mounting bracket 13 U, RAL 9005, from 19" to 23", PU 1 kit				**21596-278**

- User manual: Please enter order number under www.schroff.biz/oneclick/

- Front panels, air baffles see page 37

- Replacement parts (FRUs) see from page 38

System 12 U, 14 slot

12705005

- In accordance with AdvancedTCA Standard PICMG 3.0 Rev. 2.0

- 14 slot backplane with Dual Star or Full Mesh topology

- Assembly of 14 boards, 8 U, 6 HP (front) and 14 rear I/O boards, 8 U, 6 HP (on the rear)

- Two redundant power entry modules (PEM) for supply voltage -48 V_{DC}/-60 V_{DC}, plugged in on the rear

- Bottom fan shelf with three redundant hot-swap fan trays, inserted from front, for cooling of up to 300 W per board (see FRUs)

- Provisions for two shelf managers with Pigeon Point ShMM 500 for bused or radial IPMB topology

- Shelf alarm panel (SAP)

NEW

Bottom fan shelf, push cooling
12706053

Delivery comprises (completely assembled, wired and tested)

Item	Qty	Description
1	1	Shielded 19" subrack, St, 12 U, 84 HP, powder coated, black, RAL 9005
2	14	Front slot; guide rails for vertical boards (8 U, 280 mm deep)
3	14	Rear slot; guide rails for vertical boards (8 U, 70 mm deep)
4	1	Backplane, 14 slot
5	2	Redundant -48 V_{DC}/-60 V_{DC} power entry module (PEM), plugged in on the rear, with 4 pairs of lines each per input (8 fuses, 30 A)
6	1	Fan unit at bottom; 3 redundant fan trays with 330 m³/h (195 cfm) each, with 2 fans each to cool the front and rear I/O boards
7	1	Filter mat, removable from front
8	1	Shelf alarm panel (SAP)
9	1	Cable ducting at front and at rear of system
10	1	Cover for shelf manager slot (enclosed loose)
11	2	Mounting bracket, for assembly in 19" cabinets
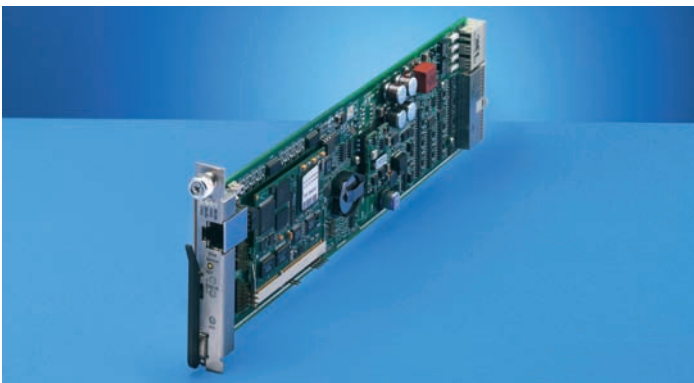
Order Information

Height U	Width HP	Depth mm	AdvancedTCA system, black Type	Order no.
12	84	383	Dual Star, bused IPMB	**11596-300**
12	84	383	Dual Star, radial IPMB	**11596-301**
12	84	383	Full Mesh, bused IPMB	**11596-302**
12	84	383	Full Mesh, radial IPMB	**11596-303**
Shelf manager (bused) 1 piece				**21593-375**
Shelf manager (radial) 1 piece				**21593-376**
Air filter for 14 slot AdvancedTCA system 1 piece				**21596-002**
Fuse 30 A/80 V for power entry module, PU 10 pieces				**21191-207**
Adaptor 12 U RAL 9005, from 19" to ETSI, PU 2 pieces				**21596-273**
Adaptor 12 U RAL 9005, from 19" to 23", PU 2 pieces				**21596-274**

Note

- User manual: Please enter order number under www.schroff.biz/oneclick/
- Front panels, air baffles see page 37
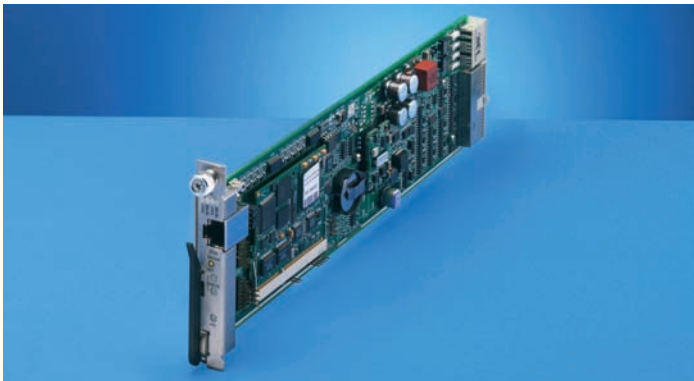- Replacement parts (FRUs) see from page 38

Shelf manager
12705007

ServicePLUS see page 82

System, 13 U, 14 slot, without rear I/O

12707006

Bottom fan shelf, push cooling

12707050

Shelf manager

12705007

ServicePLUS see page 82

- ■ 14 slot backplane with Dual Star topology, bused IPMB

- ■ Assembly of 14 boards, 8 U, 6 HP (front),
  without rear I/O board assembly space on the rear

- ■ Two redundant front plug-in power entry modules (PEM), for
  supply voltage -48 V_{DC}/-60 V_{DC}

- ■ Bottom fan shelf with three redundant hot-swap fan trays
  inserted at front, for cooling of up to 300 W per board

- ■ Provisions for two shelf managers with Pigeon Point ShMM 50(
  for bused IPMB topology

- ■ Shelf alarm panel (SAP)

NEW

Delivery comprises (completely assembled, wired and testec

Item	Qty	Description
1	1	Shielded 19" subrack, St, 13 U, 84 HP, powder coated, black, RAL 9005
2	14	Front slot; guide rails for vertical boards (8 U, 280 mm deep)
3	1	14 slot backplane, Dual Star, bused IPMB
4	2	Redundant -48 V_{DC}/-60 V_{DC} power entry module (PEM) plugged in at front, with 1 pair of lines each per input (8 fuses, 30 A)
5	1	Fan unit at bottom; 3 redundant fan trays with 330 m^3/h (195 cfm) each, with 2 fans each to cool the front I/O boards
6	1	Filter mat, removable from front
7	1	Shelf alarm panel (SAP)
8	1	Cable channel at front of system
9	1	Cover for shelf manager slot (enclosed loose)
10	2	Mounting bracket, for assembly in 19" cabinets
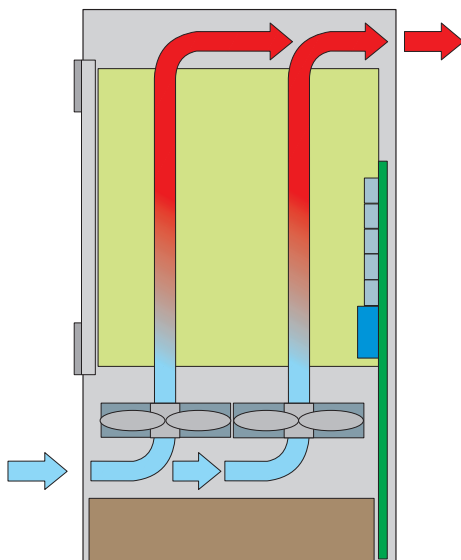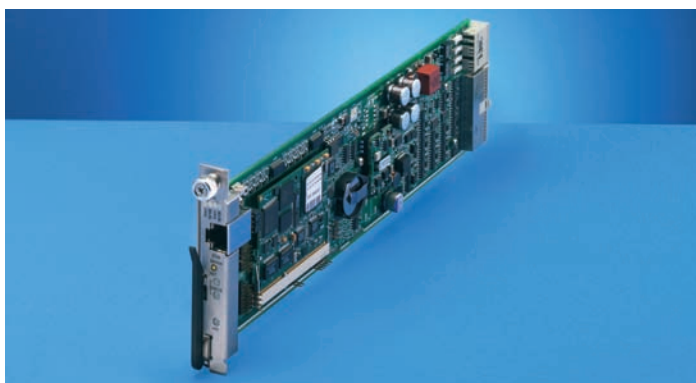
Order Information

Height	Width	Depth	Order no.
U	HP	mm	
13	84	320	**11596-040**
Shelf manager (bused) 1 piece			**21593-375**
Air filter for 14 slot AdvancedTCA system 1 piece			**21596-002**
Fuse 30 A/80 V for power entry module, PU 10 pieces			**21191-207**
Adaptor 12 U RAL 9005, from 19" to ETSI, PU 2 pieces			**21596-273**
Adaptor 12 U RAL 9005, from 19" to 23", PU 2 pieces			**21596-274**

Note

- ■ User manual: Please enter order number under
  www.schroff.biz/oneclick/

- ■ Front panels, air baffles see page 37

- ■ Replacement parts (FRUs) see from page 38

System, 6 U, 5 slot, without rear I/O

12707007

12705007

Shelf manager

ServicePLUS see page 82

■ 5 slot backplane with Dual Star topology, bused IPMB

■ Assembly of 5 boards, 8 U, 6 HP (front),
  without rear I/O board assembly area on the rear

■ Fan tray with two fans for cooling from right to left
  (push cooling); up to 200 W per board;
  fan monitoring with fan control module (FCM)

■ Shelf manager
  – Provisions for 2 shelf managers with Pigeon Point ShMM 500
  – Operation also possible without shelf manager
  – Two serial interfaces (front) for connection to the
    shelf managers

■ Two redundant front plug-in power entry modules (PEM),
  for -48 V_{DC}/-60 V_{DC} voltage supply

NEW

Delivery comprises (completely assembled, wired and tested)

Item	Qty	Description
1	1	Shielded 19" subrack, St, 6 U, 84 HP, powder coated, black, RAL 9005
2	5	Front slot; guide rails for horizontal boards (8 U, 280 mm deep)
3	1	5 slot backplane, Dual Star, bused IPMB
4	2	Redundant -48 V_{DC}/-60 V_{DC} power entry module (PEM), plugged in at front, with 1 pair of lines each per input (8 fuses, 30 A)
5	1	Fan tray; with 2 fans to cool the boards
6	1	Filter mat, removable from front
7	1	FCM for fan monitoring
8	2	Cover for shelf manager slot (enclosed loose)
9	2	Mounting bracket, for assembly in 19" cabinets

Order Information

Height U	Width HP	Depth mm	Order no.
6	84	320	**11596-045**
Shelf manager (bused) 1 piece			**21593-375**
Air filter for 5 slot AdvancedTCA system PU 10 pieces			**21596-115**
Fuse 30 A/80 V for power entry module, PU 10 pieces			**21191-207**

Note

■ User manual: Please enter order number under
  www.schroff.biz/oneclick/

■ Front panels, air baffles see page 37

■ Replacement parts (FRUs) see from page 38

For further information www.schroff.biz/oneclick
oneClick code = Order no.

System, 5 U, 6 slot, Zephyr Shelf

12706013
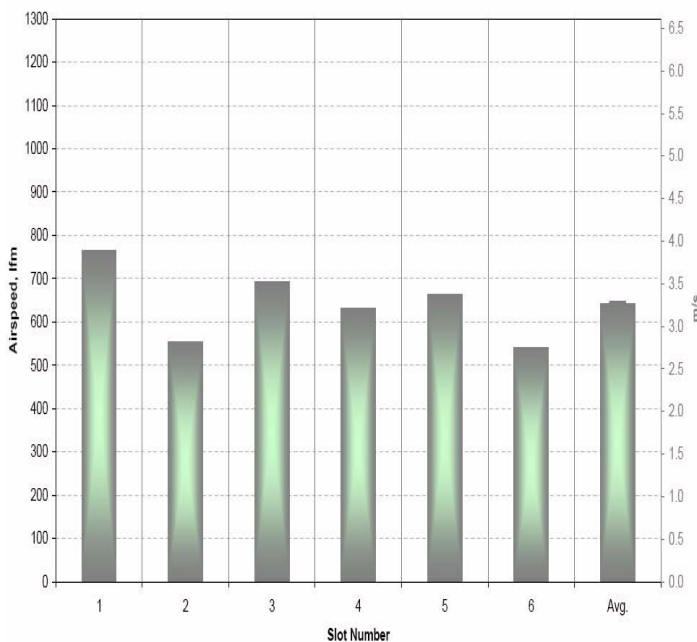
12706051

ServicePLUS see page 82

■ In accordance with AdvancedTCA Standard
PICMG 3.0 Rev. 2.0

■ Distributed intelligent platform management interface (IPMI)
using IPM enabled field replaceable units (FRUs)

■ 6 slot backplane with Triple Replicated Mesh topology,
bused IPMI

■ Assembly of 6 boards, 8 U, 6 HP (front) and rear I/O boards
(on the rear)

■ Two hot-swap fan trays for cooling from right to left (push/
pull cooling); up to 200 W per board; with IPMI

■ Provisions for two shelf managers with Pigeon Point ShMM 50(
and provision for one Shelf alarm panel

■ Voltage supply -48 V_{DC}/-60 V_{DC}, two redundant power entry
modules (PEM), inserted at rear; with IPMI

Delivery comprises (completely assembled, wired and tested

Item	Qty	Description
1	1	Shielded 19" subrack, St, 5 U, 84 HP, powder coated, black, RAL 9005
2	6	Front slot; guide rails for horizontal boards (8 U, 280 mm deep)
3	6	Rear slot (rear I/O); guide rails for horizontal boards (8 U, 80 mm deep)
4	1	6 slot backplane, Triple Replicated Mesh, bused IPMI with IPMC
5	2	Redundant -48 V_{DC}/-60 V_{DC} power entry module (PEM) plugged in on the rear
6	2	Telescopic fan unit (with 6 fans each), accessible from front; with Intelligent Platform Management Controller (IPMC)
7	1	Intelligent Platform Management Interface (IPMI) monitored air filter

Order Information

Height U	Width HP	Depth mm	Order no.
5	84	445	**ZR5ATC6TMDPEM2N**
Shelf manager (bused) 1 piece			**21593-375**
Shelf alarm panel 1 piece			**21596-077**
Intelligent shelf alarm panel 1 piece			**ISAP2**
Fan tray FRU 1 piece			**ZR5-FTM**
Power entry module FRU 1 piece			**ZR5-PEM**

Note
■ Other configurations available on request

For further information www.schroff.biz/oneclic
oneClick code = Order no.

AdvancedTCA

12706013

- In accordance with AdvancedTCA standard PICMG 3.0 Rev. 2.0

- 6 slot backplane with Triple Replicated Mesh topology, bused IPMI

- Designed to accept 6 front boards, 8 U, 6 HP (at front) and rear I/O boards

- Two hot-swap fan units (with 6 fans per tray) for cooling of up to 200 W per board

- Provisions for 2 Shelf Managers with Pigeon Point ShMM 500 and provision for one Shelf alarm panel

- Voltage supply 40 V_{DC} ... 72 V_{DC}; two redundant Power Entry Modules (PEM) plugged at rear

NEW

12706051

ServicePLUS see page 82

Delivery comprises (completely assembled, wired and tested)

Item	Qty	Description
1	1	Shielded 19" subrack, St, 5 U, 84 HP, powder coated, black, RAL 9005
2	6	Front slot; guide rails for horizontal boards (8 U, 280 mm deep)
3	6	Rear slot (rear I/O); guide rails for horizontal boards (8 U, 80 mm deep)
4	1	6 slot backplane, Triple Replicated Mesh, bused IPMI
5	2	Redundant -48 V_{DC}/-60 V_{DC} power entry module (PEM), plugged in on the rear
6	2	Telescopic fan unit (with 6 fans each), accessible from front
7	1	Monitored air filter

Order Information

Height U	Width HP	Depth mm	Order no.
5	84	497	**ZR5ATC6TMDE2**
Shelf manager (bused) 1 piece			**21593-375**
Cable RJ 45 CAT 5 D-SUB plug 9-pin, length 2 m, 1 piece			**23204-187**
Shelf alarm panel 1 piece			**21596-077**

Note
- Other configurations available on request

For further information www.schroff.biz/oneclick
oneClick code = Order no.

System, 5 U, 5 slot, AC version

12706019

12705007

Shelf manager

ServicePLUS see page 82

■ In accordance with AdvancedTCA Standard PICMG 3.0 Rev.2.0

■ 5 slot backplane with Triple Replicated Mesh topology, bused IPMI

■ Assembly of 5 boards, 8 U, 6 HP (front) and rear I/O boards (on the rear)

■ Hot-swap fan tray for cooling from right to left (push cooling); up to 200 W per board

■ Provisions for one shelf manager with Pigeon Point ShMM 500 and one shelf alarm panel (SAP)

■ Voltage supply 1200 W, 110/230 V_{AC}

■ Easy access to boards by removable cover plate

Delivery comprises (completely assembled, wired and tested

Item	Qty	Description
1	1	Shielded 19" subrack, St, 5 U, 84 HP, powder coated, black, RAL 9005
2	5	Front slot; guide rails for horizontal boards (8 U, 280 mm deep)
3	5	Rear slot; guide rails for horizontal boards (8 U, 70 mm deep)
4	1	5 slot backplane, Triple Replicated Mesh, bused IPMB
5	1	Power supply 1200 W, input voltage 110 ... 230 V_{AC}
6	1	Fan unit with removeable fan tray, 490 m³/h (290 cfm)
7	1	Air filter
8	1	Equipment cable, USA connector, IEC 320 19 female connector, length 2.5 m

Order Information

Height U	Width HP	Depth mm	Order no.
5	84	399.3	**11596-012**
Shelf manager (bused) 1 piece			**21593-375**
Shelf alarm panel 1 piece			**21596-077**
Air filter 1 piece			**21596-082**
Equipment cable, SCHUKO/UTE SCHUKO/UTE connector, IEC 320 C19 female connector, 2.5 m, 1 piece			**23204-196**
Equipment cable, BS British Standard connector, IEC 320 C19 female connector, 2.5 m, 1 piece			**23204-197**

Note

■ Other configurations available on request

■ Please order equipment cable with SCHUKO/UTE or British Standard connector and IEC-320 C19 female connector separately

■ User manual: Please enter order number under www.schroff.biz/oneclick/

■ Front panels, air baffles see page 37

■ Air filter see page 40
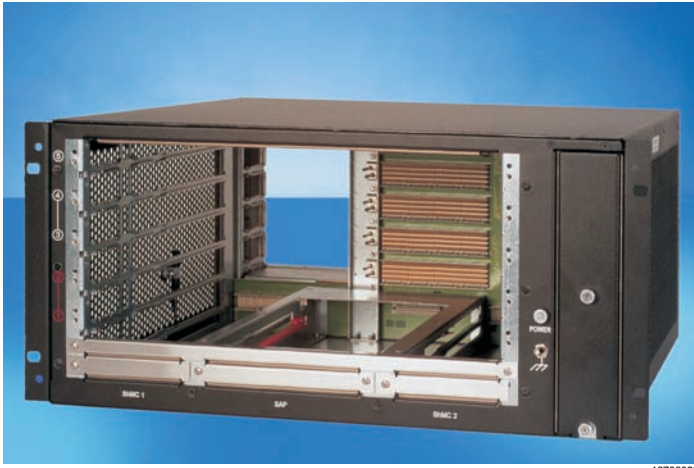
AdvancedTCA

12706020
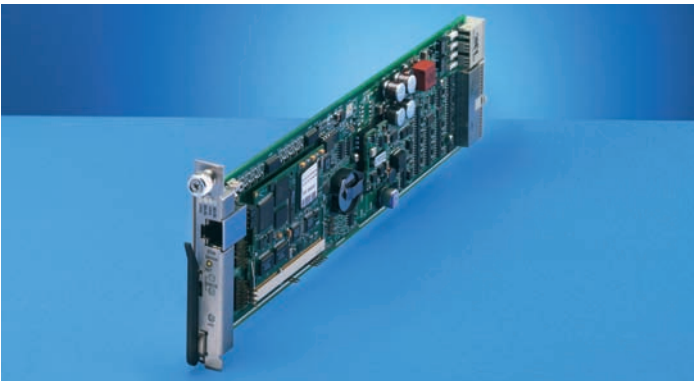
12705007

Shelf manager

ServicePLUS see page 82

■ In accordance with AdvancedTCA Standard PICMG 3.0 Rev.2.0

■ 5 slot backplane with Triple Replicated Mesh topology, bused IPMI

■ Assembly of 5 boards, 8 U, 6 HP (front) and rear I/O boards (on the rear)

■ Hot-swap fan tray with 490 m^3/h (290 cfm) for cooling from right to left (push cooling); up to 200 W per board

■ Provisions for two shelf managers with Pigeon Point ShMM 500 and one shelf alarm panel (SAP)

■ Voltage supply -48 V_{DC}/-60 V_{DC}, two redundant power entry modules (PEM), with 25 A fuses

■ Easy access to boards by removable cover plate

Delivery comprises (completely assembled, wired and tested)

Item	Qty	Description
1	1	Shielded 19" subrack, St, 5 U, 84 HP, powder coated, black, RAL 9005
2	5	Front slot; for horizontal boards (8 U, 280 mm deep)
3	5	Rear slot (rear I/O); for horizontal boards (8 U, 80 mm deep)
4	1	Backplane, 5 slot, Triple Replicated Mesh, bused IPMB
5	2	Redundant -48 V_{DC}/-60 V_{DC} power entry module (PEM), with 25 A fuses
6	1	Fan unit, removeable
7	1	Air filter

Order Information

Height U	Width HP	Depth mm	Order no.
5	84	411.3	**11596-010**
Shelf manager (bused) 1 piece			**21593-375**
Shelf alarm panel 1 piece			**21596-077**
Air filter 1 piece			**21596-082**

Note

■ Other configurations available on request

■ User manual: Please enter order number under www.schroff.biz/oneclick/

■ Front panels, air baffles see page 37

■ Air filter see page 40

 For further information www.schroff.biz/oneclick oneClick code = Order no.

System, 3 U, 2 slot, AC version

12706018

12705007

Shelf manager

ServicePLUS see page 82

- In accordance with AdvancedTCA Standard PICMG 3.0 Rev.2.0

- Backplane 2 slot, node/node configuration

- Assembly of two boards, 8 U, 6 HP (front) and rear I/O boards (on the rear)

- Fan for cooling from right to left (push/pull cooling); up to 200 W per board

- Voltage supply AC

- Easy access to boards via removable cover plate

Delivery comprises (completely assembled, wired and tested)

Item	Qty	Description
1	1	Shielded 19" subrack, St, 3 U, 84 HP, powder coated, black, RAL 9005
2	2	Front slot; guide rails for horizontal boards (8 U, 280 mm deep)
3	2	Rear slot (rear I/O); guide rails for horizontal boards (8 U, 80 mm deep)
4	1	Backplane, 2 slot, node/node configuration
5	1	Power supply 800 W, input voltage 115 ... 230 V_{AC}
6	2	Fan tray
7	1	Air filter, removeable

Order Information

Height U	Width HP	Depth mm	Order no.
3	84	383	**11596-002**
Shelf manager (bused) 1 piece			**21593-375**
Shelf alarm panel 1 piece			**21596-077**
Air filter 1 piece			**21596-037**
Equipment cable SCHUKO/UTE SCHUKO/UTE connector, IEC 320 C13 female connector, 2.5 m, 1 piece			**60103-131**
Equipment cable, BS British Standard connector, IEC 320 C13 female connector, 2.5 m, 1 piece			**60103-137**

Note

- Please order equipment cable with SCHUKO/UTE or British Standard connector and IEC 320 C13 female connector separately

- Front panels, air baffles see page 37

- User manual: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick/ oneClick code = Order no.

