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.
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.

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 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.
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 scalable 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.
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 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 system

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.

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

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

The right solution for every performance level

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

CONFORMITY TO PICMG MICRO TCA.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 FLERH 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 capability (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.
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
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.

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:**
- 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.

**TYPICAL APPLICATIONS INCLUDE:**
- Base stations
- VoIP gateways
- WiMAX solutions
- IP telephony
- IP TV
- Media servers

Applications know-how from Schroff - always good advice.
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.
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.
WHY CHOOSE SCHROFF

Why our system chassis make a difference

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 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

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.

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.

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 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

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.
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 adequate 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)

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

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

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

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

- 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

AdvancedTCA accessories
- Shelf manager based on Pigeon Point technology
- AdvancedMC carriers
- Front panels and handles
- Backplanes

ServicePLUS (more details see page 82)
- assembly: Assembled by professionals. Double benefit!
- modification: Small changes. Large impact.
- solution: Simple. Everything. From one source.
- lifecycle: Bespoke service. For the entire life of the product.

www.schroff.biz/serviceplus/
System, 13 U, 16 slot, 96 HP

- 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<sub>DC</sub>/-60 V<sub>DC</sub>, 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)

Deliver comprises (completely assembled, wired and tested)

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

<table>
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<tr>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>AdvancedTCA system, black</th>
<th>Order no.</th>
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</thead>
<tbody>
<tr>
<td>13</td>
<td>96</td>
<td>383</td>
<td>Dual Star, bused IPMB</td>
<td>11592-500</td>
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<tr>
<td>13</td>
<td>96</td>
<td>383</td>
<td>Dual Star, radial IPMB</td>
<td>11592-501</td>
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<tr>
<td>13</td>
<td>96</td>
<td>383</td>
<td>Full Mesh, bused IPMB</td>
<td>11592-502</td>
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<tr>
<td>13</td>
<td>96</td>
<td>383</td>
<td>Full Mesh, radial IPMB</td>
<td>11592-503</td>
</tr>
</tbody>
</table>

- 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

- 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 13 U, 14 slot, 84 HP

- 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 VDC/-60 VDC, 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)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Shielded 19&quot; subrack, St, 13 U, 84 HP, powder coated, black, RAL 9005</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>Front slot; guide rails for vertical boards (8 U, 260 mm deep)</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>Rear slot; guide rails for vertical boards (8 U, 70 mm deep)</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Backplane, 14 slot</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Redundant -48 VDC/-60 VDC power entry module (PEM), plugged in on the rear, with 4 pairs of lines each per input (8 fuses, 30 A)</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>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</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Filter mat, removable from front</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Shelf alarm panel (SAP)</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Shelf alarm display (SAD)</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Cable ducting at front and at rear of system</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>Mounting bracket, for assembly in 19&quot; cabinets</td>
</tr>
</tbody>
</table>

**Order Information**

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

- 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

- 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 \(-48 \text{ V}_{\text{DC}}/\text{-60 V}_{\text{DC}}\), 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)

Delivery comprises (completely assembled, wired and tested)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Shielded 19&quot; subrack, St, 12 U, 84 HP, powder coated, black, RAL 9005</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>Front slot; guide rails for vertical boards (8 U, 280 mm deep)</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>Rear slot; guide rails for vertical boards (8 U, 70 mm deep)</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Backplane, 14 slot</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Redundant (-48 \text{ V}<em>{\text{DC}}/\text{-60 V}</em>{\text{DC}}) power entry module (PEM), plugged in on the rear, with 4 pairs of lines each per input (8 fuses, 30 A)</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>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</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Filter mat, removable from front</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Shelf alarm panel (SAP)</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Cable ducting at front and at rear of system</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Cover for shelf manager slot (enclosed loose)</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>Mounting bracket, for assembly in 19&quot; cabinets</td>
</tr>
</tbody>
</table>

Order Information

<table>
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<tr>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>AdvancedTCA system, black</th>
<th>Order no.</th>
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<tr>
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<td>mm</td>
<td>Type</td>
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<td>12</td>
<td>84</td>
<td>383</td>
<td>Dual Star, bused IPMB</td>
<td>11596-301</td>
</tr>
<tr>
<td>12</td>
<td>84</td>
<td>383</td>
<td>Dual Star, radial IPMB</td>
<td>11596-302</td>
</tr>
<tr>
<td>12</td>
<td>84</td>
<td>383</td>
<td>Full Mesh, bused IPMB</td>
<td>11596-303</td>
</tr>
<tr>
<td>12</td>
<td>84</td>
<td>383</td>
<td>Full Mesh, radial IPMB</td>
<td>11596-304</td>
</tr>
</tbody>
</table>