Advanced**TCA**

12706017

ServicePLUS see page 82

- ■ In accordance with AdvancedTCA Standard PICMG 3.0 Rev.2.0

- ■ Perfect configuration for the introduction to AdvancedTCA

- ■ Backplane 2 slot, node/node configuration, all 15 fabric channels are directly connected

- ■ Assembly of two boards, 8 U, 6 HP (front) and rear I/O boards (rear)

- ■ Two hot-swap fan trays for cooling from right to left (push/pull cooling); up to 200 W per board and 15 W per RTM board

- ■ Two power entry modules (PEM) -48 V_{DC}

- ■ Easy access to boards by removable cover plate

Delivery comprises (completely assembled, wired and tested)

Item	Qty	Description
1	1	Shielded 19" subrack, St, 2 U, 84 HP, powder coated, black, RAL 9005
2	2	Front slot; guide rails for horizontal boards (8 U, 280 mm deep)
3	2	Rear slot (rear I/O); guide rails for horizontal boards (8 U, 80 mm deep)
4	1	Backplane, 2 slot, node/node configuration
5	2	Power entry module (PEM) -48 V_{DC}
6	2	Fan tray
7	1	Air filter

Order Information

Height U	Width HP	Depth mm	Order no.
2	84	469	**11596-004**
Air filter 1 piece			**21596-028**

Note
- ■ Front panels, air baffles see page 37
- ■ Air filter see page 40
- ■ User manual: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

Shelf manager

12705007
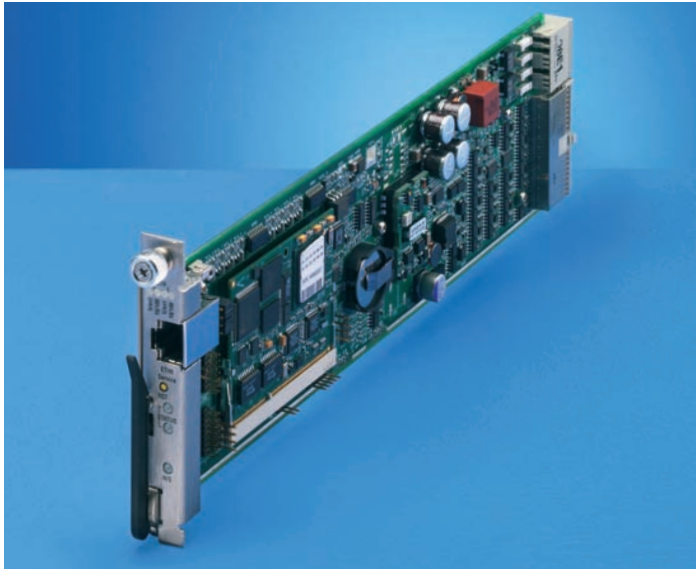
- Based on Pigeon Point Shelf Management technology ShMM 500

- Prepared for use with up to two shelf managers per system

- Inclusive of stainless steel front panel and AdvancedTCA handle (black)

Order Information

Height U	Width mm	Depth mm	Description	Qty/PU	Order no.
2	20	280	Shelf manager, bused version	1	**21593-375**
2	20	280	Shelf manager, radial version	1	**21593-376**
Cable RJ 45 CAT 5 D-sub plug 9-pin, length 2 m, 1 piece					**23204-187**
Stainless steel front panel to cover an unused shelf manger slot, width 15.22 mm, height 99.33 mm, incl. EMC gasketing, 1 piece					**21596-012**

Note

- Shelf manager in accordance with Intel NetStructure® MPCMM0002 (Chassis Management Module) on request
- User manual: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

12706021

Cable

12706052
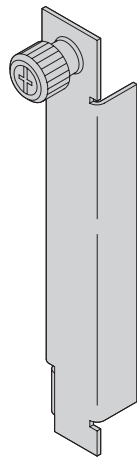
Steinless steel front panel

ServicePLUS see page 82

Backplanes
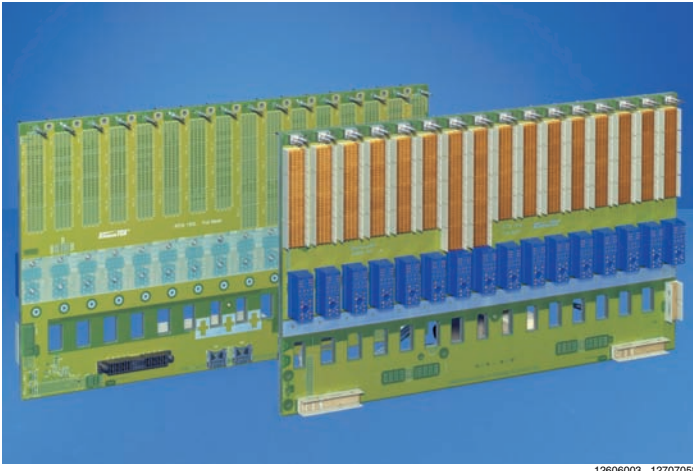
12606003 12707058

- Backplanes with Dual Star and Full Mesh topology as standard

- Backplanes with Replicated Mesh and Dual Dual Star topology available on request

- Bused or radial intelligent platform management interface (IPMB)

- Redundant power supply, divided into up to four independent segments

- Point-to-point connection structure independent of protocol

- Data transfer rates at up to 10 Gbps

- I^2C bus for internal monitoring

- Excellent eye pattern at up to 10 Gbps

Note
- For detailed description see chapter Standards, page 84

servicePLUS see page 82

Eye Pattern @ 3.125 Gbps vs. XAUI spec

| Bit Pattern: | PRBS | Data Rate: | 3.125 Gbps | Pair: | 01P21_GH05-16P23_EF03 |
| Rise Time: | 50ps | Pattern Lenght: | 2^7 -1 | trace info: | na |
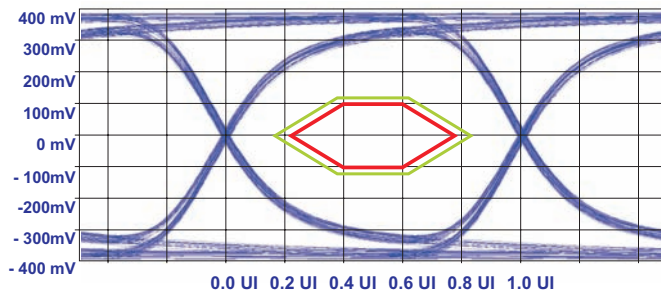
Eye Pattern @ 6.25 Gbps vs. XAUI spec

| Bit Pattern: | PRBS | Data Rate: | 6.25 Gbps | Pair: | 01P21_GH05-16P23_EF03 |
| Rise Time: | 40ps | Pattern Lenght: | 2^7 -1 | trace info: | na |
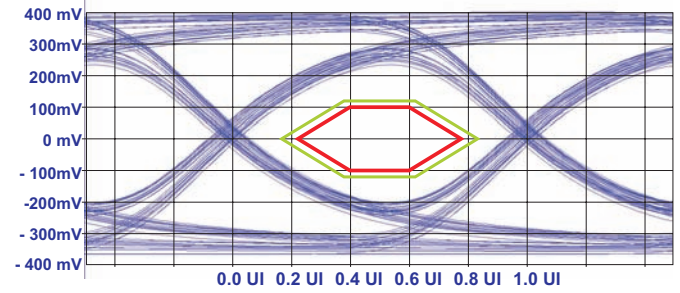
Eye Pattern @ 10.0 Gbps vs. XAUI spec

| Bit Pattern: | PRBS | Data Rate: | 10.0 Gbps | Pair: | 01P21_GH05-16P23_EF03 |
| Rise Time: | 20ps | Pattern Lenght: | 2^7 -1 | trace info: | na |
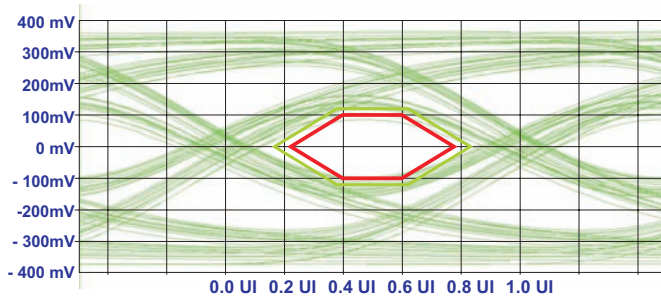
Eye Pattern @ 12.5 Gbps vs. XAUI spec

| Bit Pattern: | PRBS | Data Rate: | 12.5 Gbps | Pair: | 01P21_GH05-16P23_EF03 |
| Rise Time: | 20ps | Pattern Lenght: | 2^7 -1 | trace info: | na |
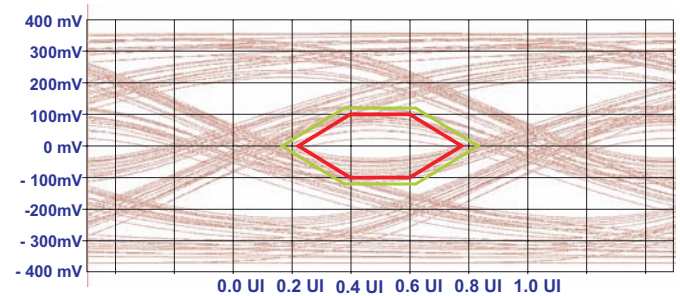
AdvancedTCA front panel kit

Delivery exclusive of board

12705008

AdvancedTCA handle

12706004

AdvancedTCA IEA handle

12707017

ServicePLUS see page 82

- ■ Stainless steel or Al extrusion version

- ■ Schroff hot-swap handle (AdvancedTCA handle or AdvancedTCA IEA handle)

- ■ Special support for mounting the board on the components side

- ■ EMC mesh gasketing

Delivery comprises (kit)

Item	Qty	Description
1	1	Stainless steel or Al extrusion front panel incl. alignment pin and knurled screw M3
2	1	Bottom handle incl. bearing
3	1	Top handle incl. bearing
4	1	EMC mesh gasket
5	1	Assembly kit (M2.5 screws incl. thread locking compound)

Order Information
AdvancedTCA handle

Height U	Width HP	Description	Order no.
8	6	Front panel kit, stainless steel, with AdvancedTCA handle	**21591-100**
8	6	Front panel kit, Al extrusion, with AdvancedTCA handle	**21591-102**

■ Description AdvancedTCA IEA handle see page 36

AdvancedTCA IEA handle

Height U	Width HP	Description	Order no.
8	6	Front panel kit, stainless steel, with AdvancedTCA IEA handle (plunger style)	**21596-324**
8	6	Front panel kit, stainless steel, with AdvancedTCA IEA handle (lever style)	**21596-325**

■ Description AdvancedTCA IEA handle see page 35

Note

- ■ Front panels with Copperberyllium gasketing (CuBe), available on request

- ■ Front panels with board cover on request

- ■ Schroff offers an extensive modifcation service via the Front Panel Service, including customized cut-outs, foils and silk-screen printing: www.schroff.biz/fpe

- ■ CAD data: Please enter order numer under www.schroff.biz/oneclick/

FRONT PANEL
FAST TRACK

AdvancedTCA front panels

Al extrusion　　　　Stainless steel
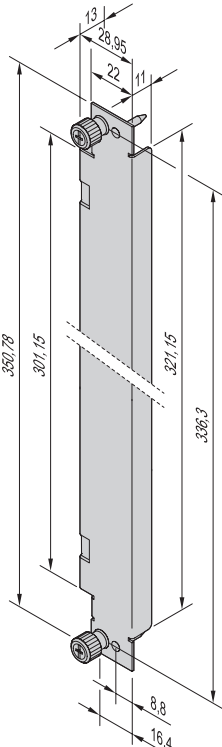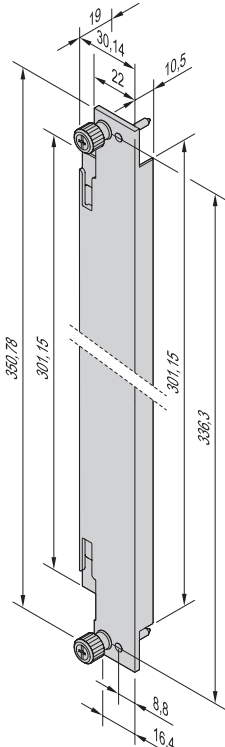
For plunger style

ServicePLUS see page 82

■ Stainless steel or Al extrusion for EMC mesh gasketing

Order Information

Height U	Width HP	Description **AdvancedTCA front panels**	Qty/PU	Order no.
8	6	Al extrusion for AdvancedTCA handle	1	**31591-454**
8	6	Al extrusion for AdvancedTCA IEA handle (plunger style)	1	**31596-575**
8	6	Al extrusion for AdvancedTCA IEA handle (lever style)	1	**31596-576**
8	6	Stainless steel, for AdvancedTCA handle and AdvancedTCA IEA handle (plunger style)	1	**31591-422**
8	6	Stainless steel, for AdvancedTCA handle and AdvancedTCA IEA handle (lever style)	1	**31596-423**
Mesh gasketing, self-adhesive, for AdvancedTCA front panels PU 10 pieces				**21591-092**

Note
■ CuBe gasketing on request
■ Schroff offers an extensive modifcation service via the Front Panel Service, including customized cut-outs, foils and silk-screen printing: www.schroff.biz/fpe
■ Description AdvancedTCA IEA handle see page 35
■ CAD data: Please enter order number under www.schroff.biz/oneclick/

FRONT PANEL
FAST TRACK

Front panel with integrated Side Two Cover

■ For protection of components on solder side of backplane
■ Customised version on request

ServicePLUS see page 82

AdvancedTCA IEA handle

Intuitive Ergonomic Asthetic (IEA handle, plunger style)

12707017
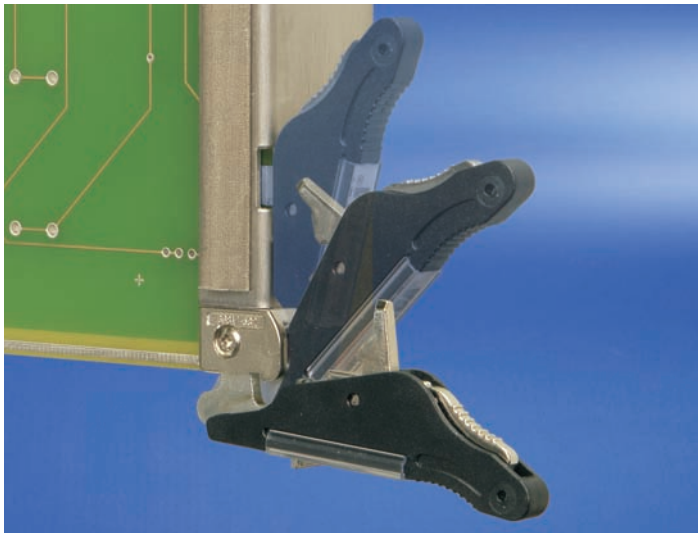
■ Innovative insertion/extraction mechanics

■ Secure locking

■ Ergonomic design

■ For stainless steel and aluminium front panels

■ Conforms to PICMG 3.0 R2.0

■ For two different microswitch activations
  – Plunger style contact
  – Lever style contact

NEW

Delivery comprises (assembled)

Item	Qty	Description
1	10	AdvancedTCA handle

Order Information

Description	Order no.
Upper handle for microswitch with plunger	**20818-12**
Lower handle for microswitch with plunger	**20818-122**
Upper handle for microswitch with lever	**20818-123**
Lower handle for microswitch with lever	**20818-124**
AdvancedTCA handle (IEA) design element, plastic, transparent, to clip over customized logos, PU 10 pieces	**20818-140**

Note

■ CAD data: Please enter order number under
www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

Handle for microswitches

With plunger-style contact	With lever-style contact
Underside of lever closes microswitch	Front tip of lever closes microswitch
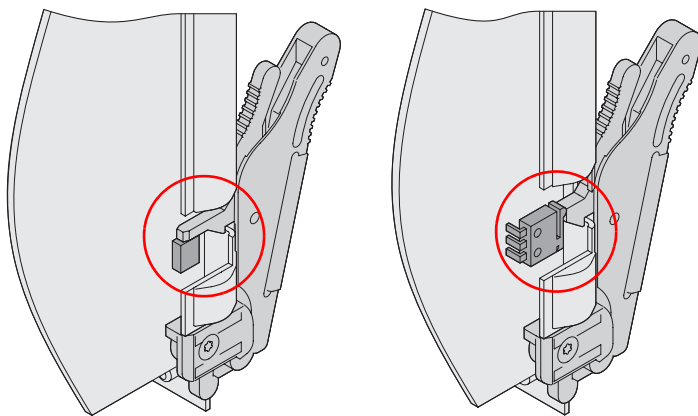
12707051   12707052

12706024

Design element for logos

AdvancedTCA

12706004

3   4+5   1   2
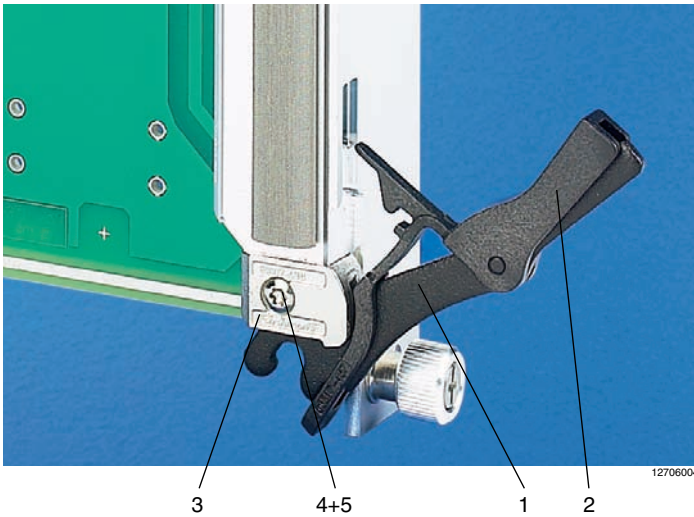
■ Secure locking

■ For stainless steel and aluminium front panels

■ In accordance with PICMG 3.0 R2.0

■ For microswitch activation with plunger-style contact

Delivery comprises (kit)

Item	Qty	Description
1	10	Lever, St, 2 mm, black
2	10	Plastic part, black
3	10	Die-cast bearing (top/bottom)
4	10	Screw M2.5 x 12, self-locking
5	10	Washer

Order Information

Description	Order no.
Lower handle assembly kit	**20817-476**
Upper handle assembly kit	**20817-477**
Microswitch for carriers (mid-size AdvancedMC modules) normally closed, for soldering (SMD), PU 10 pieces	**20817-853**

■ CAD data: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

AdvancedTCA front panels (filler panels)

12705062

Item 1   Item 2   Item 3

350,78   350,78   350,78

279   72,54

W   W   W

12705064   12705061   12705063

ServicePLUS see page 82
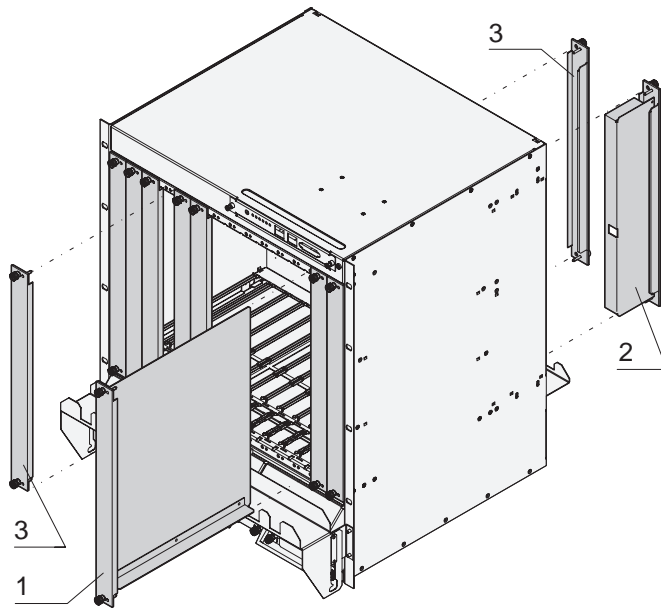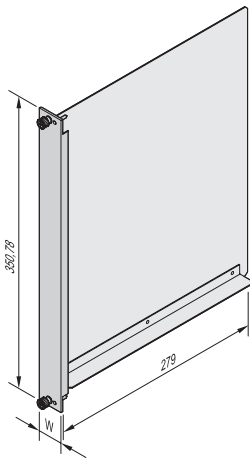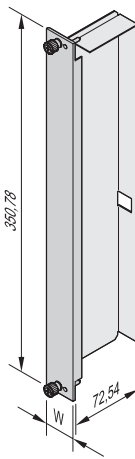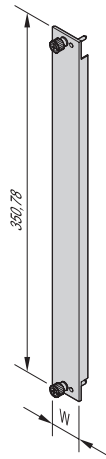
■ Front panels from stainless steel or Al extrusion

■ 6 HP front panels in three versions
  – Front: Front panel with air baffle (item 1, air baffle blocks the air through unused slots not used)
  – Rear: Front panel with air baffle (item 2, air baffle blocks the air through unused slots not used)
  – Only front panel (item 3)

Delivery comprises (kit)

Item	Qty	Description
1	1	Front panel
2	1	Air baffle (front or rear)

Order Information

Item	Height U	Width HP	Depth mm	W mm	Description	Order no.
1	8	6	280	30.14	Front panel, Al extrusion, incl. air baffle with mesh gasketing	**21596-008**
1	8	6	280	28.95	Front panel, stainless steel, incl. air baffle with mesh gasketing	**21591-079**
2	8	6	70	30.14	Front panel, Al extrusion for rear I/O area incl. air baffle with mesh gasketing	**21591-107**
2	8	6	70	28.95	Front panel, stainless steel for rear I/O area incl. air baffle with mesh gasketing	**21591-099**
3	8	6	–	30.14	Al extrusion front panel with mesh gasketing	**21591-104**
3	8	6	–	28.95	Stainless steel front panel with mesh gasketing	**21591-097**

Note

■ Version with CuBe gasketing on request

■ AdvancedMC carriers see page 42

■ CAD data: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

Field replaceable units (FRUs)

Field replaceable units (FRUs) designate system components that can be exchanged on-site, thus reducing the downtime of the system to a minimum.