Shelf manager (bused) 1 piece
Shelf manager (radial) 1 piece
Air filter for 14 slot AdvancedTCA system 1 piece
Fuse 30 A/80 V for power entry module, PU 10 pieces
Adaptor 12 U RAL 9005, from 19" to ETSI, PU 2 pieces
Adaptor 12 U RAL 9005, from 19" to 23", PU 2 pieces

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

- 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<sub>DC</sub>/60 V<sub>DC</sub>
- 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 500 for bused IPMB topology
- Shelf alarm panel (SAP)

**Delivery comprises** (completely assembled, wired and tested)

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

**Order Information**

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelf manager (bused)</td>
<td>1 piece</td>
<td>21593-373</td>
</tr>
<tr>
<td>Air filter for 14 slot AdvancedTCA system</td>
<td>1 piece</td>
<td>21596-002</td>
</tr>
<tr>
<td>Fuse 30 A/80 V for power entry module, PU 10 pieces</td>
<td>1 piece</td>
<td>21191-207</td>
</tr>
<tr>
<td>Adaptor 12 U RAL 9005, from 19&quot; to ETSI, PU 2 pieces</td>
<td>2 pieces</td>
<td>21596-273</td>
</tr>
<tr>
<td>Adaptor 12 U RAL 9005, from 19&quot; to 23&quot;, PU 2 pieces</td>
<td>2 pieces</td>
<td>21596-274</td>
</tr>
</tbody>
</table>

**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

- 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

Delivery comprises (completely assembled, wired and tested)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Shielded 19&quot; subrack, St, 6 U, 84 HP, powder coated, black, RAL 9005</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>Front slot; guide rails for horizontal boards (8 U, 280 mm deep)</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>5 slot backplane, Dual Star, bused IPMB</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>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)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Fan tray; with 2 fans to cool the boards</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Filter mat, removable from front</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>FCM for fan monitoring</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Cover for shelf manager slot (enclosed loose)</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>Mounting bracket, for assembly in 19&quot; cabinets</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>HP</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>84</td>
<td>320</td>
<td>11596-045</td>
</tr>
</tbody>
</table>

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.
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 500 and provision for one Shelf alarm panel
- Voltage supply -48 VDC/-60 VDC; two redundant power entry modules (PEM), inserted at rear; with IPMI

**Delivery comprises** (completely assembled, wired and tested)

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

**Height** UH **Width** P **Depth** mm **Order no.**

<table>
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<tr>
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<td>445</td>
<td>ZR5ATC6TMDPEM2N</td>
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**Order Information**

- 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/oneclick

oneClick code = Order no.
System, 5 U, 6 slot, Zephyr Enterprise Shelf

- 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 $40 \text{ V}_{\text{DC}}$ to $72 \text{ V}_{\text{DC}}$; two redundant Power Entry Modules (PEM) plugged at rear

Delivery comprises (completely assembled, wired and tested)

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

Order Information

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<th>Width</th>
<th>Depth</th>
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<tbody>
<tr>
<td>U</td>
<td>HP</td>
<td>mm</td>
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<td>5</td>
<td>84</td>
<td>497</td>
<td>ZRSATC6TMDE2</td>
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</table>

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

- 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)

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

Order Information

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

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
System, 5 U, 5 slot, DC version

- 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 m³/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)

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

Order Information

<table>
<thead>
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<th>Height</th>
<th>Width</th>
<th>Depth</th>
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<tbody>
<tr>
<td>5 U</td>
<td>84</td>
<td>411.3</td>
<td>11596-010</td>
</tr>
<tr>
<td>Shelf manager (bused)</td>
<td>1 piece</td>
<td>21593-375</td>
<td></td>
</tr>
<tr>
<td>Shelf alarm panel</td>
<td>1 piece</td>
<td>21596-077</td>
<td></td>
</tr>
<tr>
<td>Air filter</td>
<td>1 piece</td>
<td>21596-082</td>
<td></td>
</tr>
</tbody>
</table>

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

- 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)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Shielded 19&quot; subrack, St, 3 U, 84 HP, powder coated, black, RAL 9005</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Front slot; guide rails for horizontal boards (8 U, 280 mm deep)</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Rear slot (rear I/O); guide rails for horizontal boards (8 U, 80 mm deep)</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Backplane, 2 slot, node/node configuration</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Power supply 800 W, input voltage 115 ... 230 V&lt;sub&gt;AC&lt;/sub&gt;</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>Fan tray</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Air filter, removeable</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Order no.</th>
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</thead>
<tbody>
<tr>
<td>U</td>
<td>HP</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>84</td>
<td>383</td>
<td>11596-007</td>
</tr>
<tr>
<td>Shelf manager (bused)</td>
<td>1 piece</td>
<td>21593-375</td>
<td></td>
</tr>
<tr>
<td>Shelf alarm panel</td>
<td>1 piece</td>
<td>21596-077</td>
<td></td>
</tr>
<tr>
<td>Air filter</td>
<td>1 piece</td>
<td>21596-037</td>
<td></td>
</tr>
<tr>
<td>Equipment cable SCHUKO/UTE</td>
<td>SCHUKO/UTE connector, IEC 320 C13 female connector, 2.5 m, 1 piece</td>
<td>60103-131</td>
<td></td>
</tr>
<tr>
<td>Equipment cable, BS British Standard connector, IEC 320 C13 female connector, 2.5 m, 1 piece</td>
<td>60103-137</td>
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</tr>
</tbody>
</table>

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.
System, 2 U, 2 slot, DC version

- 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<sub>DC</sub>
- Easy access to boards by removable cover plate

Delivery comprises (completely assembled, wired and tested)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Shielded 19” subrack, St, 2 U, 84 HP, powder coated, black, RAL 9005</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Front slot; guide rails for horizontal boards (8 U, 280 mm deep)</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Rear slot (rear I/O); guide rails for horizontal boards (8 U, 80 mm deep)</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Backplane, 2 slot, node/node configuration</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Power entry module (PEM) -48 V&lt;sub&gt;DC&lt;/sub&gt;</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>Fan tray</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Air filter</td>
</tr>
</tbody>
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Order Information

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<thead>
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<th>Width (HP)</th>
<th>Depth (mm)</th>
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<tbody>
<tr>
<td>2</td>
<td>84</td>
<td>469</td>
<td>11596-004</td>
</tr>
<tr>
<td>Air filter</td>
<td>1 piece</td>
<td></td>
<td>21596-028</td>
</tr>
</tbody>
</table>

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

- 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

<table>
<thead>
<tr>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Description</th>
<th>Qty/PU</th>
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</thead>
<tbody>
<tr>
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<td>mm</td>
<td>mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>280</td>
<td>Shelf manager, bused version</td>
<td>1</td>
<td>21593-375</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>280</td>
<td>Shelf manager, radial version</td>
<td>1</td>
<td>21593-376</td>
</tr>
</tbody>
</table>

- **Cable** RJ 45 CAT 5 D-sub plug 9-pin, length 2 m, 1 piece
- **Stainless steel front panel** to cover an unused shelf manager slot, width 15.22 mm, height 99.33 mm, incl. EMC gasketing, 1 piece

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.
Backplanes

- 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
- I²C bus for internal monitoring
- Excellent eye pattern at up to 10 Gbps

Note
- For detailed description see chapter Standards, page 84

Eye Pattern @ 3.125 Gbps vs. XAUI spec

Eye Pattern @ 6.25 Gbps vs. XAUI spec

Eye Pattern @ 10.0 Gbps vs. XAUI spec

Eye Pattern @ 12.5 Gbps vs. XAUI spec
AdvancedTCA front panel kit

- 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)

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

**Order Information**

**AdvancedTCA handle**

- Front panel kit, stainless steel, with AdvancedTCA handle
  - Height: 8
  - Width: 6
  - Order no.: 21591-100

- Front panel kit, Al extrusion, with AdvancedTCA handle
  - Height: 8
  - Width: 6
  - Order no.: 21591-102

**AdvancedTCA IEA handle**

- Front panel kit, stainless steel, with AdvancedTCA IEA handle (plunger style)
  - Height: 8
  - Width: 6
  - Order no.: 21596-324

- Front panel kit, stainless steel, with AdvancedTCA IEA handle (lever style)
  - Height: 8
  - Width: 6
  - Order no.: 21596-325