Schroff offers various FRU components for AdvancedTCA systems:

■ Power entry modules

■ Fan trays

■ Air filter

■ Shelf alarm panels

■ Shelf alarm displays

Power entry module for 12 U, 14 slot AdvancedTCA system

12706006

■ Input 48 V_{DC}/60 V_{DC}

■ Plugged-in at rear of chassis

■ For 4 pairs of lines each (RTN and -48 V_{DC}/-60 V_{DC}) per input

■ 8 fuses 30 A/80 V each

Order Information

Description	Qty/PU	Order no.
Power entry module for 12 U, 14 slot AdvancedTCA system	1	**21596-003**
Fuse 30 A/80 V for power entry module, PU 10 pieces		**21191-207**

Note
■ Download of FRU files: Please enter order number under www.schroff.biz/oneclick/
■ AdvancedTCA systems see page 20

Power entry module for 13 U, 14/16 slot AdvancedTCA system

12706006

■ Input 48 V_{DC}/60 V_{DC}

■ Plugged-in at rear of chassis

■ For 4 pairs of lines each (RTN and -48 V_{DC}/-60 V_{DC}) per input

■ 8 fuses 30 A/80 V each

Order Information

Description	Qty/PU	Order no.
Power entry module for 13 U, 14/16 slot AdvancedTCA system	1	**21596-020**
Fuse 30 A/80 V for power entry module, PU 10 pieces		**21191-207**

Note
■ Download of FRU files: Please enter order number under www.schroff.biz/oneclick/
■ AdvancedTCA systems see from page 20

Fan tray for 13 U,
14 slot AdvancedTCA system

■ Fan tray with 3 radial fans (390 m^3/h = 230 cfm) for cooling of front and rear boards in system

■ Extractor handle and LED display (hot-swap, alarms, etc.)

Order Information

Description		Qty/PU	Order no.
Fan tray	for 13 U, 14 slot systems (11596-10x)	1	**21596-139**

Note
■ Download of FRU files: Please enter order number under www.schroff.biz/oneclick/
■ AdvancedTCA systems see page 21

12706009

Fan tray for 13 U, 16 slot AdvancedTCA system

■ Fan tray with 2 radial fans (390 m^3/h = 230 cfm) for cooling of front and rear boards in system

■ Extractor handle and LED display (hot-swap, alarms, etc.)

Order Information

Description		Qty/PU	Order no.
Fan tray	for 13 U, 16 slot systems (11592-50x)	1	**21594-143**

Note
■ Download of FRU files: Please enter order number under www.schroff.biz/oneclick/
■ AdvancedTCA systems see page 20

12706009

Fan tray for 12 U, 14 slot AdvancedTCA system

■ Fan tray with 2 fans (330 m^3/h = 195 cfm each) for cooling of front and rear boards in system

■ Extractor handle and LED display (hot-swap, alarms, etc.)

Order Information

Description		Qty/PU	Order no.
Fan tray	for 12 U, 14 slot systems (115963x)	1	**21596-236**

Note
■ Download of FRU files: Please enter order number under www.schroff.biz/oneclick/
■ AdvancedTCA systems see page 22

12706007

Air filter for AdvancedTCA systems
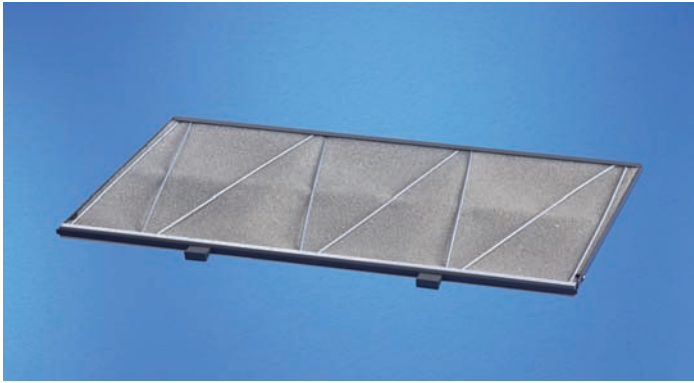
Order Information

Air filter		Qty/PU	Order no.
for 12 U, 14 slot systems (11592-40x, 11596-30x)		1	**21596-002**
for 13 U, 14 slot systems (11596-10x)		1	**21596-138**
for 13 U, 16 slot systems (11592-50x)		10	**21594-144**
for 6 U, 5 slot system (11596-045)		10	**21596-115**
for 5 U, 5 slot system (11596-012)		1	**21596-082**
for 3 U, 3 slot systems (11596-010, 11596-012)		1	**21596-037**
for 2 U, 2 slot system (11596-004)		1	**21596-028**

12706005

Note
■ CAD data: Please enter order number under www.schroff.biz/oneclick/

■ AdvancedTCA systems see from page 20

Shelf alarm panel for 13 U, 14 slot AdvancedTCA system

■ For output of all Telco alarm signals in accordance with the AdvancedTCA Specification

■ One D-Sub connector

Order Information

Description		Qty/PU	Order no.
Shelf alarm panel	for 14 slot systems (1159610xx)	1	**21596-140**

12707004

Note
■ Download of FRU files: Please enter order number under www.schroff.biz/oneclick/

■ AdvancedTCA systems see page 21

Shelf alarm panel for 12 U, 14 slot AdvancedTCA system
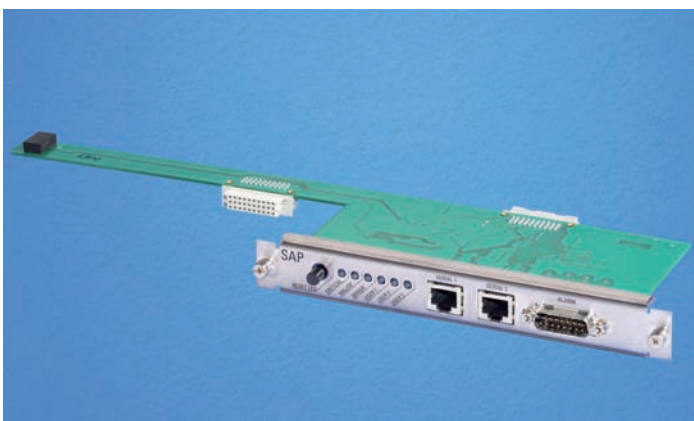
■ For displaying all alarm signals in accordance with the AdvancedTCA Specification

■ With alarm cut-off push button

■ Two RJ 45 sockets, for connection of one serial console (serial interface of the two shelf managers)

■ One D-Sub connector for Telco alarm

Order Information

Description		Qty/PU	Order no.
Shelf alarm panel	for 12 U, 14 slot systems (11592-40x, 11596-30x)	1	**21596-022**

12706008

Note
■ Download of FRU files: Please enter order number under www.schroff.biz/oneclick/

■ AdvancedTCA systems see page 22

Shelf alarm panel for 13 U, 16 slot AdvancedTCA system

12706010

■ For output of all Telco alarm signals in accordance with the AdvancedTCA Specification

■ One D-Sub connector

Order Information

Description	Description	Qty/PU	Order no.
Shelf alarm panel	for 13 U, 16 slot systems (11592-50x)	1	**21596-025**

Note

■ Download of FRU files: Please enter order number under www.schroff.biz/oneclick/

■ AdvancedTCA systems see page 20

Shelf alarm display for 13 U AdvancedTCA system

12706015

■ For displaying the Telco and fan tray alarm signals in accordance with the AdvancedTCA Specification

■ With alarm cut-off push button

■ Two RJ 45 sockets, for connection of one serial console (serial interface of the two shelf managers)

Order Information

Description		Qty/PU	Order no.
Shelf alarm display	for 14 and 16 slot systems (11592-5xx, 11596-1xx)	1	**21596-026**

Note

■ Download of FRU files: Please enter order number under www.schroff.biz/oneclick/

■ AdvancedTCA systems see page 20

Chassis data module for 12 and 13 U AdvancedTCA systems

12706014

■ SEEPROM for chassis FRU data (must be specifically programmed by user for the chassis)

■ Temperature sensor for input temperature of chassis

■ Hall sensor for filter mat ("air filter present")

Order Information

Description		Qty/PU	Order no.
Chassis data module	for systems 11592-50x, 11596-30x, 11596-10x	1	**21596-023**

Note

■ Download of FRU files: Please enter order number under www.schroff.biz/oneclick/

■ AdvancedTCA systems see from page 20

12806028

AdvancedMC carriers

AdvancedMC carriers are plug-in units that are pushed into an AdvancedTCA system. They contain the carrier board that accepts AdvancedMC modules.

Electrical connection to the AdvancedTCA backplane is via connectors. With the fully-assembled AdvancedMC carrier in place, cost-effective additional functions may be integrated into the system.

The standard stipulates three verschiedene mechanical versions, in accordance with PICMG Specification AMC.0 R2.0 RC1.2:
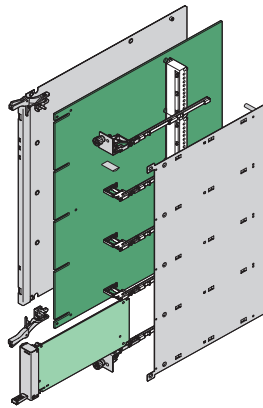
12805083

12805082

12805081

Conventional carrier

■ Carrier board is continuous from front to rear

■ Max. assembly:
4 single compact or
4 mid-size AdvancedMC
modules

■ Full-size AdvancedMC modules cannot be used
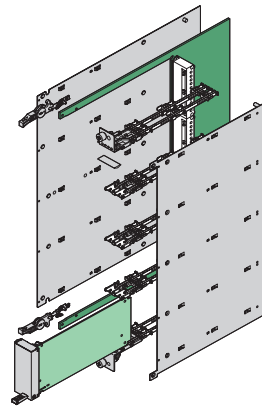
Cutaway carrier

■ Carrier board is cut away in the area of the AdvancedMC modules

■ Max. assembly:
8 single compact or
4 single full-size AdvancedMC
modules

■ Combinations of full-size and compact modules are possible
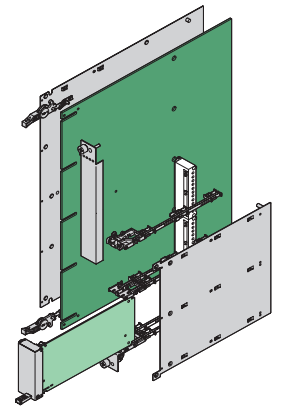
Hybrid carrier

■ Carrier board is a combination of conventional and cutaway carrier

■ Maximum number of assemblies depends on design of carrier

■ Combinations of all AdvancedMC modules possible

AdvancedMC carriers for AdvancedTCA systems

- **Conventional, cutaway and hybrid carrier mechanisms for**
  - **Compact AdvancedMC carrier board**
  - **Mid-size AdvancedMC carrier board**
  - **Full-size AdvancedMC carrier board**

- **Standard versions from stock**

- **Individual carrier/module combinations to your requests**

PICMG®

**Open Modular
Computing Specifications**

AdvancedMC carrier mechanics

- 1 slot plug-in unit, 8 U, 6 HP for AdvancedTCA systems

- Insertion/extraction handle for microswitch activation

- Versions
  - Carrier for compact and full-size modules
  - Carrier for mid-size modules
  - Hybrid carrier available on request

12807020

AdvancedMC carrier accessories

- Board guides and struts

- ESD clips

- Carrier front handle

- Microswitches

ServicePLUS offers

- assembly: Assembled by professionals. Double benefit!

- modification: Small changes. Large impact.

- express: When fast has to be faster.

- solution: Simple. Everything. From one source.

- support: Support. Solution. Availability.

- lifecycle: Bespoke service. For the entire life of the product.

www.schroff.biz/serviceplus/   30407004

Carrier mechanics for compact and full-size AdvancedMC modules

12805002

■ Mechanics for cutaway carrier board (carrier **with** 3 different struts, guide rails, ESD clips)

■ Stainless steel (EMC shielded)

■ Width 1 slot (6 HP), height 8 U, in accordance with PICMG® AMC.0 R2.0 RC 1.2

■ Insertion/extraction mechanics designed for hot-swap microswitch operation

Delivery comprises (kit)

Item	Qty	Description
1	1	Cover B (on the right), stainless steel, 0.6 mm, insulated interior, exterior with protection film
2	1	Cover A (on the left), stainless steel, 0.6 mm, insulated interior, exterior with protection film
3	1	Lower splitting (strut), Zn die-cast, nickel-plated
4	1	Upper splitting (strut), Zn die-cast, nickel-plated
5	1	Lower front panel, stainless steel, 1 mm, pressed-in alignment pin and retention screws
6	1	Upper front panel, stainless steel, 1 mm, pressed-in alignment pin and retention screws, with holes for LEDs
7	1	Standard insertion/extraction handle, with microswitch operation, plastic lever, black
8	1	Standard insertion/extraction handle, plastic lever, black
9	1	EMC profile gasketing, core: foam, sleeve: textile cladding with CuNi coating
10	3	Support member between cover A and B
11	3	Support member for cover A (on the left)
12	3	Support member for cover B (on the right)
13	8	ESD clip (assembled at bottom)
14	10	AdvancedMC guide rail, PBT, UL 94 V-0, red
15	1	Assembly kit

Order Information

Description	Order no.
Carrier mechanics for AdvancedMC compact and full-size modules **with** struts, ESD clips and guide rails	**10849-001**
Microswitch, normally closed, for AdvancedMC carrier (compact and full-size modules) for soldering (SMD), PU 10 pieces	**20849-236**
Microswitch, normally open, for AdvancedMC carrier (compact and full-size modules) for soldering (SMD), PU 10 pieces	**20849-235**

Note
■ Description of insertion/extraction handle see page 47
■ Description of microswitch see page 48
■ AdvancedMC module mechanics, see page 68

For further information www.schroff.biz/oneclick
oneClick code = Order no.

12807086

ServicePLUS see page 82

12807021

Carrier mechanics for compact and full-size AdvancedMC modules
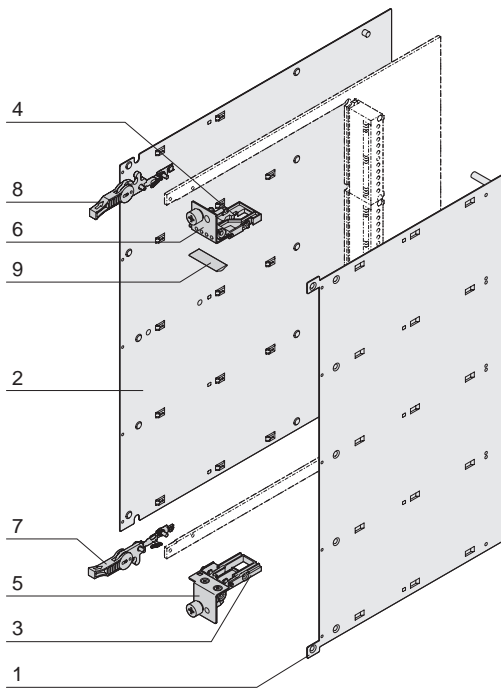
- ■ Mechanics for cutaway carrier board (carrier **without** struts, guide rails, ESD clips, for individual assembly)

- ■ Stainless steel (EMC shielded)

- ■ Width 1 slot (6 HP), height 8 U, in accordance with PICMG® AMC.0 R2.0 RC1.2

- ■ Insertion/extraction mechanics designed for hot-swap microswitch operation

Delivery comprises (kit)

Item	Qty	Description
1	1	Cover B (on the right), stainless steel, 0.6 mm, insulated interior, exterior with protection film
2	1	Cover A (on the left), stainless steel, 0.6 mm, insulated interior, exterior with protection film
3	1	Lower splitting (strut), Zn die-cast, nickel-plated
4	1	Upper splitting (strut), Zn die-cast, nickel-plated
5	1	Lower front panel, stainless steel, 1 mm, pressed-in alignment pin and retention screws
6	1	Upper front panel, stainless steel, 1 mm, pressed-in alignment pin and retention screws, with holes for LEDs
7	1	Standard insertion/extraction handle, with microswitch operation, plastic lever, black
8	1	Standard insertion/extraction handle, plastic lever, black
9	1	EMC profile gasketing, core: foam, sleeve: textile cladding with CuNi coating
10	1	Assembly kit

Order Information

Description	Order no.
Carrier mechanics for AdvancedMC compact and full-size modules without struts, ESD clips and guide rails	**10849-002**
Microswitch, normally closed, for AdvancedMC carrier (compact and full-size modules) for soldering (SMD), PU 10 pieces	**20849-236**
Microswitch, normally open, for AdvancedMC carrier (compact and full-size modules) for soldering (SMD), PU 10 pieces	**20849-235**

Note

12805053

- ■ Please order further struts, ESD clips and guide rails separately, see page 46
- ■ Description of insertion/extraction handle see page 47
- ■ Description of microswitch see page 48
- ■ AdvancedMC module mechanics see page 68

ServicePLUS see page 82

For further information www.schroff.biz/oneclick
oneClick code = Order no.

Board guidance/struts for AdvancedMC compact and full-size modules

12805070
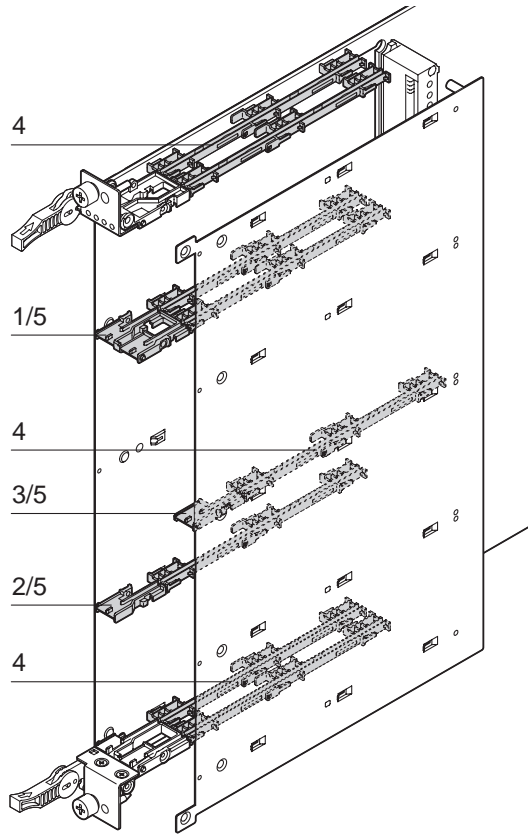
■ Board guiding is always done with a splitting (strut) and guide rail

■ Three different struts
  – Strut is assembled between the cover plates A and B
  – Strut is assembled on the left on cover plate A
  – Strut is assembled on the right on cover plate B

■ ESD clip is pushed into strut (one piece each per guide rail)

■ Guide rails are clipped into the cover

Order Information

Item	Description	Qty/PU	Order no.
1	Strut between cover A (left) and B (right), Zn die-cast, nickel-plated	10	**20849-009**
2	Splitting (strut) for cover A (on the left), Zn die-cast, nickel-plated	10	**20849-010**
3	Splitting (strut) for cover B (on the right), Zn die-cast, nickel-plated	10	**20849-011**
4	AdvancedMC guide rail, PBT, UL 94 V-0, red	10	**20849-008**
5	ESD clip, spring steel, corrosion-free, for deflection of electrostatic charges	50	**20849-021**

For further information www.schroff.biz/oneclick
oneClick code = Order no.

12805071
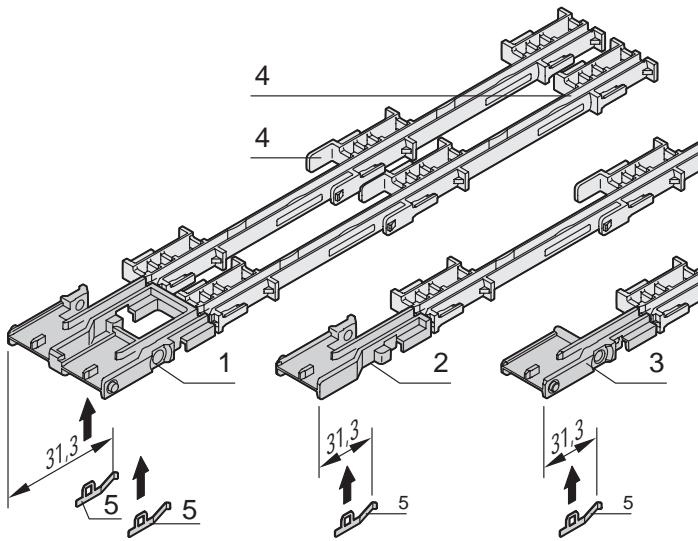
Differences between standard and MF handle for AdvancedMC carrier (compact and full-size modules)

Standard front handle - is included in delivery of carriers for compact and full-size modules

22,6   75°
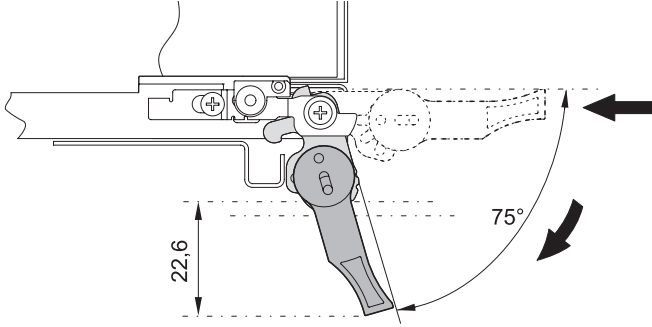
12806063

- ■ Extractor handle 75° opening angle

- ■ Insertion/extraction in one step

- ■ Swing range: 23 mm below and above the pitch line

- ■ Included in delivery of carrier

MF handle - can be exchanged by standard handle if needed (available on request)

75°
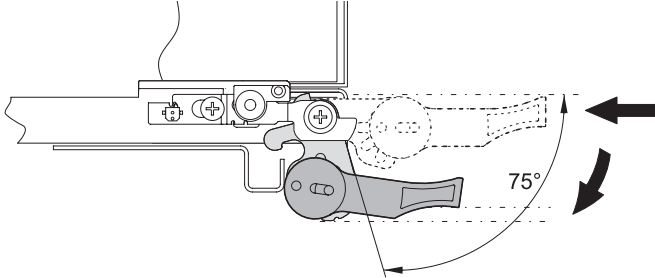
128050

- ■ Extractor handle 75° opening angle

- ■ Insertion/extraction in three steps (2 operations)

- ■ Small swing range (0 mm) below and above the pitch line. The lower respectively upper limit of the carrier is not exceeded during extraction.

Microswitch for carrier (compact and full-size AdvancedMC modules)

12807066

■ Microswitch to solder in (SMD)

NEW

Order Information

Description	Qty/PU	Order no.
Microswitch, **normally closed**, for AdvancedMC carrier (compact and full-size modules)	10	**20849-236**
Microswitch, **normally open**, for AdvancedMC carrier (compact and full-size modules)	10	**20849-235**

Technical data

Max. switch current	15 mA
Operating temperature	-15 °C ... +70 °C
Electrical life	10^5

For further information www.schroff.biz/oneclick
oneClick code = Order no.
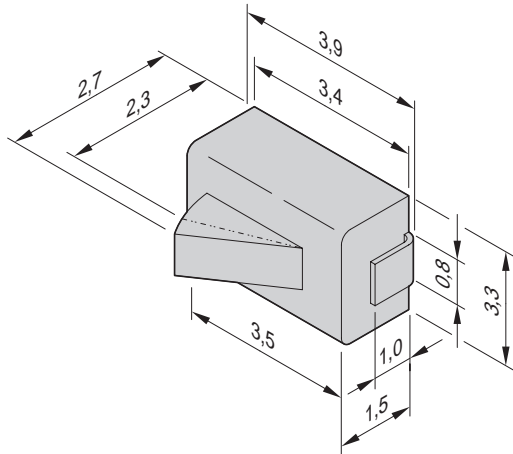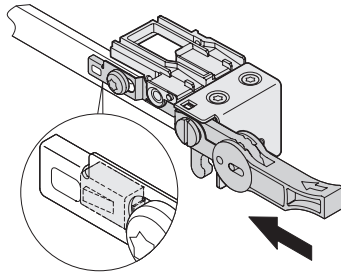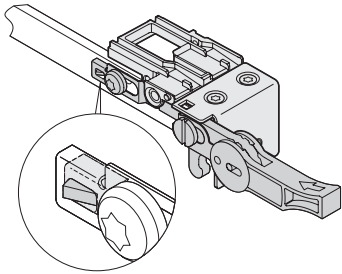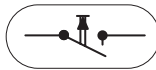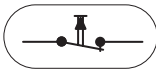
"Normally closed"

12807081

Handle in inoperative position   Handle activated

"Normally closed"
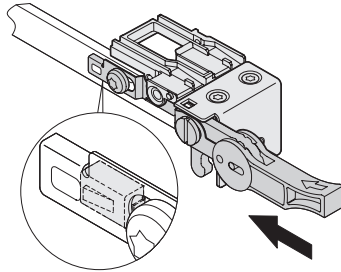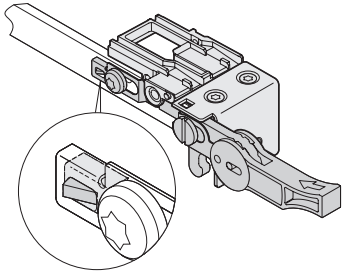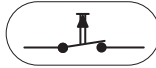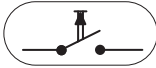
12807082

Handle in inoperative position   Handle activated

AdvancedMC Carrier mechanics for hybrid boards

■ The carrier board is a combination of conventional and cutaway carrier

■ Maximum number of assemblies depends on design of carrier

■ Available on request

12806017

ServicePLUS see page 82

1280601012806012

Carrier mechanics for mid-size Advanced*MC* modules, complete kit
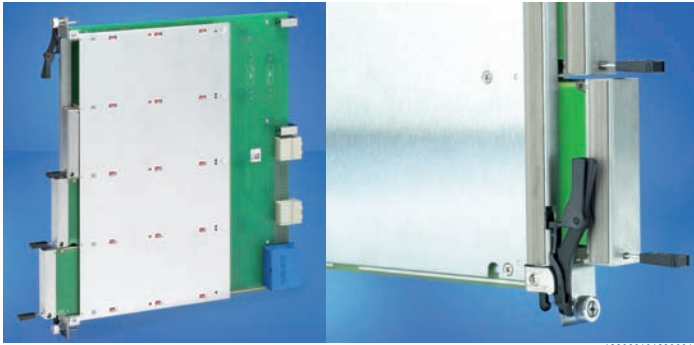
■ Mechanics for conventional carrier, stainless steel (EMC shielded)

■ Width 1 slot (6 HP), height 8 U, in accordance with PICMG® AMC.0 R2.0 RC 1.2

■ Insertion/extraction handle designed for hot-swap microswitch operation

■ Carrier mechanics with struts and guide rails for four modules

Delivery comprises (kit)

Item	Qty	Description
1	1	Cover B (on the right), stainless steel, 0.6 mm, insulated interior, exterior with protection film
2	1	Cover A (on the left), stainless steel, 0.6 mm, insulated interior, exterior with protection film
3	1	Lower splitting (strut), Zn die-cast, nickel-plated
4	1	Upper splitting (strut), Zn die-cast, nickel-plated
5	1	Lower front panel, stainless steel, 1 mm, pressed in alignment pin and retention screws
6	1	Upper front panel, stainless steel, 1 mm, pressed in alignment pin and retention screws
7	1	AdvancedTCA insertion/extractor handle, with microswitch operation, plastic lever, black
8	1	AdvancedTCA insertion/extractor handle, with microswitch operation, plastic lever, black
9	1	EMC profile gasketing, core: foam, sleeve: textile cladding with CuNi coating
10	1	EMC profile gasketing, core: foam, sleeve: textile cladding with CuNi coating
11	3	Splitting between covers A and B (4 ESD clips)
12	5	AdvancedMC guide rail, PBT, UL 94 V-0, green
13	1	Assembly kit

For conventional board/mid-size module

12806054

Handle
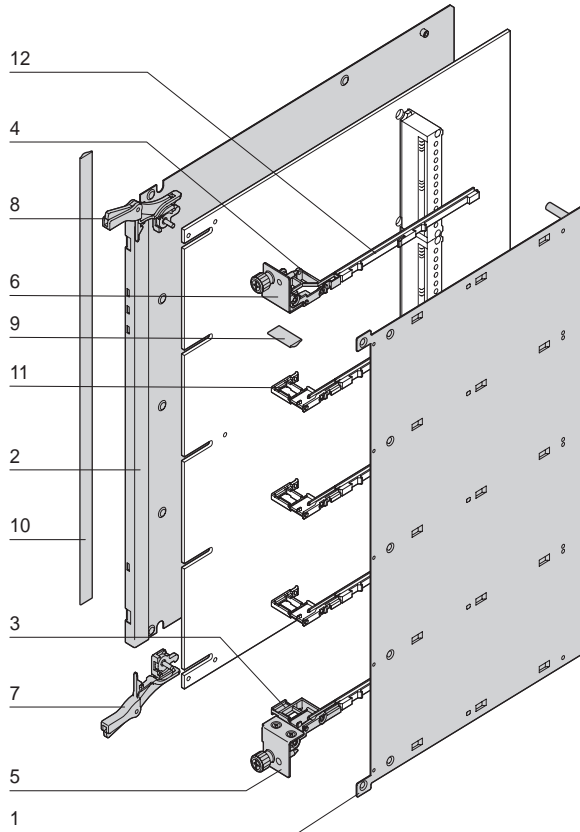
12806060

Order Information

Description	Order no.
AdvancedMC carrier mechanics for mid-size AdvancedMC modules with support member, ESD clips, guide rails	**10849-003**
Microswitch for carriers (mid-size AdvancedMC modules) "normally closed" for soldering (SMD), PU 10 pieces	**20817-853**

Note

■ Handle in Southco design on request

■ Carrier with stronger cover plate A (1 mm) available on request

■ Carrier for compact AdvancedMC modules available on request

■ Description of microswitch see page 51

■ AdvancedMC module mechanics, see page 68
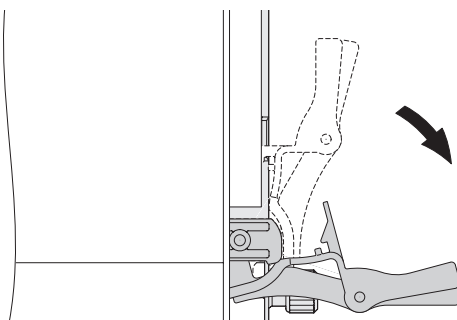
For further information www.schroff.biz/oneclick oneClick code = Order no.

ServicePLUS see page 82

Guide rails/struts for AdvancedMC mid-size modules
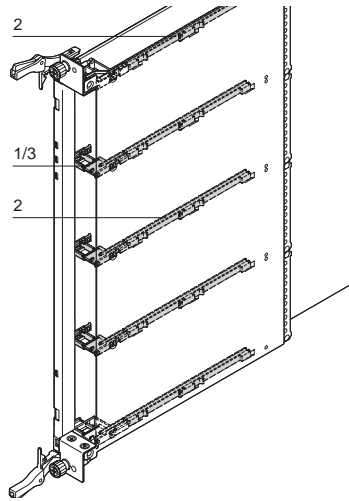
■ Board guiding is always done with support member (strut) and guide rail

■ Support member (strut) assembled between the covers A and

■ ESD clip is pushed into strut (1 piece each)

■ Guide rails are clipped into the cover

Order Information

Item	Description	Qty/PU	Order no.
1	Strut between cover A (left) and B (right), Zn die-cast, nickel-plated	10	**20849-242**
2	AdvancedMC guide rail for mid-size carrier, PBT, UL 94 V-0, green	10	**20849-166**
3	ESD clip, spring steel, corrosion-free, for deflection of electrostatic charges	50	**20849-021**
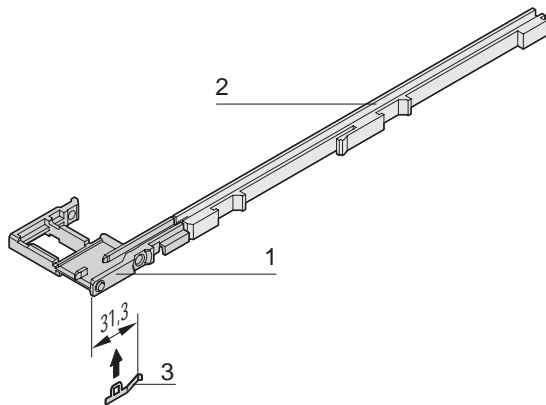
For further information www.schroff.biz/oneclic
oneClick code = Order no.

12806061

12806062

Microswitch for carriers (mid-size AdvancedMC modules)
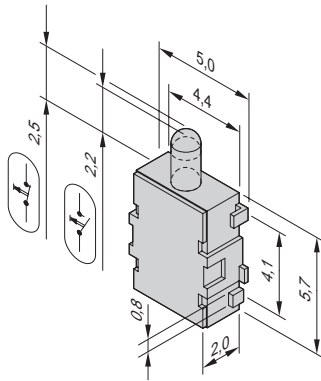
■ Microswitch to solder in (SMD)

Order Information

Description	Qty/PU	Order no.
Microswitch **(normally closed)** for carrier (mid-size AdvancedMC modules)	10	**20817-853**

Dimensions

Max. switch current	100 mA, 12 V_{DC}
Operating temperature	-20 °C ... +60 °C
Electrical lifespan	5×10^5
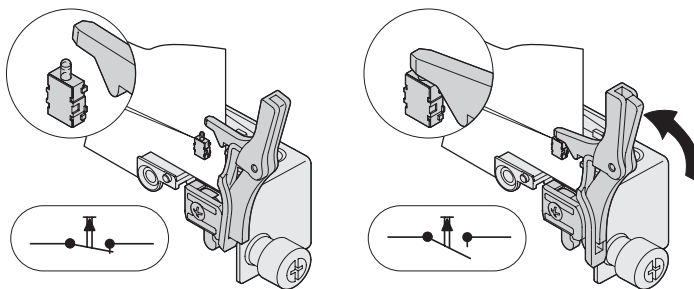
12807071

For further information www.schroff.biz/oneclic
oneClick code = Order no.

12807079

12907003

MicroTCA (Micro Telecommunications Computing Architecture)

MicroTCA.0 R1.0 is a modular standard for plugging AdvancedMC modules directly into a backplane. As well as standard systems and modifications, Schroff also offers all individual components for system building.

A so-called MicroTCA carrier hub (MCH) is needed to operate the AdvancedMC modules. In addition to the management function it also takes over the switch function.

The management includes temperature, voltage and fan monitoring. By remote diagnosis problems can be identified at an early stage and thus downtimes can be reduced.

Applications

Lower development costs and shorter time-to-market are the advantages of the MicroTCA standard compared to proprietary system solutions, as they can be found increasingly often in today's telecommunications.

Among others the advantages over the previous bus systems (VME, CompactPCI busses) are higher speed, smaller designs and larger flexibility.

MicroTCA is used in environments where faster data transfer rates are required and large data volumes must be processed in the shortest time, e.g. in telecommunications, automation, image processing, medical technology, defence systems etc.

Heat dissipation

MicroTCA systems can be cooled by push or pull cooling.
Push cooling: The fan is situated by the air inlet and pushes air through the system.
Pull cooling: The fan is situated by the air outlet and sucks air through the system.

The dimensions of the fans are such that the heat loss of up to 80 W per full-size AdvancedMC module (maximum 12 modules) can be safely dissipated.

Modular MicroTCA high speed systems

- **Large product range with regard to dimensions, number of slots, cooling designs, backplane topologies**

- **From simple subrack to integrated system**

- **Modifications to your requests**

PICMG

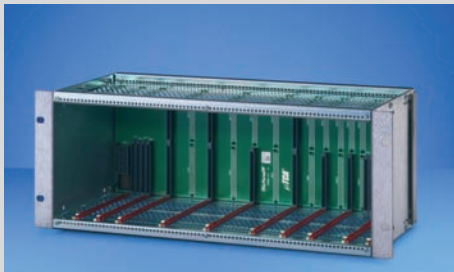**Open Modular Computing Specifications**

MicroTCA development systems

- For single and double full-size AdvancedMC modules

- Active fan cooling

- Backplane with Dual Star topology

- Power supply units

12806020

MicroTCA systems

- Different designs

- For single and double AdvancedMC modules

- Active fan cooling

- Backplanes with different topologies

- Power supply

12907002

MicroTCA subracks

- For single and double AdvancedMC modules

- Backplane with star topology

12806022

ServicePLUS (more details see page 82)

- configuration: Simple. Fast. To the ideal product.

- assembly: Assembled by professionals. Double benefit!

- modification: Small changes. Large impact.

- solution: Simple. Everything. From one source.

- support: Support. Solution. Availability.

- academy: Knowledge. Sharing. Partnerships.

- lifecycle: Bespoke service. For the entire life of the product.

www.schroff.biz/serviceplus/

30407004

Development systems, 6 U (9 single full-size) and 8 U (9 double full-size)

6 U system
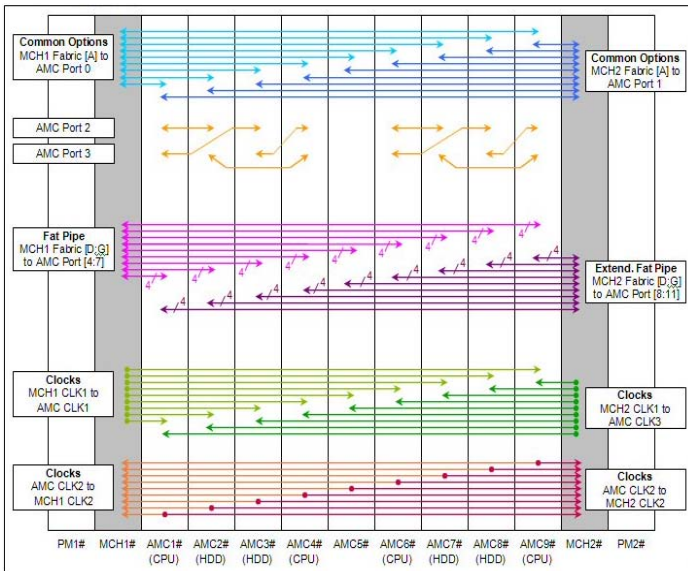

8 U system

Backplane topology

ServicePLUS see page 82

■ In accordance with PICMG MicroTCA.0 R1.0 Specification

■ Case system with handle (19" bracket available on request), 316 mm deep, RAL 9006, completely assembled and wired, assembly space for 2 power modules (9 HP) and 2 MCHs and 9 AdvancedMC modules, **2 heights**
  – 6 U, for 9 **single** full-size AdvancedMC modules
  – 8 U, for 9 **double** full-size AdvancedMC modules

■ Backplane, Dual Star connections for Gigabit Ethernet (GbE) and fat pipe/extended fat pipe, direct connections for the storage interface

■ Power supply units
  – 2 slots for MicroTCA power modules with up to 9 HP width or Schroff power input module
  – 2 power supply slots to accommodate Schroff plug-in power supplies, AC wide range input and DC output (12 V_{DC} or -48 V_{DC})

■ Active cooling
  – Hot-swap fan tray with three 12 V_{DC} fans, temperature dependent control available on request
  – Air circulation from front to rear
  – Air filter (exchangeable from front)
  – Optional fan control with NTC resistor (position selectable within system)

NEW

Order Information

Description	Backplane Slots	Qty/ PU	Order no.
Development system for 9 **single** full-size AdvancedMC modules	9 full-size, 2 x PM (9 HP), 2 x MCH	1	**11850-005**
Development system for 9 **double** full-size AdvancedMC modules	9 full-size, 2 x PM (9 HP), 2 x MCH	1	**11850-007**
Power supply 300 W, AC-DC (12 V) Input 85 ... 264 V_{AC}, output 12 V_{DC}/25A, 1 piece			**11098-287**
Power supply 300 W, AC-DC (-48 V_{DC}) Input 85 ... 264 V_{AC}, output -48 V_{DC}/6.25 A, 1 piece			**11098-288**
Connection cable Power supply, 12 V_{DC} output to power input module, length 260 mm, 1 piece			**23204-176**
Connection cable Power supply 12 V_{DC} output to power input module, length 550 mm, 1 piece			**23204-182**
Connection cable Power supply, -48 V_{DC} output to power input module, length 260 mm, 1 piece			**23204-177**
MicroTCA power input module, single full-size MicroTCA power input module, single full-size 6 HP, 1 piece see page 63			**23098-561**
Connection cable from power supply module (-12 V_{DC}) to ring cable eye M5, length 2 m, 1 pce			**23204-802**
Connection cable from power module (-48 V_{DC}) to ring cable eye M4, length 2 m, 1 pce			**23204-803**

■ Description MicroTCA backplane see page 55

■ Replacement parts (FRUs) see from page 66

■ User manual: Please enter order number under www.schroff.biz/oneclick/

MicroTCA backplanes for development systems

12607001

12806805

ServicePLUS see page 82

- ■ In accordance with PICMG MicroTCA.0 R1.0

- ■ Dual Star topology on ports 0/1 and ports 4 ... 7/8 ... 11

- ■ Direct connections on ports 2 and 3

- ■ Carrier FRU SEEPROM and carrier number 2x on rear side of backplane, connected to the MCHs via I^2C bus
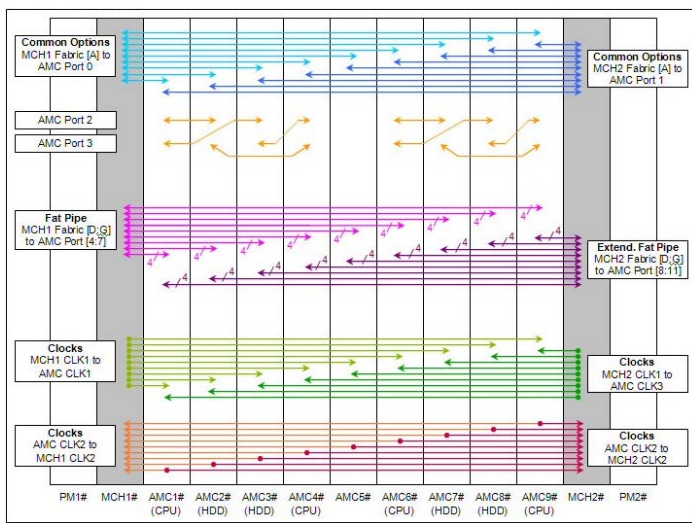
NEW

Delivery comprises

Item	Qty	Description
1	1	Backplane

Order Information

Slots AMC	Width mm	Height mm	Description	Order no.
9	425.0	169.9	9 full-size AdvancedMC slots, 2 MCH slots, 2 PM slots (9 HP)	**23005-419**

Dimensions

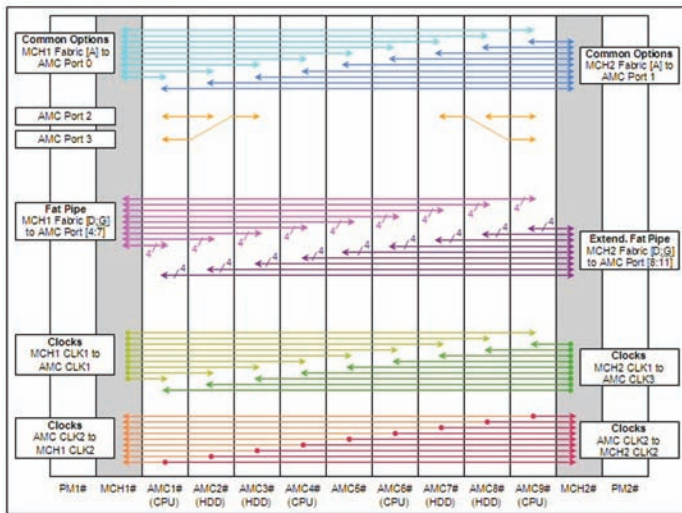|	
Slots	9 AdvancedMC single full-size slots, 2 redundant MicroTCA carrier hub (MCH) slots, 2 redundant power module (PM) slots 9 HP
IPMB	Radial IPMI from both MCH slots to all AdvancedMC slots; bused, redundant IPMB to the cooling unit (CU) and power module (PM) slots
Clock connections	CLK1: radial from MCH1 to all AdvancedMC slots CLK2: radial from each AdvancedMC slot to both MCH slots, incl. serial termination CLK3: radial from MCH2 to all AdvancedMC slots
Common options	AdvancedMC port 0 in star form to MCH1; AdvancedMC port 1 in star form to MCH2; AdvancedMC ports 2, 3 direct connection between the AMC slots
Data ports	Fat pipe ports 4 ... 7: radial connection from MCH1 to all AMC slots Extended fat pipe ports 8 ... 11: radial connections from MCH2 to all AdvancedMC slots

Note

- ■ User manual: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

6 U systems, for 9 single full-size AdvancedMC modules

12907002

12806805

Backplane topology

ServicePLUS see page 82
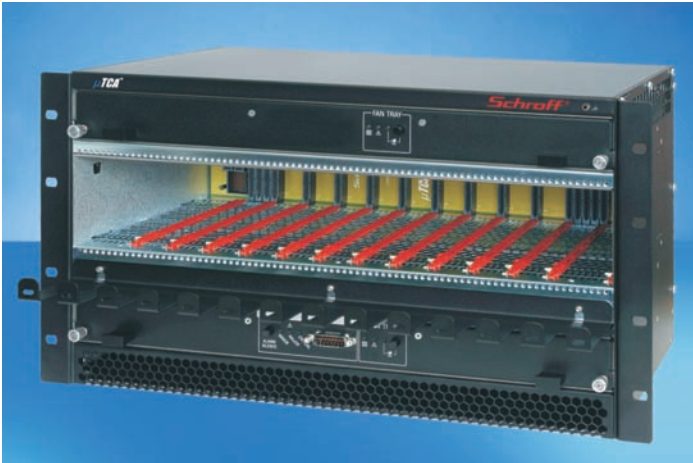
■ in accordance with PICMG MicroTCA.0 R1.0 Specification

■ 19" subrack system, 6 U, 197 mm deep, black, fully assembled and wired; cable channel;
  assembly space for
  – 9 single full-size modules
  – 2 power modules (9 HP)
  – 2 MCH single full-size slots

■ Backplane, dual star connection for GbE and fat pipe/extended fat pipe, direct connections for the storage interface

■ Power supply, 2 possibilities
  – MicroTCA power modules (up to 9 HP width)
  – Schroff power supply module (single full-size, 6 HP)

■ Active cooling
  – 2 frame-type fan plug-in units, insertable from front (push-pull cooling), each with cooling unit enhanced module management controller (CU EMMC); lower fan unit with interface and display for Telco alarms
  – Air circulation from the front upwards, to the sides and to the rear
  – Air filter (exchangeable from front)

NEW

Order Information

Description	Qty/PU	Order no.
MicroTCA system for 9 single full-size AdvancedMC modules	1	**10849-005**
MicroTCA power input module, single full-size 6 HP, 1 piece		**23098-561**

Note

■ For description of the power supply module see page 63

■ Replacement parts (FRUs) see from page 66
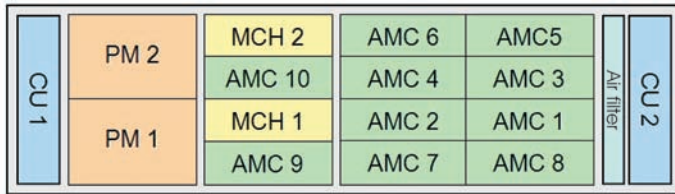
■ User manual: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

3 U systems, for 2 single and 4 double (8 single) full-size AdvancedMC modules
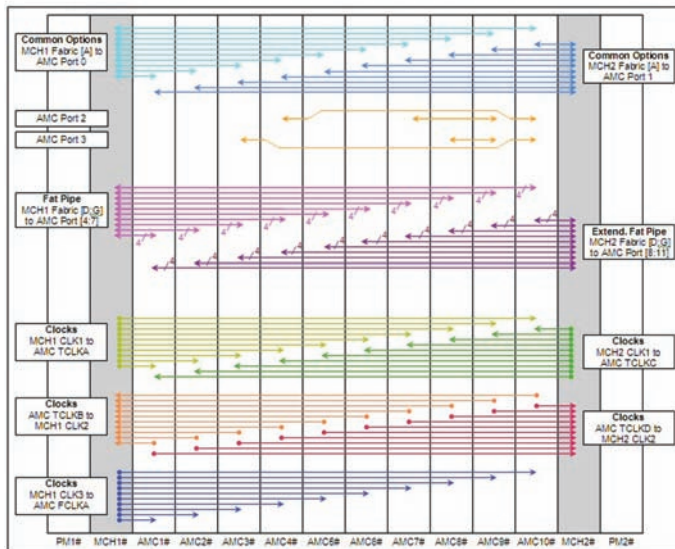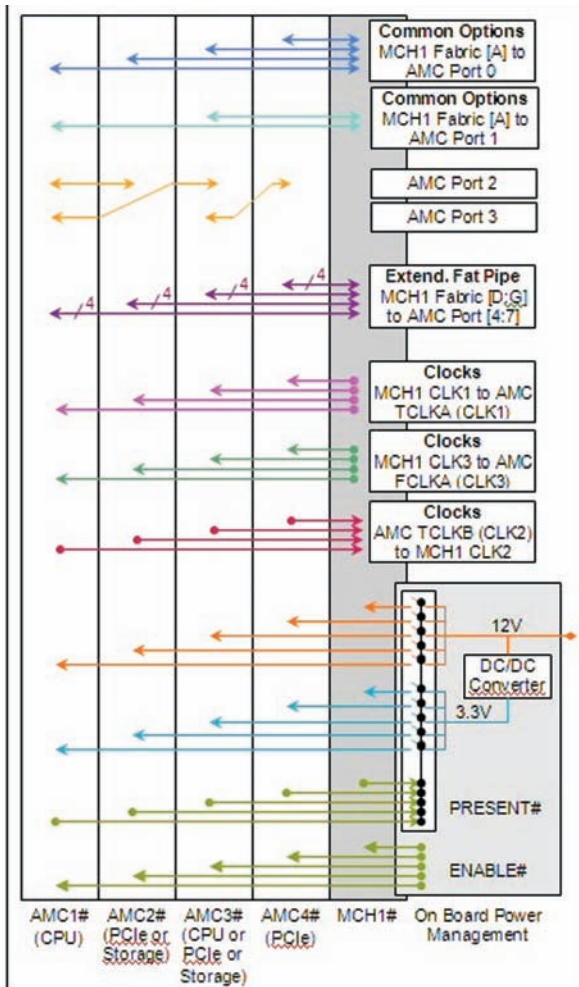

12907001

12907050

Slot allocation

12907051

Backplane topology

ServicePLUS see page 82

■ In accordance with PICMG MicroTCA.0 R1.0 Specification

■ 19" subrack system, 3 U, 215 mm deep, with horizontal board mounting, black, fully assembled and wired; slots see drawing; 3 board assembly spaces
  – On the left for 2 power modules of up to 12 HP width
  – In the centre for 2 MCHs and 2 single full-size AdvancedMC modules
  – On the right for 4 double full-size-modules or, with splitting kits supplied, 8 single full-size-modules

■ MicroTCA backplane
  – Dual star connection for GbE and fat pipe/extended fat pipe, direct connections for the storage interface

■ Power supply, 2 possibilities
  – MicroTCA power modules (up to 12 HP width)
  – Schroff power supply module (single full-size, 6 HP)

■ Active cooling
  – 2 frame-type fan plug-in units, insertable from front (push-pull cooling), each with cooling unit enhanced module management controller (CU EMMC)
  – Air circulation from right to left
  – Air filter (exchangeable from front)

NEW

Order Information

Description	Qty/PU	Order no.
MicroTCA system for 2 single and 4 double full-size AdvancedMC modules	1	**11850-011**
MicroTCA power input module, single full-size 6 HP, 1 piece		**23098-561**

Note

■ For description of the power supply module see page 63

■ Replacement parts (FRUs) see from page 66

■ User manual: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

Industrial cube for 4 single full-size AdvancedMC modules

12907011

Backplane topology

12907053

ServicePLUS see page 82

■ Conforms to PICMG MicroTCA.0 R1.0 Specification

■ Cube system for 4 single full-size modules and 1 MCH module, single full-size;
2 designs:
  – Subrack system, width 156.76 mm, height 150 mm, depth 250 mm
  – Case system (ratiopacPRO), width 175.85 mm, height 132.45 mm, depth 315.5 mm

■ Backplane, MicroTCA, star connection for GbE and fat pipe, direct connections for the storage interface

■ Open frame power supply, 150 W, mains/line connection on the rear with IEC connector, switch-off logic device for individual slots on the backplane

■ Active cooling
  – 2 fans
  – Air circulation for subrack upwards from below, for case system from below to rear

Order Information

Description	Backplane Slots	Qty/PU	Order no.
MicroTCA case system for 4 single full-size AdvancedMC modules	4 full-size, 1 x MCH	1	**21850-045**
MicroTCA subrack system for 4 single full-size AdvancedMC modules	4 full-size, 1 x MCH	1	**21850-046**

Note

■ User manual: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

19" subrack, for single or double AdvancedMC modules
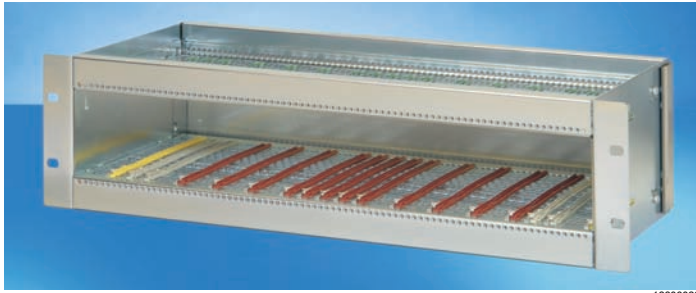
3 U
12806023
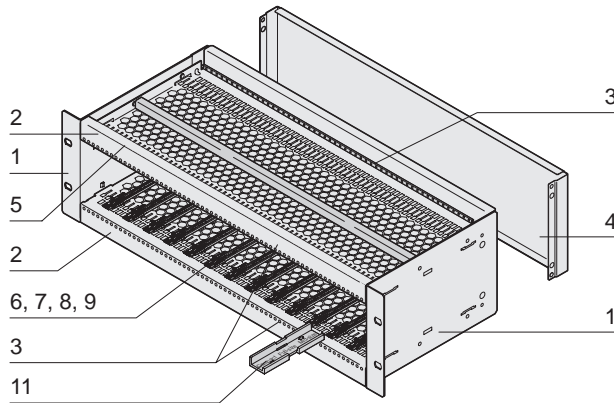
12807060
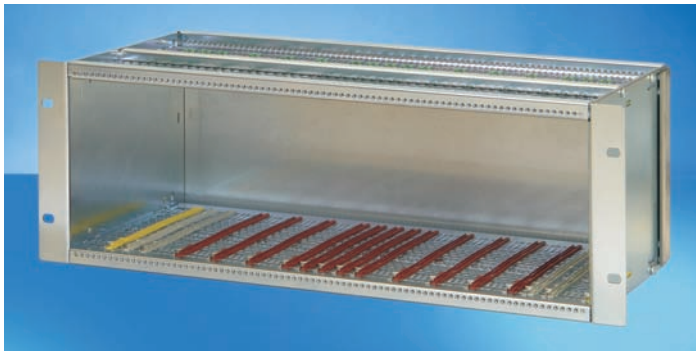
4 U
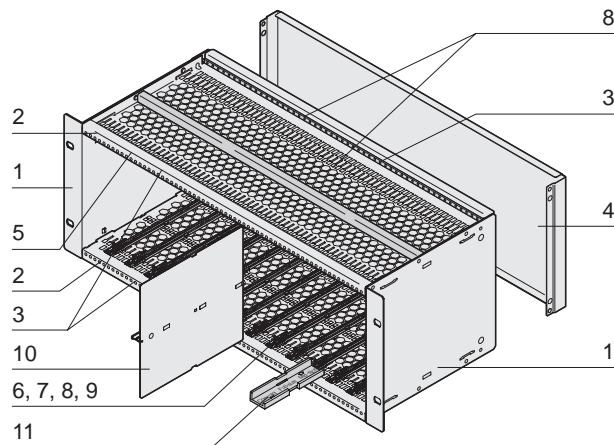12806022

12807061

ServicePLUS see page 82

■ In accordance with specifications
– PICMG MicroTCA.0 R1.0 RC2
– PICMG AMC.0 R2.0 RC1.2
– PICMG AMC.0 RC1.1

NEW

■ To accommodate compact, mid-size- and full-size AdvancedMC modules:
– 3 U subrack for single modules
– 4 U subrack for single and double modules with splitting kit

■ Guide rails can be assembled in HP increments (5.08 mm) in top cover and base plate; ESD clips integrated in upper guide rails

■ Top cover and base plate with reinforcement and front Al extrusion for threaded inserts

Delivery comprises (kit)

Item	Qty	Description
1	2	Side panel with 19" bracket, St, 1.5 mm, zinc-plated, with EMC textile gasket on the right
2	2	Cover plate; for top and bottom, St, 1 mm, zinc-plated; with reinforcement and front Al extrusion to push in the threaded insert; with EMC textile gasket at top
3	4	Threaded insert M3, St, zinc-plated
4	1	EMC rear hood
5	20	Guide rail, green, top, PBT UL 94 V-0; with ESD clip, stainless steel, assembled in guide rail
6	20	Guide rail, red, bottom, PBT UL 94 V-0; for AdvancedMC function modules
7	2	Guide rail, yellow, bottom, PBT UL 94 V-0; for power supplies
8	2	Guide rail grey, bottom, PBT UL 94 V-0; for first slot position of a 6 HP wide MicroTCA carrier hub
9	2	Guide rail with back stop, grey, bottom, PBT UL 94 V-0, for third slot position of a 6 HP wide MicroTCA carrier hub
10	5	Splitting kit incl. guide rail, for assembly of single modules (only for 4 U subrack)
11	1	Mounting aid for guide rails

Items 5 ... 11 enclosed loose

Order Information

Height U	Width HP	Depth mm	Qty/PU	Order no.
3	84	197	1	**20849-204**
4	84	197	1	**20849-205**
Additional splitting kits PU 5 pieces				**20849-115**
MicroTCA backplane for subrack 3 U, 2 + 2 + 12 slot, 1 piece				**23005-414**
MicroTCA backplane for subrack 4 U, 2 + 2 + 12 slot, 1 piece				**23005-415**

■ Technical data of backplane see page 60

■ Mounting rail for single backplane in double subrack see page 61

■ Further guide rails see page 62

■ CAD data: Please enter order number under www.schroff.biz/oneclick/
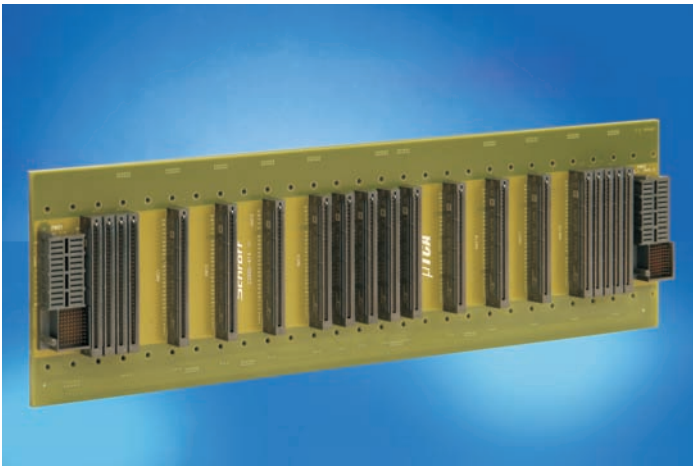
Illustration shows 3 U version

12606005

Topology

12907052

ServicePLUS see page 82

■ In accordance with PICMG MicroTCA.0 R1.0

NEW

Delivery comprises

Item	Qty	Description
1	1	Backplane

Order Information

Slots AMC	Width mm	Height U	Description	Order no.
12	425.0	3	8 full-size slots, 4 single compact slots, 2 MCH slots, 2 PM slots	**23005-414**
12	425.0	4	8 full-size slots, 4 double compact slots, 2 MCH slots, 2 PM slots	**23005-415**

Dimensions

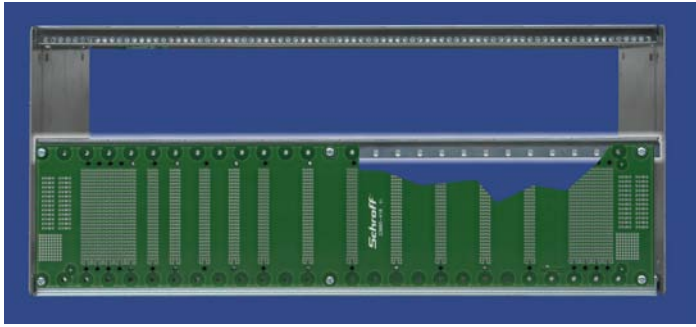|	Backplane 2 + 2 + 12
Slots	12 AdvancedMC slots, 8 single full-size and 4 single compact, 2 redundant MicroTCA carrier hub (MCH) slots, 2 redundant power module (PM) slots 6 HP
IPMB	Radial IPMB connections from both MCH slots to all AdvancedMCs, bused redundant IPMB connections between both MCH and both PM slots
Clock Connections	CLK1: radial from MCH 2 to all AdvancedMC slots CLK2: radial from each AdvancedMC slot to both MCH slots, incl. serial termination CLK3: same topology as fat pipe connections (ports 4 ... 7)
Common options	AdvancedMC port 0 in star form to MCH1; AdvancedMC port 1 in star form to MCH2
Fat pipe	Ports 4 ... 7 radial connections from MCH1 to AdvancedMC slots 2, 3, 5, 7, 10, 11, point-to-point connections between slots 1 and 4, 6 and 8, 9 and 12

Note

■ User manual: Please enter order number under www.schroff.biz/oneclick/

 For further information www.schroff.biz/oneclick
oneClick code = Order no.

Mounting rail for single backplane in double subrack

■ Is required when single backplanes are assembled in double subracks

■ Mounting rail with M3 thread in 3 U increments

■ Assembly by simply pushing into designated slots in side pane

NEW

12807009

Delivery comprises (Kit)

Item	Qty	Description
1	5	Mounting rail, St, 1.5 mm, zinc-plated, M3 thread in 3 HP increments

Order Information

Description	Order no.
Mounting rail for single backplane in double subrack	**20849-20**

Note

■ CAD data: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclic
oneClick code = Order no.
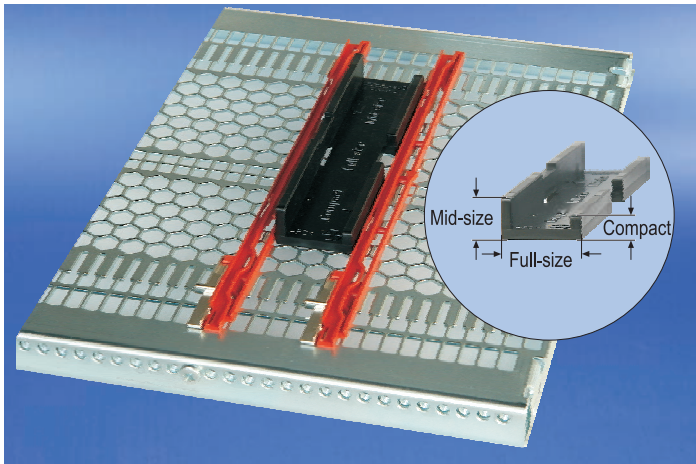
Mounting aid for guide rails

■ Mounting aid usable for all AdvancedMC module sizes
  – Compact
  – Mid-size
  – Full-size

Delivery comprises

Item	Qty	Description
1	1	Assembly aid, plastic, black

Order Information

Description	Order no.
Mounting aid for guide rails	**20849-124**

Note

■ CAD data: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclic
oneClick code = Order no.

12807018
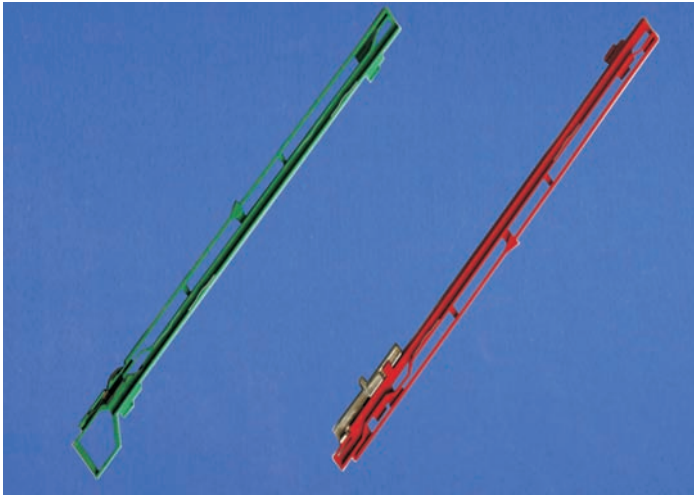
Upper guide rails (green), bottom guide rails (red)

12806010

Bottom guide rails, grey, for guide rails of 6 HP wide MicroTCA carrier hubs

12807011

12807059

■ Assembly in 1 U increments on cover or base plate (minimum distance between two guide rails is 3 HP)

■ Green guide rail, top, with ESD clip, for all modules

■ Red guide rail, bottom, for AdvancedMC function modules

■ Yellow guide rail, bottom, for power supplies

■ Grey guide rail, bottom, for MicroTCA carrier hubs (MCHs)
– First guide rail of a 6 HP MCH module (identification on guide rail: **1**)
– Third guide rail of a 6 HP MCH module with back stop, so that MCHs are not inserted incorrectly (indentification on guide rail: **3**)

Order Information

Description	Qty/PU	Order no.
Upper guide rail, green, with ESD clip	10	**20849-200**
Upper guide rail, green, with ESD clip	100	**20849-201**
Bottom guide rail, red, for AdvancedMC function modules	10	**20849-194**
Bottom guide rail, red, for AdvancedMC function modules	100	**20849-195**
Bottom guide rail, yellow, for power supplies	10	**20849-196**
Bottom guide rail, yellow, for power supplies	100	**20849-197**
Bottom guide rail, grey, for left guide rail of 6 HP wide MicroTCA carrier hubs (identification 3)	10	**20849-202**
Bottom guide rail, grey, for right hand guide rail of 6 HP wide MicroTCA carrier hubs (identification 1)	10	**20849-198**
Bottom guide rail, grey, for right hand guide rail of 6 HP wide MicroTCA carrier hubs (identification 1)	100	**20849-199**

Note
■ CAD data: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

MicroTCA power input module, single full-size

12807001

- ■ Input of +12 V_{DC} supply voltage from external source via D-Sub connector (front panel) to 16 x 12 V_{DC} outputs of MicroTCA backplane

- ■ Generation of +3.3 V_{DC} management voltage, 5 A max. and distribution to 16 outputs

- ■ Is inserted into the power module slot position instead of a MicroTCA power module (single full-size), connector and form factor compatible

- ■ Hot-swap voltage cut-off of the individual outputs via "present" signal of AdvancedMC boards

- ■ Protection against overvoltage and polarity reversal of input voltage

NEW

12806801
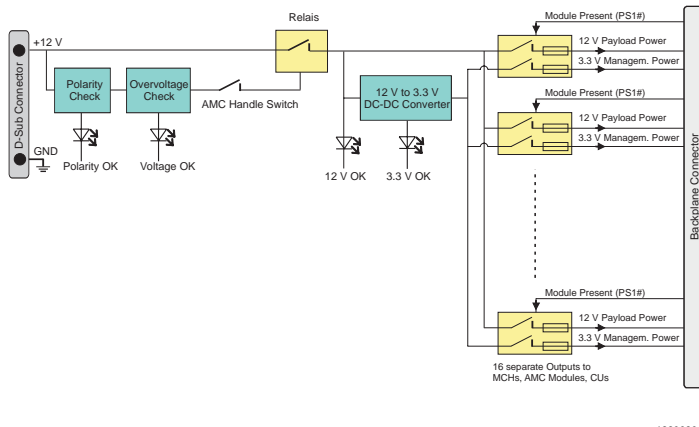
Order Information

Description	Order no.
MicroTCA power input module, single full-size	**23098-561**
Connection cable Power supply, 12 V_{DC} output to power input module, length 260 mm, 1 piece	**23204-176**
Connection cable Power supply 12 V_{DC} output to power input module, length 550 mm, 1 piece	**23204-182**
Connection cable from power supply module (-12 V_{DC}) to ring cable eye M5, length 2 m, 1 pce	**23204-802**

Note

- ■ Both connecting cables are specifically for use in developing systems
- ■ User manual: Please enter order number under www.schroff.biz/oneclick/

ServicePLUS see page 82

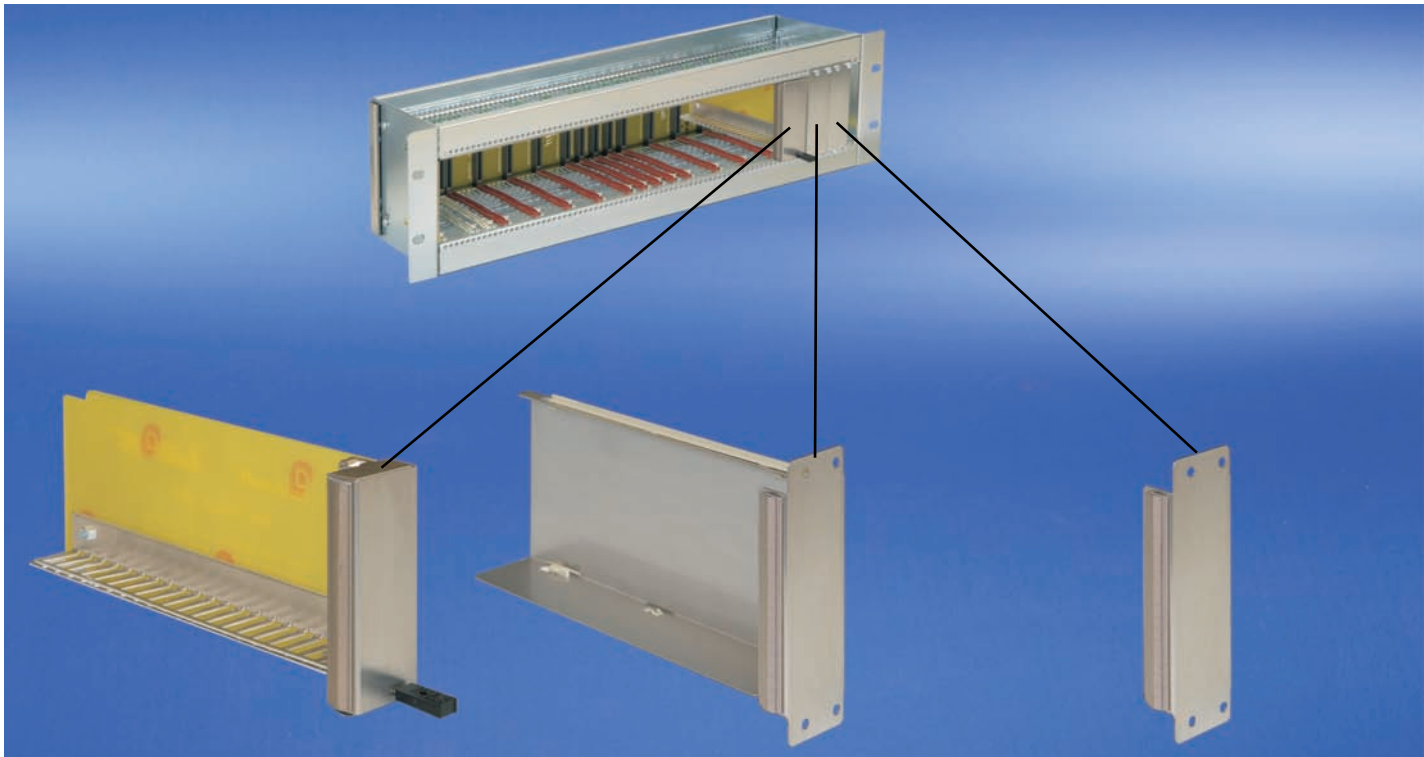**For further information www.schroff.biz/oneclick**
oneClick code = Order no.

MicroTCA subracks and systems must always be shielded
in accordance with the standard.
Therefore, all slots, even if unused, must be covered.
Schroff offers three possibilities to cover the front EMC-compliantly.

12907008

AdvancedMC filler panel for adjustable air throughput

■ Insertion/extraction mechanism conforms to AdvancedMC Specification; inserted into guide rails

■ Optional air-circulation baffle allows adjustment of air througput from 60 ... 80 %

■ Same design as AdvancedMC modules

■ Description see page72

MicroTCA filler panel with fixed air baffle

■ Can be screwed on; inserted into guide rails

■ With air bafffle

■ Description see page 65

Front panel

■ Can be screwed on

■ Without air baffle

■ Description see page 65

MicroTCA filler modules with air bafffle

Single full-size

12807013

ServicePLUS see page 82

■ Must be pushed into guide rails; can be screwed on

■ With air bafffle

Delivery comprises (assembled)

Item	Qty	Description
1	1	Front panel with side panel and air baffle, stainless steel, 0.6 mm
2	1	Lateral EMC profile gasketing, core: foam, sleeve: textile cladding with CuNi coating
3	2	Guide rail, PBT, UL 94 V-0, grey
4	1	Assembly kit

Order Information

Description	Order no.
MicroTCA filler module single compact	**20849-187**
MicroTCA filler module single mid-size	**20849-186**
MicroTCA filler module single full-size	**20849-185**
MicroTCA filler module double compact	**20849-184**
MicroTCA filler module double full-size	**20849-183**
MicroTCA filler module double full-size	**20849-182**

Note

■ Not suitable with splitting kit

■ CAD data: Please enter order number under www.schroff.biz/oneclick/

MicroTCA front panel

Single m0id-size

12807014

ServicePLUS see page 82

■ Must be screwed on

Delivery comprises (assembled)

Item	Qty	Description
1	1	Front panel, stainless steel, 0.6 mm
2	1	Lateral EMC profile gasketing, core: foam, sleeve: textile cladding with CuNi coating
3	1	Assembly kit

Order Information

Description	Qty/PU	Order no.
MicroTCA filler module single, 2 HP	5	**20849-213**
MicroTCA filler module single, 3 HP	5	**20849-215**
MicroTCA filler module single, 4 HP	5	**20849-217**
MicroTCA filler module single, 6 HP	5	**20849-219**
MicroTCA filler module double, 2 HP	5	**20849-214**
MicroTCA filler module double, 3 HP	5	**20849-216**
MicroTCA filler module double, 4 HP	5	**20849-218**
MicroTCA filler module double, 6 HP	5	**20849-220**

Note

■ Not suitable with splitting kit

■ CAD data: Please enter order number under www.schroff.biz/oneclick/

Field replaceable units (FRUs) designate system components that can be exchanged on-site, thus reducing the downtime of systems to a minimum.

Schroff offers various FRU components for MicroTCA systems:

- Air-cooling units

- Air filter

Fan units for 6 and 8 U development systems

12907012

- Plug-in fan unit with 3 axial fans (170 m^3/h each), 12 V$_{DC}$, temperature controllable with NTC

- Air circulation upwards from the front

Order Information

Description	Description	Qty/PU	Order no.
Air-cooling units	for development systems (11850-005,11850-007)	1	**21850-035**

Note
- User manual: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

Frame-type fan plug-in units for 3 U systems, without Telco alarm panel

12907013

- Fan tray with 1 axial fan (225 m^3/h), 12 V$_{DC}$

- With cooling unit enhanced module management controller (CU EMMC)

Order Information

Description	Description	Qty/PU	Order no.
Air-cooling units	for 3 U MicroTCA system (11850-003)	1	**21850-038**

Note
- User manual: Please enter order number under www.schroff.biz/oneclick/

For further information www.schroff.biz/oneclick
oneClick code = Order no.

Frame-type fan plug-in units for 6 U systems, without Telco alarm panel

■ Fan tray with 2 axial fans (each 460 m^3/h), 12 V_{DC}

■ With cooling unit enhanced module management controller (CU EMMC)

Order Information

Description	Description	Qty/PU	Order no.
Air-cooling units	for 6 U MicroTCA system (10849-005)	1	**21850-036**

Note
■ User manual: Please enter order number under www.schroff.biz/oneclick/

12907006

Frame-type fan plug-in units for 6 U system with Telco alarm panel

■ Fan tray with 2 axial fans (each 460 m^3/h), 12 V_{DC}

■ With cooling unit enhanced module management controller (CU EMMC)

■ With Telco alarm interface, includes 3 LEDs, a Telco alarm connector (DB15) and a Telco alarm silence push-button

Order Information

Description	Description	Qty/PU	Order no.
Air-cooling units	for 6 U MicroTCA system (10849-005)	1	**21850-037**

Note
■ User manual: Please enter order number under www.schroff.biz/oneclick/
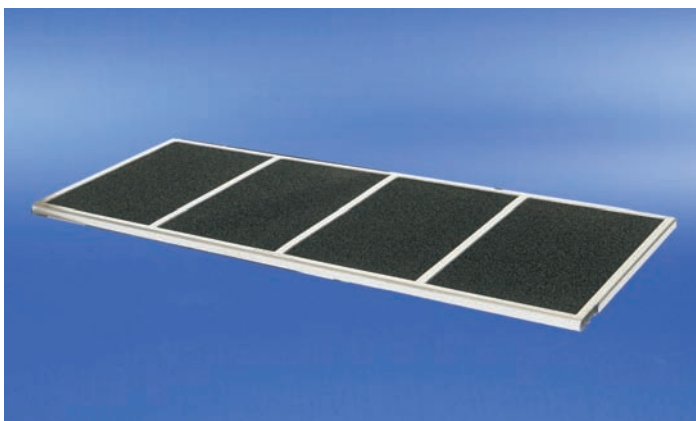
12907007

Air filter

■ Material: polyurethane UL 94 HF1

■ 45 ppi, 80 % dust reduction under NEBS GR-78 core standard

Order Information

Description	Description	Qty/PU	Order no.
Air filter	for 3 U MicroTCA system (11850-003)	1	**21850-034**
Air filter	for development systems and 6 U MicroTCA systems (10849-005, 11850-005, 11850-007)	1	**21850-033**

Note
■ CAD data: Please enter order number under www.schroff.biz/oneclick/

12907005
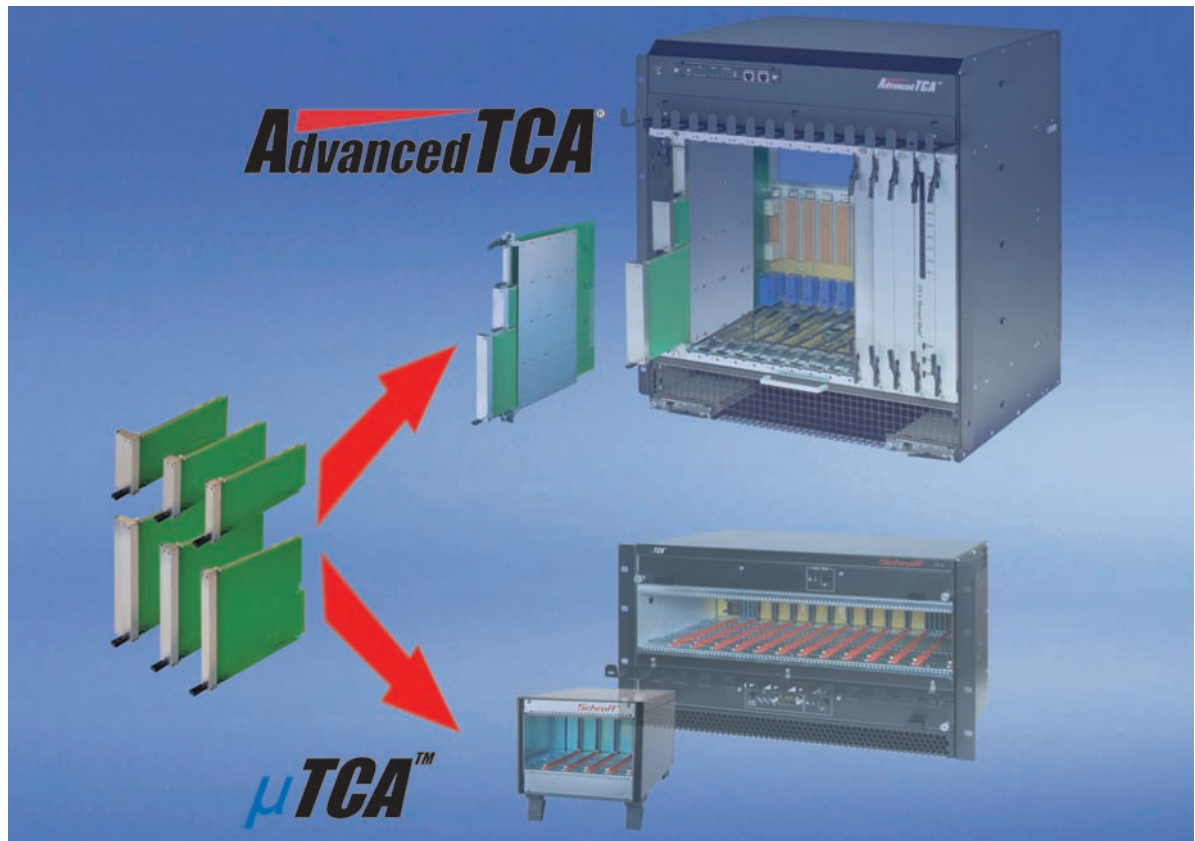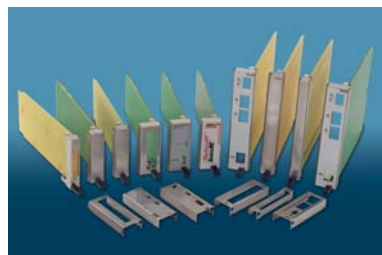
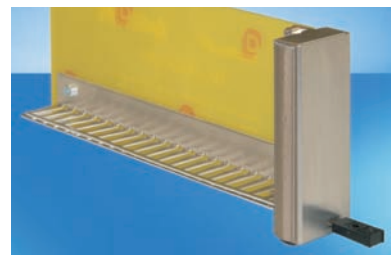12806029

12806024

AdvancedMC modules adapted to
your specifications

■ Cut-outs

■ Finish

■ Printing

■ Assembly

12805005

Handle with interlocking
mechanism

12807012

Filler module with air baffle
(air throughput 60 ... 80 %)

AdvancedMC modules mechanics

■ **Front panel with interlocking mechanism for AdvancedMC carriers and MicroTCA systems**

■ **AdvancedMC module dimensions**
  – **2 heights (single and double)**
  – **3 widths (compact, mid-size and full-size)**

■ **Filler modules with adjustable air inlet**

■ **Standard versions from stock**

■ **Cut-outs, printing, finish and assembly to your specifications**
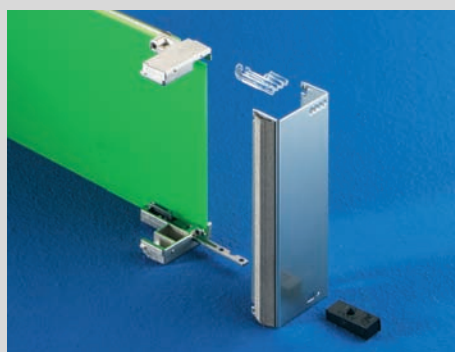
AdvancedMC module mechanics

■ Front panel with handle, EMC shielded

■ Module interlocking without screws

■ Designed for insertion/extraction mechanism conforming to AdvancedMC Standard for microswitch activation

■ For PICMG® AMC.0 RC1.1 and AMC.0 R2.0 RC1.2

■ Optional microswitch

■ Includes light pipe for standard LEDs

12805006

AdvancedMC filler modules

■ Front panel with handle, printed board and air baffle for compact, mid-size and full-size AdvancedMC modules

■ Air baffles to adjust air resistance where a slot is not used
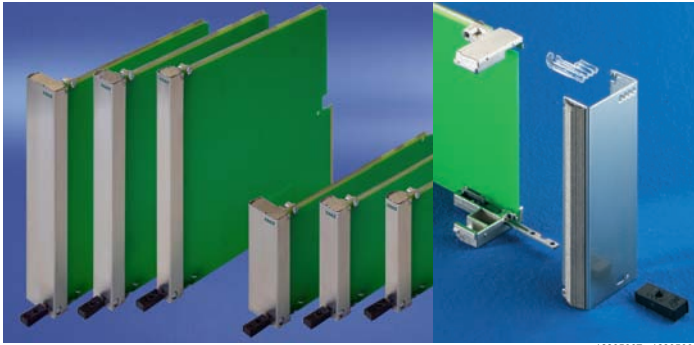
■ Air throughput adjustable 60 ... 80 %

12807012

ServicePLUS (more details see page 82)

■ assembly: Assembled by professionals. Double benefit!

■ modification: Small changes. Large impact.

■ solution: Simple. Everything. From one source.

■ express: When fast has to be faster.

www.schroff.biz/serviceplus/ 30407004

AdvancedMC module mechanics
## PIGMG® AMC.0 RC1.1

12805007 12805006

■ Kit, shielded

■ Interlocking of modules without screws

■ For conventional, cutaway and hybrid carrier

■ Insertion/extraction mechanics in accordance with AdvancedMC Standard

■ Insertion/extraction mechanics designed for microswitch operation hot-swap)

■ Inclusive of light pipe
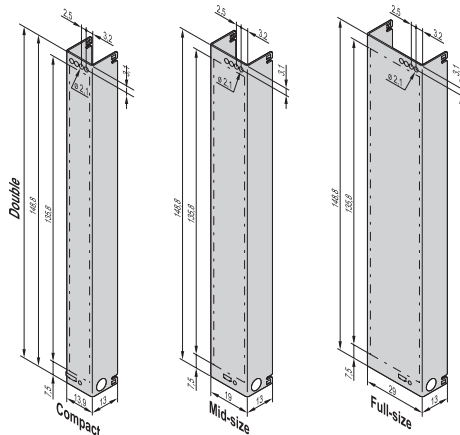
Delivery comprises (kit)

Item	Qty	Description
1	1	U-form front panel, stainless steel, 0.6 mm
2	1	Holder for light pipe and board bracket, Zn die-cast, nickel-plated
3	1	Light Pipe, PC, UL 94 V-0
4	1	Standard insertion/extraction mechanics, with microswitch operation and board bracket
5+6	1	Handle, PC, UL 94 V-0, black
7	1	Lateral EMC gasketing, core: foam, sleeve: textile cladding with CuNi-coating
8	1	EMC gasketing at bottom, core: foam, sleeve: textile cladding with CuNi-coating
9	1	Assembly kit

12805061
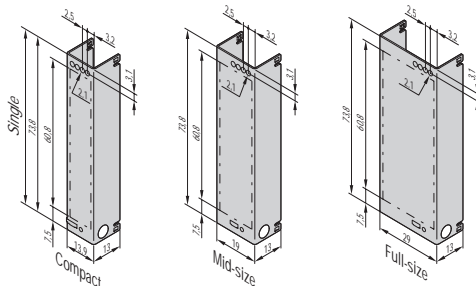
Order Information

Description	Order no.
AdvancedMC module mechanics single compact, 3 HP	**20849-002**
AdvancedMC module mechanics single mid-size, 4 HP	**20849-101**
AdvancedMC module mechanics single full-size, 6 HP	**20849-004**
AdvancedMC module mechanics double compact, 3 HP	**20849-003**
AdvancedMC module mechanics double mid-size, 4 HP	**20849-104**
AdvancedMC module mechanics double full-size, 6 HP	**20849-005**
Microswitch for AdvancedMC modules for soldering (SMD), PU 10 pieces	**20849-209**

Note

12805080

■ Filler modules (filler panels) see page 72

■ Description microswitch for AdvancedMC modules see page 73

■ Schroff offers an extensive modification service via the Front Panel Service, including customized cut-outs, foils and silk-screen printing, www.schroff.biz/fpe
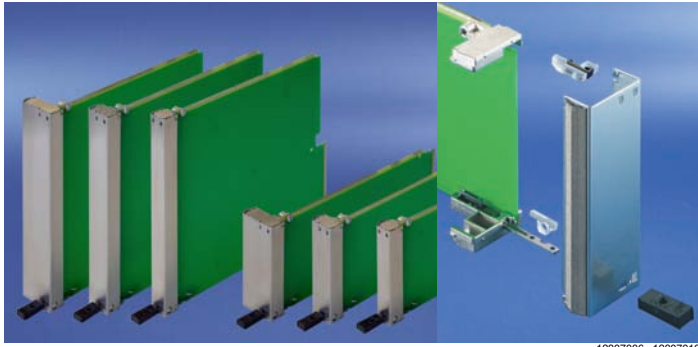
FRONT PANEL
FAST TRACK

For further information www.schroff.biz/oneclick oneClick code = Order no.

Single AdvancedMC modules

Double AdvancedMC modules

12806050

ServicePLUS see page 82

AdvancedMC module mechanics PICMG®
AMC.0 R2.0 RC1.2

12807006 12807019

- Kit, shielded

- Interlocking of modules without screws

- For conventional, cutaway and hybrid carrier

- Insertion/extraction mechanics in accordance with AdvancedMC Specification

- Insertion/extraction mechanics designed for microswitch operation (hot-swap)

- Inclusive of light pipes

NEW
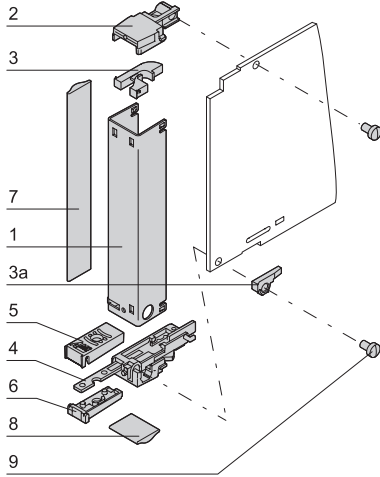
Delivery comprises ((kit))

| Item	Qty	Description
1	1	U-form front panel, stainless steel, 0.6 mm
2	1	Holder for light pipe at top and board bracket, Zn die-cast, nickel-plated
3	1	Upper light pipe, PC, UL 94 V-0
3a	1	Bottom light pipe, PC, UL 94 V-0
4	1	Standard insertion/extraction mechanics, with microswitch operation and board bracket
5 + 6	1	Handle, PC, UL 94 V-0, black
7	1	Lateral EMC gasketing, core: foam, sleeve: textile cladding with CuNi-coating
8	1	Bottom EMC gasketing, core: foam, sleeve: textile cladding with CuNi-coating
9	1	Assembly kit

12806059

Single AdvancedMC modules

12806057

Double AdvancedMC modules

12806055

ServicePLUS see page 82
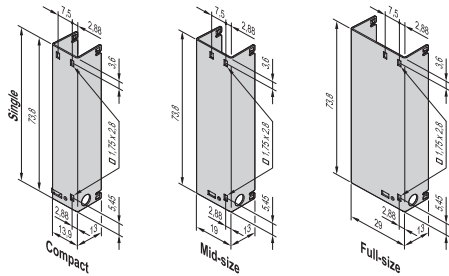
Order Information

Description	Order no.
AdvancedMC module mechanics single compact, 3 HP	**20849-127**
AdvancedMC module mechanics single mid-size, 4 HP	**20849-128**
AdvancedMC module mechanics single full-size, 6 HP	**20849-129**
AdvancedMC module mechanics double compact, 3 HP	**20849-130**
AdvancedMC module mechanics double mid-size, 4 HP	**20849-131**
AdvancedMC module mechanics double full-size, 6 HP	**20849-132**
Microswitch for AdvancedMC modules normally open, for soldering (SMD), PU 10 pieces	**20849-209**
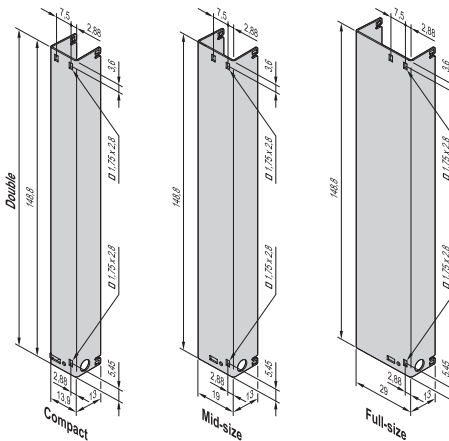
Note

- Filler modules (filler panels) see page 72
- Microswitch for AdvancedMC modules see page 73
- Schroff offers an extensive modification service via the Front Panel Service, including customized cut-outs, foils and silk-screen printing, www.schroff.biz/fpe

FRONT PANEL
FAST TRACK

For further information www.schroff.biz/oneclick
oneClick code = Order no.

AdvancedMC filler modules (filler panels)

Filler module single, full-size with air baffle

12807012

1

12805050

ServicePLUS see page 82

■ For conventional, cutaway and hybrid carrier

■ Insertion/extraction mechanism in accordance with AdvancedMC Specification; is pushed into guide rails

■ Same design as AdvancedMC modules

■ By using an air baffle the air through-put can be adjusted from 60 ... 80 % (please order separately)

Delivery comprises (assembled)

Item	Qty	Description
1	1	**AdvancedMC filler module, consisting of**
	1	U-form front panel, stainless steel, 0.6 mm
	1	Printed board bracket, Zn die-cast, nickel-plated
	1	Printed circuit board
	1	Insertion/extraction mechanics and board bracket
	1	Handle, plastic, PC, UL 94 V-0, black
	1	Lateral EMC profile gasketing, core: foam, sleeve: textile cladding with CuNi-coating
	1	Bottom EMC profile gasketing, core: foam, sleeve: textile cladding with CuNi-coating
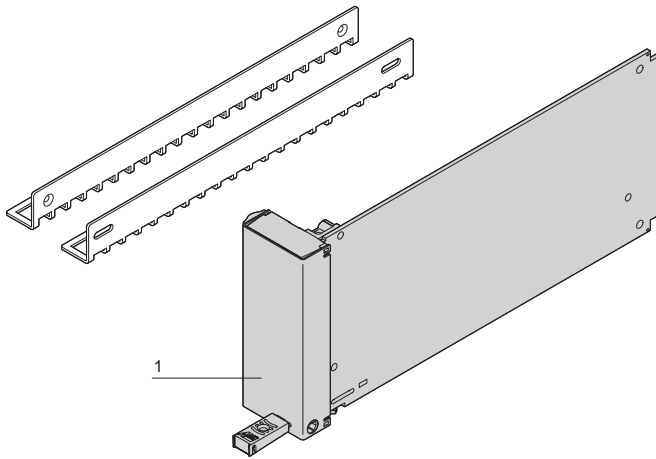
Order Information

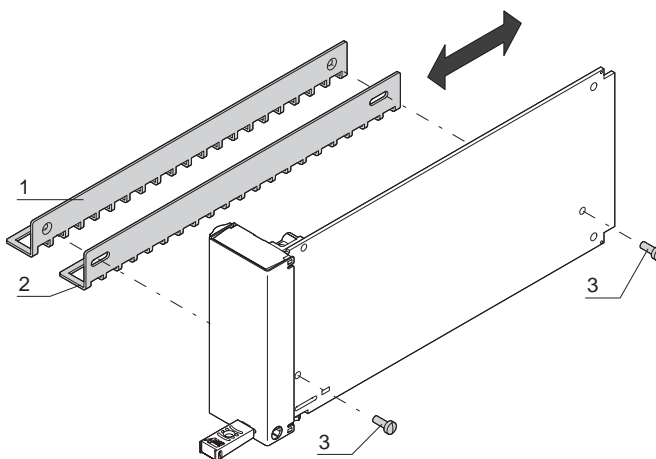| Description	Order no.
AdvancedMC filler module single compact	**20849-022**
AdvancedMC filler module single mid-size	**20849-106**
AdvancedMC filler module single full-size	**20849-024**
AdvancedMC filler module double compact	**20849-023**
AdvancedMC filler module double mid-size	**20849-107**
AdvancedMC filler module double full-size	**20849-025**

Note
■ Front panel dimensions see page 70
■ Please order air baffle separately, see page 72

Air baffle for AdvancedMC filler modules

1
2
3
3

12805051

ServicePLUS see page 82

■ Air throughput adjustable between 60 ... 80 %

■ Retrofittable

Delivery comprises

Item	Qty	Description
1	1	Metal sheet with perforation, Al
2	1	Sliding metal sheet with perforation, Al
3	1	Assembly kit

Order Information

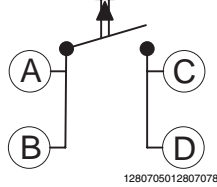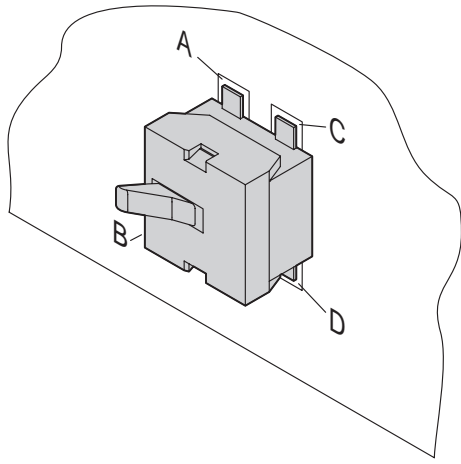| Description	Qty/PU	Order no.
Air baffle for AdvancedMC filler module compact	10	**20849-016**
Air baffle for AdvancedMC filler module mid-size and full-size	10	**20849-017**
Air baffle for AdvancedMC filler module full-size, cutaway printed boards	10	**20849-018**

Microswitch for AdvancedMC modules

1280705012807078

■ Microswitch for soldering (SMD)

Order Information

Description	Qty/PU	Order no.
Microswitch for AdvancedMC module	10	**20849-20**...

Dimensions

Max. switch current	1 mA, 5 V_{DC}
Operating temperature	-15 °C ... +70 °C
Electrical lifespan	10^5

For further information www.schroff.biz/oneclic...
oneClick code = Order no.

"normally open"
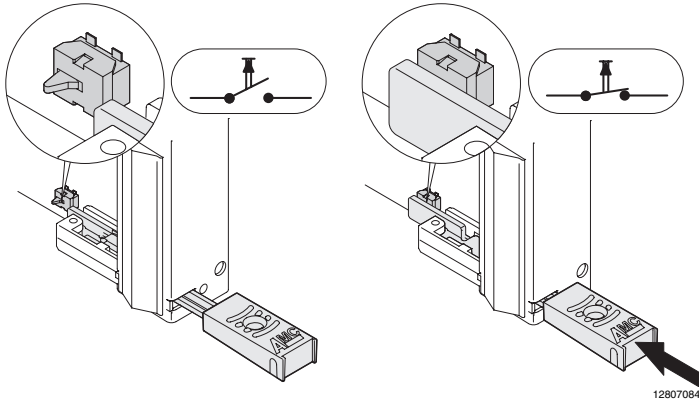
12807084

01007021

The compact construction of AdvancedTCA and MicroTCA systems and the immense performance of the AdvancedMC modules place high demands on the cooling system.

The heat loss of an AdvancedTCA system can exceed 3 kW and that of a MicroTCA system can be up to 1 kW. Multiple systems may be fitted within one cabinet. For this situation we offer a complete cabinet design with integrated ait/water heat exchanger.

01005009

01005081

01005081

Protection between electronics and water
For safety reasons the air/water heat exchanger is contained within its own protective housing. This ensures that no water comes into contact with the electronics. The water supply is from the bottom.
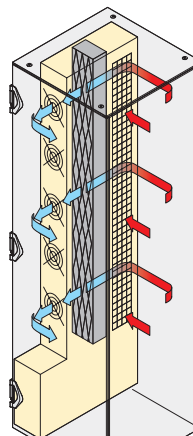
Principle of operation
The warm air is sucked from the rear and drawn through the air/water heat exchanger. In the exchanger the heat is transferred to the water. The cooled air is returned to the electronics systems from the front via powerful temperature-controlled fans.

Control and adjustment
Electronic monitoring unit with display and interfaces for communication with the AdvancedTCA shelf manager. Interfaces for cabinet monitoring and optional Ethernet gateway.

Effective cooling with air/water heat exchanger

- ■ **A well thought-out mechanical solution avoids direct contact between electronics and water**

- ■ **The water dissipates the heat without warming the cabinet's surroundings**

- ■ **Optimal system adjustment and safety via built-in alarm and communications interfaces**

- ■ **Individual parametrisation results in low energy consumption**

01105019

VARISTAR LHX 20 for AdvancedTCA applications

- ■ Cooling capacity of up to 20 kW

- ■ Air flow capacity 1000 ... 3000 m^3/h, temperature controlled

- ■ Air discharge temperature adjustable in range from 18 to 30 °C

- ■ Condensation control with built-in drop collector

- ■ Uniform air dissipation over whole cabinet height

- ■ Temperature regulation through water and air circuit

- ■ Low noise level of 50 dB(A)

Special solutions available on request

- ■ Mounting of heat exchanger on right hand side

- ■ Other cabinet dimensions (e. g. 1200 mm depth)

- ■ Side-by-side mounting solutions

- ■ Other cooling capacities

- ■ Electronic door opening

- ■ Special colours

www.schroff.biz/serviceplus/   30407004

ServicePLUS (more details see page 82)

- ■ Configuration: Simple. Fast to the ideal product.

- ■ assembly: Assembled by professionals. Double benefit!

- ■ modification: Small changes. Large impact.

- ■ solution: Simple. Fast. From one source.

- ■ support: Support. Solution. Availability.

- ■ academy: Knowledge. Sharing. Partnerships.

- ■ life cycle: Bespoke service. For the entire life of the product.

VARISTAR LHX 20 for Advanced TCA

01005019

- ■ Cabinet IP 55, RAL 7021 with air/water heat exchanger

- ■ Assembly dimensions in alignment with those of AdvancedTCA subracks (cabinet depth 800 mm)

- ■ Air/water heat exchanger 20 kW, voltage supply 48 V_{DC} or 230 V_{AC}, assembled on the left (assembly on the right possible)

- ■ Max. static load-carrying of 19" plane: 800 kg

Delivery comprises (completely assembled and GND/earthed)

item	Qty	Description
1	1	Welded basic frame, St profile, zinc-plated, RAL 7021, IP 55 with sealing all around
2	1	Flat top cover, St, RAL 7021
3	1	Front door glazed, RAL 7021, security glass 6 mm, 180° hinge, 4 point locking, lever handle for optional DIN profile half cylinder
4	1	Rear door, St, RAL 7021, 180° hinge, 4 point locking, lever handle for optional DIN profile half cylinder
5	2	Side panel, screw-fixed, St, RAL 7021
6	1	Base plate, St, RAL 7021, cable ducting at rear, water connection at front, connections can be sealed with sliding covers
7	1	Base/plinth 100 mm, St, RAL 7021, removable trims, integrated feet
8	4	19" panel/slide mount with EIA cut-outs, St, RAL 7021, 175 mm recessed at front, 500 mm distance between front and rear 19" plane
9	2	Support rail for assembly of air/water heat exchanger and 19" panel/slide mounts, St, RAL 7021
10	4	Air baffle, St, RAL 7021
11	1	Air baffle for optimised airflow, St, RAL 7021
12	1	Air/water heat exchanger 20 kW, RAL 7021 V_{AC}, assembled on the left (assembly on the right possible)
13	1	User manual
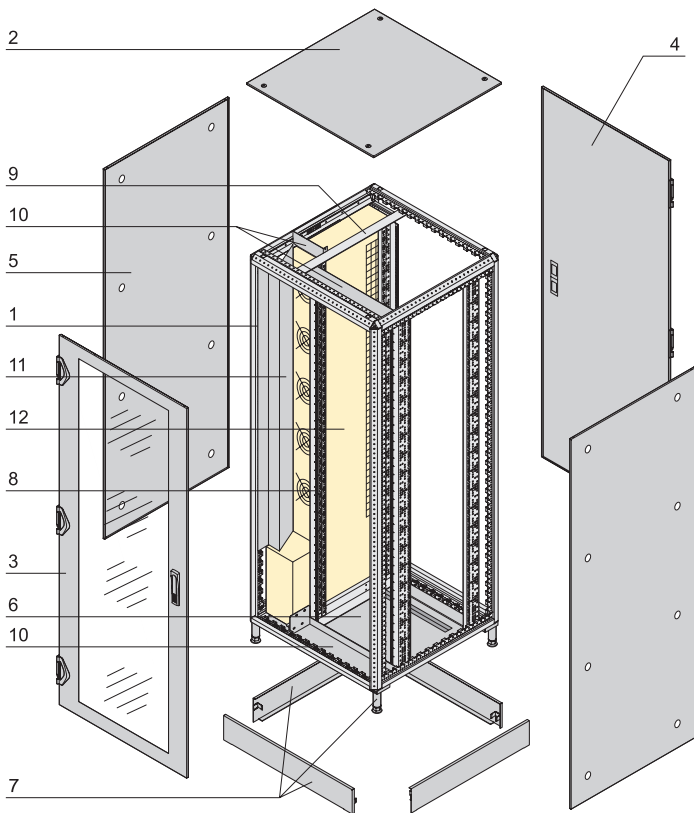
Order Information

Height U	Height H mm	Width W mm	Depth D mm	Description	Order no.
42	2100	800	800	230 V_{AC}	**10130-010**
42	2100	800	800	48 V_{DC}	**10130-011**
DIN profile half cylinder, common locking (1 key fits into all locks), incl. 2 keys					**25127-995**
Lifting eye PU 4 pieces					**23130-072**
Ethernet gateway for LHX 20 1 piece					**60130-440**

Note

- ■ Total weight 266 kg

- ■ Further dimensions and versions available on request

- ■ Technical data air/water heat exchanger see page 77

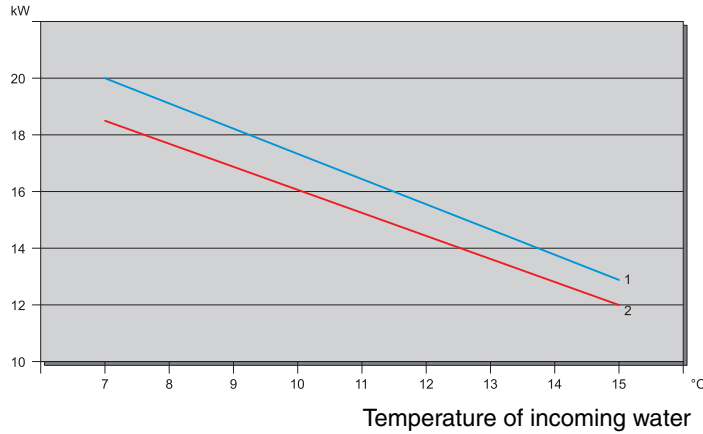- ■ For a description of the Ethernet gateway see page 78

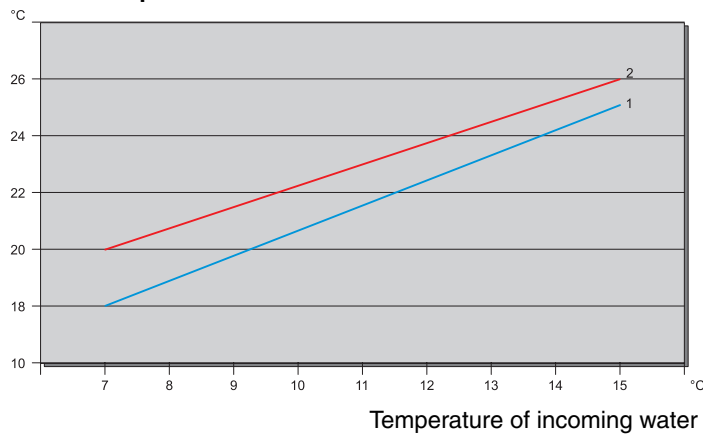**For further information www.schroff.biz/oneclick**
oneClick code = Order no.

01005091

ServicePLUS see page 82

Technical data LHX20
(only air/water heat exchanger)

Usable cooling capacity[*]

kW

Temperature of incoming water

Air exit temperature [*]

°C

Temperature of incoming water

01005093 01005094

*) at constant incoming air temperature of 40 °C

1) at 2.8 m^3/h water

2) at 1.55 m^3/h water

Dimensions LHX 20

Cooling capacity	
Usable cooling capacity	**up to 20 KW**
Adjustment range air outlet temperature	18 ... 30 °C (in 0.1 °C increments)
Max. offset	± 2 K

Water circuit	
Cooling medium [1]	Water
Water inlet temperature[2]	6 ... 15 °C
Water flow volume	up to 2.8 m3/h
Static pressure loss in device at 1.55 m3/h	0.5 bar
Water conduit	Copper
Water connection inlet/outlet	Rp 1"
Condensat drain connection	Rp $^1/_2$"

Air circuit	
Airflow volume, temperature dependently controlled	1000 .... 3000 m^3/h
Air outlet LHX 20 (adjustable)	18 .... 30° C

Electrical data AC	
Supply voltage (single phase mains/line)	230 V$_{AC}$ (50/60 Hz)
Max. current consumption	4.3 A
Max. power consumption	700 W
Apparent output at full load	990 VA
Pre-fuse	10 A

Electrical data DC	
Supply voltage	48 V$_{DC}$
Max. current consumption	13 A
Max. power consumption	624 W
Pre-fuse	16 A

Interface	
ST bus (RJ 45)	Connection possibility for external operation and digital display
RS 232 (SUB D 9-pin)	ASCII protocol, all operational values and status reports, such as temperature, humidity levels fan operation times
Digital input/output (SUB-D 25-pin)	External on/off, alarm outputs and warning signals

General Data	
Type of protection cabinet	IP 55
Ambient temperature at transport	−25 ... 70 °C
Ambient temperature outside of cabinet (during operation)	5 ... 70 °C
Noise level (closed cabinet) at 80 % fan capacity	50.7 dB(A)
Relative humidity level	5 ... 95 %
Weight	78.5 kg (82 kg with water)

1) For an optimal operation of the air/water heat exchanger the demands on water quality have to be fulfilled (VDE 3803, please see user manual)

2) For water inlet temperature < 6 °C and > 15 °C the control accuracy is not guaranteed anymore, furthermore there is the risk of condensation if the water temperature falls short of limits
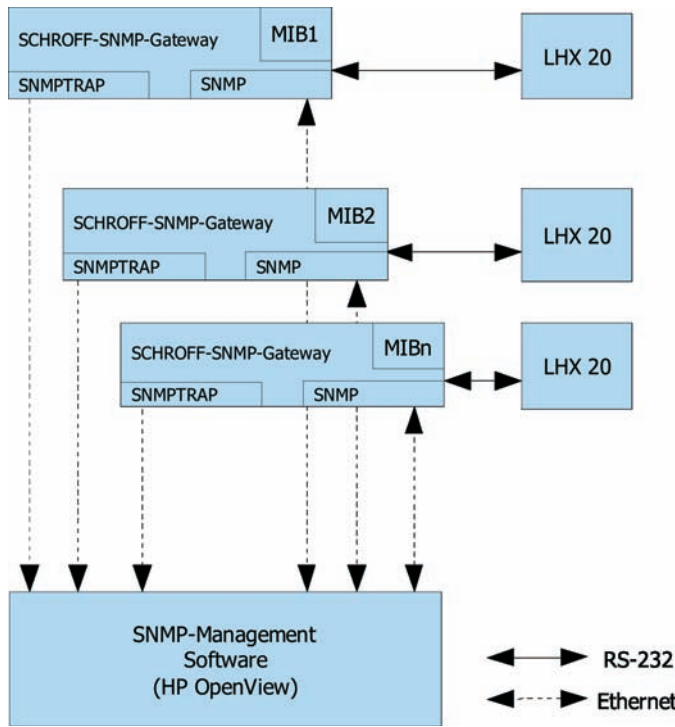
Ethernet gateway for LHX 20

01007022

■ Network connection for VARISTAR air/water heat exchanger LHX 20
  – Ethernet 10/100 MHz
  – RS 485
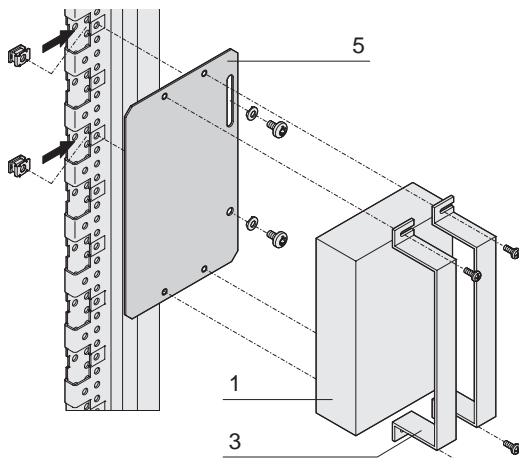 – RS 232

■ StackSNMPv3 protocol

Delivery comprises (assembled)

Item	Qty	Description
1	1	Interface in small case, height 46 mm, width 158 mm, depth 100 mm, RAL 7021; mains/line voltage 230 V_{AC}; 3-pin mains/line connectors for Wieland connector type ST 18/3; ST bus RS485, 3-pin screw connection; ST bus COM1 RS232, SUB-D 9-pin female connector; Ethernet RJ45, 8-pin, CAT5
2	1	Equipment cable SCHUKO/UTE connector, cable length 2 m, Wieland type ST18/3
3	2	Mounting bracket
4	1	User manual

Order Information

Description	Order no.
Ethernet gateway for LHX 20	**60130-440**
Item 5, mounting plate for Ethernet gateway (LHX 20), for mounting on 19" profile, incl. assembly kit, 1 kit	**23130-389**

For further information www.schroff.biz/oneclick
oneClick code = Order no.

01007077

SNMP management

01007078

Mounting plate (item 5) with Ethernet gateway (item 1) and mounting bracket (item 3)

VARISTAR LHX 20 with air/water heat exchanger
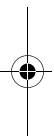
Further information:
www.a-tca.com or AdvancedTCA E-mail hotline:
Europe, Asia: infoATCA@schroff.biz
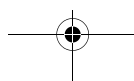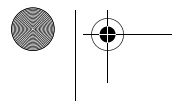America: infoATCA@pentair-ep.com

Responsible for contents and print
Schroff GmbH, Marketing Communication, D-75334 Straubenhardt, Germany
The details in this catalogue have been carefully compiled and checked –
supported by the certified Quality Management System to EN ISO 9001/2000.
The company cannot accept any liability for errors or misprints. The company reserves the right t
amendments or technical specifications due to further development and improvement of products

UK 12/2007

79
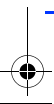
Instant access to expert knowledge

Support and information se

www.a-tca.com

Schroff on the Internet – convenient and always up-to-date.

Comprehensive documentation online, updated daily

rvice

AdvancedTCA, MicroTCA and AdvancedMC knowledge portal

- **Know-how: profit from news, events and seminars**
- **Service: the latest information around the clock**
- **Added value: drawing downloads, specifications, firmware and more…**

Knowledge transfer and partnership.

Knowledge is the one resource that increases when it is shared - assuming openness. Schroff gives you access to a broad spectrum of knowledge and experience relating to the latest technologies and special product information, through to individual training on our AdvancedTCA, MicroTCA and AdvancedMC packaging solutions. Whether it is basic training or seminars for developers and professionals, we always have the same goal: to support you practically and systematically in order to optimize your processes and make you more successful in your core activities.

Development and product support.

We are always there for you, with an abundance of technical information and service tools - worldwide. We can advise you on optimizing your system performance and assure the long-term availability of your applications. This is our understanding of quality of service. We make available a broad array of supporting materials such as product data sheets, firmware and downloadable drawings and advise you individually on technical questions. Regular software updates ensure the stability of your systems and keep them current.

www.a-tca.com

SUPPORT INFORMATION

- **Here you can find easy-to-download information and tools to help you develop and implement AdvancedTCA and MicroTCA systems:**
  Data sheets, handbooks, firmware, drawings, reference information, technical articles, brochures, background information, test reports and much more.

ACADEMY, NEWS AND EVENTS

- **Our tailor-made basic and advanced training programmes make for an uncomplicated transfer of knowledge. Check for current dates of our seminars and events worldwide or take advantage of more contemporary means of knowledge transfer - webinars, webcasts and white papers, in the comfort of the Internet!**

Schroff's product services program

ServicePLUS

Simply a perfect performance!

configuration
Simple. Fast. To the ideal product.

Individual combination and variation of components
- Interactive configurators on the Internet
- Configuration tables in the catalog
- Configuration hotline by telephone

With ServicePLUS configuration we offer fast, uncomplicated combination of your ideal, individual product based on standard components.

- unlimited combinations
- error-free choices
- simply ordering

modification
Small changes. Large impact.

Customer specific machining, cut-outs, printing and special colors for standard products

- Cabinets
- 19" cases
- Subracks
- Front panels
- Backplanes
- Power supplies

Quality also means 100 % compatibility. Therefore Schroff modify standard products to individual demands. With ServicePLUS modification the customer receives nearly every customization competently, fast and at favorable terms.

- enjoy flexibility
- modify trouble-free
- order exactly to your requirements

assembly
Assembled by professionals. Double benefit!

Assembly of all mechanical, electrical and electronic components by our experts
- Cabinets
- 19" cases
- Subracks

ServicePLUS assembly provides you with the security that the operation-ready products allow you to devote your time to your core tasks, as we are pleased to undertake the entire assembly of components professionally and in time.

- simply concentrate on your competences
- save valuable time
- know that everything fits

solution
Simple. Everything. From one source.

Complete and tested operational systems and customer specific developments

- System integration for cabinets, Outdoor enclosures, Embedded systems
- Customized product developments

ServicePLUS solution combines our decades of experience in integration of mechanics, electronics and climate control. You profit from fully integrated, operational systems and customized new developments.

- express requirements uncomplicatedly
- receive your individual solution
- obtain security and partnership

Schroff Service - always the first choice.

Valuable. Comprehensive. Concise.

ServicePLUS

Custom service – throughout a product's lifetime.

express
When fast has to be faster.

Delivery times to customers' request, at additional cost, on top of the ServicePLUS modules:

- assembly
- modification
- solution
- support

For many projects speed is essential and flexibility is a deciding factor. ServicePLUS express offers maximum flexibility with various express options.

- plan economically
- error-free choices
- receive extra fast delivery

academy
Knowledge. Sharing. Partnerships.

Knowledge transfer and partnership . . .

- In-depth seminars for products and technologies
- Virtual and interactive knowledge transfer via multimedia: webinars, webcasts and white papers.

With ServicePLUS academy Schroff offers uncomplicated access to expert knowledge. After all, sound manufacturer know-how contributes to trouble-free availability in your business, too.

- hands-on training
- simply download expert knowledge
- pick-up ideas for the future

support
Support. Solution. Availability.

Assistance on request

- Telephone hotline with flexible response times
- Remote diagnosis, remote control
- Software updates

With ServicePLUS support we stand by you with help and advice even after the sale. With our modular support package we are always available should the need arise and will fulfil your specific service needs.

- get fast assistance
- minimize down time
- feel secure not to be on your own

(Some services might not be available in every country)

lifecycle
Custom service. Throughout a product's lifetime.

- Delivery to the operating site
- Commissioning
- Guarantee extensions
- Maintenance, repairs, replacement parts
- Recycling

With ServicePLUS lifecycle you profit from a flexible customer care during the entire life cycle of your products and turnkey solutions. Design your individual Lifecycle Package.

- decide securely
- choose your service
- be well looked after

Data and Facts

PICMG 3.0 AdvancedTCA

Specification overview

The Advanced Telecom Computing Architecture specification is tailored to meet the needs of the telecoms market. The modern architecture (serial point-to-point connections) however makes AdvancedTCA systems also suitable for other markets in which a high data throughput is necessary, such as server applications, medical technology or research.

The board form factor was defined as: height 8 U, width 6 HP, depth 280 mm, depth of I/O board 70 mm (RTM = Rear Transition Module). This size of board allows sufficient space for the components required and offers optimal cooling. The boards are EMC-shielded, and special handles are provided for inserting and removing the plug-in units in order to overcome the high insertion and extraction force required.

In AdvancedTCA data transfer takes place via high-speed serial point-to-point connections. The following point-to-point topologies are typically employed:

- Dual Star (all slots are connected to a star point)
- Dual Dual Star (all slots are connected to two star points)
- Full Mesh (each slot is connected to every other slot)

The overall data transfer rate can, in certain systems, exceed 1 Tbps.

A typical system consists of two redundant switchboards and a number of node boards (number dependent on application and chassis width). The outer dimensions are based on the existing industry standards: 19'' (IEC 60297) and ETSI (ETS 300 119-3).

AdvancedTCA systems are designed for a maximum heat loss of 200 W per front board and 15 W per RTM board. In some system versions it is necessary to remove more than 3000 W of generated heat. Cooling is via fans and is a purely air-cooling system.

The specification describes data transport mechanisms that can be operated in parallel to one another:

- PICMG® 3.1   Ethernet/Fibre Channel
- PICMG® 3.2   InfiniBand
- PICMG® 3.3   StarFabric
- PICMG® 3.4   PCI-Express and Advanced Switching
- PICMG® 3.5   Serial Rapid I/O™

The backplanes of an AdvancedTCA system are divided into three distinct zones.

- **In Zone 1 the boards are supplied with power. The shelf management system communicates via the IPMI channels of the Zone 1 connector.**

- **Zone 2 is divided into two sections:**
  The base interface provides internal communication between the boards, while the fabric interface serves the high-speed transfer of the large data volume (payload).

- **Zone 3 is openly defined in the AdvancedTCA specification. The connection may be made in two ways: a direct link via connectors, or via a customized, so-called zone 3 backplane.**

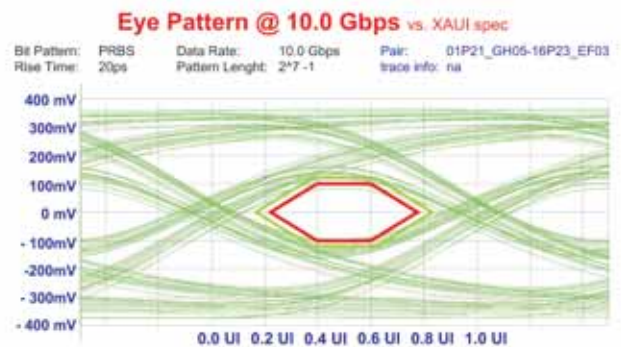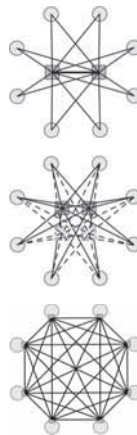**Schroff's standardization competence: simply pointing the way.**
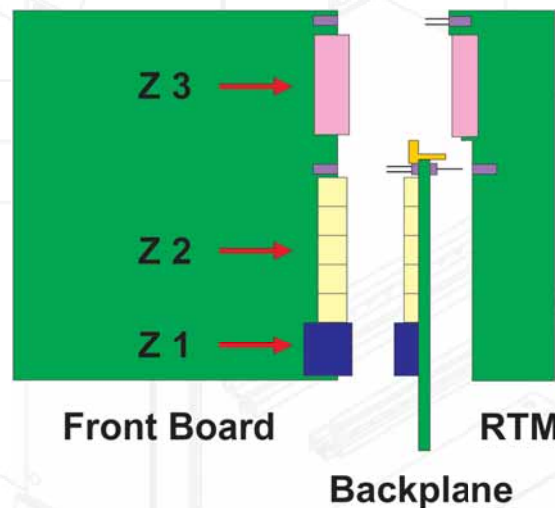
Data and Facts

- **Topologies: Dual Star, Dual Dual Star, Full Mesh**
- **Radial and bussed IPMI topology**
- **Shelf management**

Dual Star, Dual Dual Star, Full Mesh

Schroff supports multiple AdvancedTCA backplane topologies.

In designing the AdvancedTCA specification the principal goal was a scaleable architecture that permits the balancing of performance and cost. A further aim was to replace parallel buses on the backplane, as these led to data jams and were a frequent cause of failure. The AdvancedTCA backplane is the first backplane to be built to an open standard, on which only packet-based architectures (switched fabrics) are supported. Scalability is assured through the various topology options, which support one, two or four ports per channel (link between slots) and through the Dual Star, Dual Dual Star or Full Mesh connections.

- **In a Dual Star topology all slots are connected to a star point on which a fabric switch is situated. A second switch (dual) assures the redundancy that is important for system availability. All AdvancedTCA boards communicate with one another via the switches in the hub slots.**

- **Where higher performance is required, a second group with two redundant switches may be added, so creating a Dual Dual Star configuration.**

- **Maximum performance is obtained with a Full Mesh configuration, whereby each slot is connected directly to every other slot. Here a data transfer rate of over 2.5 Tbps is possible.**

Radial and bussed IPMI topology

IPMI (intelligent platform management interface) is used for system management. This is used by the shelf manager to communicate with the individual AdvancedTCA boards. The connection may be either over a redundant bus (bussed) or via a star point to each board (radial).

Eye Pattern @ 10.0 Gbps vs. XAUI spec

| Bit Pattern: | PRBS | Data Rate: | 10.0 Gbps | Pair: | 01P21_GH05-16P23_EF03 |
| Rise Time: | 20ps | Pattern Lenght: | 2*7 -1 | trace info: | na |

Shelf management

Schroff offers the latest shelf management products for AdvancedTCA systems.

The shelf manager controls and monitors the boards, fans, temperature and power supplies. The introduction of electronic coding was an important focus in the standardization work. This coding ensures that only compatible AdvancedTCA boards are enabled. When an AdvancedTCA board is fitted into the shelf, the shelf manager compares the features of the board with those available in the system. It compares power, cooling and fabric signaling levels (protocols) for each channel, the ports available per channel and the backplane topology with the characteristics of the new entity at the other end of the fabric connection. The shelf manager then allocates power to the board, allows the board to 'power up' and enables only those features of the board that are compatible with the remainder of the shelf. This detailed shelf management avoids harm to the board through electrical incompatibility and prevents an unreliable system configuration. Additionally, the shelf manager compiles a list of the boards and components installed in the shelf. (Remote) access to this list can be obtained via a network interface to the shelf manager.

Data and Facts

PICMG MicroTCA.0 R1.0

Specification overview

The Micro Telecom Computing Architecture specification is tailored to meet the needs of the telecoms market. The modern architecture (serial point-to-point connections) however makes MicroTCA systems also suitable for other markets in which a high data throughput, small form factor or scaleable architecture is necessary, such as medical technology, security systems, industrial automation, defense systems, traffic control or image processing.

In MicroTCA the boards used are the existing mezzanine cards - AdvancedMC modules - of AdvancedTCA. These are defined in 6 sizes: single and double modules, with the following "widths" (defined in the AdvancedMC specification as height): compact (3 HP), mid-size (4 HP) and full-size (6 HP). Since AdvancedMC modules were defined as mezzanine cards for the AdvancedTCA carrier, the PCB of the module is not on the left-hand side of the module, as with previously-specified boards (VME, CompactPCI or AdvancedTCA), but on the right, with the components protruding leftward.

In MicroTCA, data transfer is via very fast serial point-to-point connections. The following point-to-point topologies are defined:

- Star (all slots are connected to a star point)
- Dual star (all slots are connected to two star points; the second star provides redundancy)
- Point-to-point (direct connections between individual AdvancedMC modules)

Overall data transfer can in certain systems be up to 480 Gbps.

A maximum of 12 AdvancedMC modules are defined in a MicroTCA carrier, while a number of such carriers can be cascaded in one shelf. The physical form of the system and shelf structure is open. Both 19'' (IEC 60297) and ETSI (ETS 300 119-3) widths are possible, while more compact enclosures such as cube or pico can also be realized with MicroTCA.

AdvancedMC modules are defined for a maximum heat loss of between 20 W (single compact module) and 80 W (double full-size module). The MicroTCA specification further defines the maximum heat loss values for 19" MicroTCA carriers: these range from 560 W for a configuration with max. 12 single full-size modules to 1120 W for a system with double full-size modules.

All the data transport mechanisms defined in the AdvancedMC sub-specifications may be used in MicroTCA:

- PCI Express and Advanced Switching (AMC.1)
- Gigabit Ethernet (AMC.2)
- Storage Interface (AMC.3)
- Serial Rapid I/O (AMC.4)

Work is currently in progress on the first MicroTCA sub-specification, MicroTCA.1 (Rugged MicroTCA). The aim of the specification is to employ MicroTCA in environments with high demands from shock and vibration. The first tests on the mechanical and electrical interfaces (AdvancedMC handle including interlocking and connectors) in accordance with IEC 61587-1 and VITA 47 have been very promising.

MicroTCA uses the management structure of AdvancedTCA with the latter's defined shelf and system management and the carrier management of the AdvancedMC carriers. Here, however, a new module is defined in the AdvancedMC form factor: the MCH (MicroTCA carrier hub), which performs both carrier management and the fabric functionality.

Schroff's standardization competence: simply pointing the way.
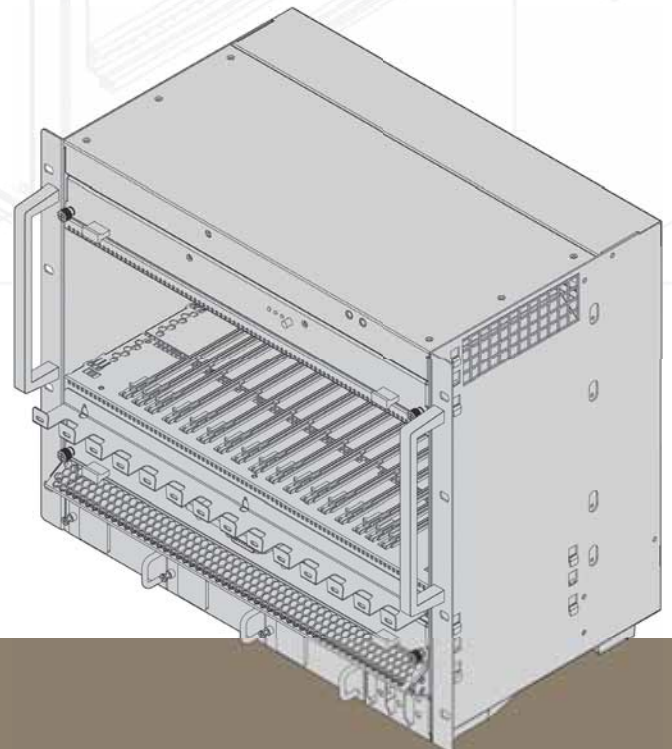
Data and Facts

- **Star and Dual Star topologies or direct connections**
- **Transfer rates of up to 10 Gbit per second per port**
- **Carrier and shelf management**

A range of topologies optimized for your application

Schroff has now developed a large number of MicroTCA backplanes with various topologies.

In designing the MicroTCA specification the principal goal was a scaleable architecture that permits the balancing of performance and cost. Further aims were, firstly, to replace parallel buses on the backplane, as these lead to data jams, and secondly, protocol independence for the data lines on the backplane. Like AdvancedTCA, MicroTCA replaces the parallel bus with packet-based data-transport mechanisms (switched fabrics). Scalability is provided with the various transfer protocols defined in the AdvancedMC sub-specifications and through the choice of Star or Dual Star topologies or direct connections.

- **In a star topology all AdvancedMC modules are connected to a star point on which a fabric switch is situated. All AdvancedMC modules communicate with one another via the switch, which in MicroTCA is located on the MicroTCA carrier hub (MCH).**

- **In a Dual Star topology a second switch (dual) is provided which ensures redundancy that is important for system availability.**

- **With a direct connection, two AdvancedMC modules may exchange data directly, without diversion via a switch. This method is used, for example, to link one or two hard disks to a CPU via S-ATA or SAS.**
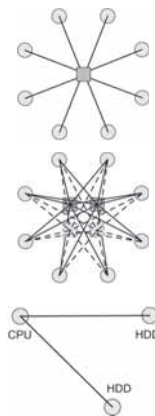
Carrier and shelf management

Schroff works closely with many MCH, AdvancedMC and PM (power module) manufacturers to ensure management compatibility.

The shelf manager controls and monitors the boards, fans, temperature and power supplies. The electronic coding ensures that only compatible AdvancedTCA modules are enabled. When an AdvancedTCA module is fitted into the shelf, the shelf manager compares the features of the module with those available in the system. It compares power, cooling and fabric signaling levels (protocols) and the backplane topology with the characteristics of the new entity at the other end of the fabric connection. The shelf manager then allocates power to the module, allows the module to 'power up' and enables only those features of the module that are compatible with the remainder of the shelf. This detailed shelf management avoids harm to the module through electrical incompatibility and prevents an unreliable system configuration. Additionally, the shelf manager compiles a list of the modules and components installed in the shelf. (Remote) access to this list can be obtained via a network interface to the shelf manager.

Schroff offers systems with cooling unit management and with power module management. In MIWs (MicroTCA Interoperability Workshops) and through direct collaboration with MCH, AdvancedMC and PM manufactures, the compatibility of Schroff systems with these components has been and will continue to be tested and guaranteed.

Established as one of the best

Worldwide market competence. Local to you.
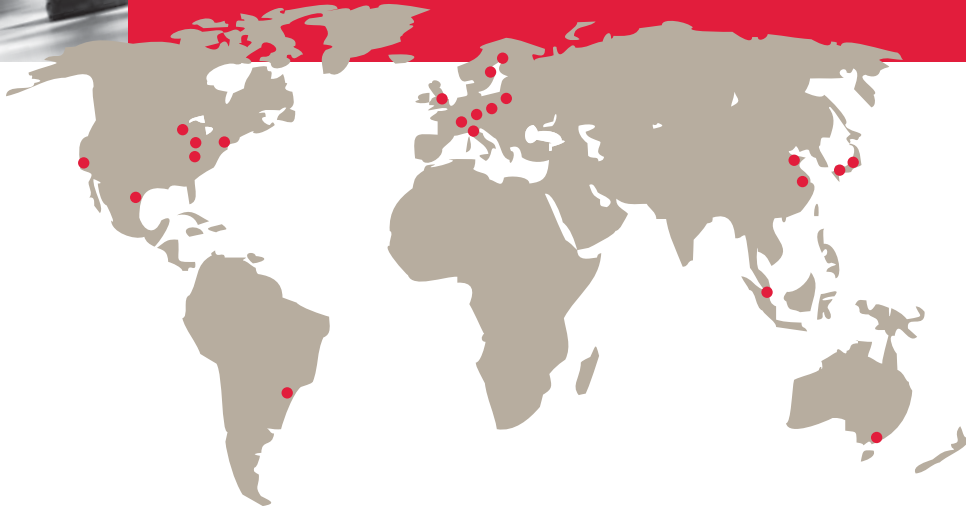
Schroff®

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 UK Ltd.
Maylands Avenue
Hemel Hempstead
Herts HP2 7DE
Great Britain
Tel. +44 (0)1442 240 471
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.biz

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

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

Schroff S.r.l.
Via Brughiera 1
20010 Pregnana Milanese (MI)
Italy
Tel. +39 02 932 714-1
www.schroff.biz

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

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

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

39601-422   12/2007

Pentair
Technical Products

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Schroff *manufacturer:*

Other Similar products are found below :

13100103 21006-945 24563-157 24827-024 20848-487 24566-125 34561-198 60817097 60817071 60807211 60817072 60817054 64560010 14575271 14576145 14575265 20117-156 20817772 20846211 20860229 21100777 23022602 23130082 24571331 24571586 24572066 24822075 26230-374 30817-001 30825080 20849021 21100359 23001021 24571303 24572054 34560489 21006959 20860-624 20860-611 20848496 20838-111 20838-116 20860-612 20860-628 20860-633 10225-602 14826207 10828058 13100105 13100136