**Note**

- Front panels with Copperberyllium gasketing (CuBe), available on request
- Front panels with board cover on request
- Schroff offers an extensive modification 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/

**ServicePLUS** see page 82

**UK 12/2007**
AdvancedTCA front panels

- Stainless steel or Al extrusion for EMC mesh gasketing

Order Information

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

Note
- CuBe gasketing on request
- Schroff offers an extensive modification 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 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

- 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

**Delivery comprises** (assembled)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>AdvancedTCA handle</td>
</tr>
</tbody>
</table>

**Order Information**

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper handle for microswitch with plunger</td>
<td>20818-121</td>
</tr>
<tr>
<td>Lower handle for microswitch with plunger</td>
<td>20818-122</td>
</tr>
<tr>
<td>Upper handle for microswitch with lever</td>
<td>20818-123</td>
</tr>
<tr>
<td>Lower handle for microswitch with lever</td>
<td>20818-124</td>
</tr>
<tr>
<td>AdvancedTCA handle (IEA) design element, plastic, transparent, to clip over customized logos, PU 10 pieces</td>
<td>20818-140</td>
</tr>
</tbody>
</table>

**Note**

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

For further information www.schroff.biz/oneclick

oneClick code = Order no.
**AdvancedTCA handles**

- 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)**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>Lever, St, 2 mm, black</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>Plastic part, black</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>Die-cast bearing (top/bottom)</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>Screw M2.5 x 12, self-locking</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>Washer</td>
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**Order Information**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Lower handle assembly kit</td>
<td>20817-476</td>
</tr>
<tr>
<td>Upper handle assembly kit</td>
<td>20817-477</td>
</tr>
<tr>
<td>Microswitch for carriers (mid-size AdvancedMC modules) normally closed, for soldering (SMD), PU 10 pieces</td>
<td>20817-853</td>
</tr>
</tbody>
</table>

- 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)

- 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)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Front panel</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Air baffle (front or rear)</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Item</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>6</td>
<td>280</td>
<td>Front panel, Al extrusion, incl. air baffle with mesh gasketing</td>
<td>21596-008</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>6</td>
<td>280</td>
<td>Front panel, stainless steel, incl. air baffle with mesh gasketing</td>
<td>21591-079</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>6</td>
<td>70</td>
<td>Front panel, Al extrusion for rear I/O area incl. air baffle with mesh gasketing</td>
<td>21591-107</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>6</td>
<td>70</td>
<td>Front panel, stainless steel for rear I/O area incl. air baffle with mesh gasketing</td>
<td>21591-099</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>6</td>
<td>–</td>
<td>Al extrusion front panel with mesh gasketing</td>
<td>21591-104</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>6</td>
<td>–</td>
<td>Stainless steel front panel with mesh gasketing</td>
<td>21591-097</td>
</tr>
</tbody>
</table>

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

- Input 48 VDC/60 VDC
- Plugged-in at rear of chassis
- For 4 pairs of lines each (RTN and -48 VDC/-60 VDC) per input
- 8 fuses 30 A/80 V each

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power entry module for 12 U, 14 slot AdvancedTCA system</td>
<td>1</td>
<td>21596-003</td>
</tr>
<tr>
<td>Fuse 30 A/80 V for power entry module, PU 10 pieces</td>
<td>10 pieces</td>
<td>21191-207</td>
</tr>
</tbody>
</table>

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

- Input 48 VDC/60 VDC
- Plugged-in at rear of chassis
- For 4 pairs of lines each (RTN and -48 VDC/-60 VDC) per input
- 8 fuses 30 A/80 V each

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power entry module for 13 U, 14/16 slot AdvancedTCA system</td>
<td>1</td>
<td>21596-020</td>
</tr>
<tr>
<td>Fuse 30 A/80 V for power entry module, PU 10 pieces</td>
<td>10 pieces</td>
<td>21191-207</td>
</tr>
</tbody>
</table>

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 m³/h = 230 cfm) for cooling of front and rear boards in system
- Extractor handle and LED display (hot-swap, alarms, etc.)

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan tray for 13 U, 14 slot systems</td>
<td>1</td>
<td>21596-139</td>
</tr>
</tbody>
</table>

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

Fan tray for 13 U, 16 slot AdvancedTCA system

- Fan tray with 2 radial fans (390 m³/h = 230 cfm) for cooling of front and rear boards in system
- Extractor handle and LED display (hot-swap, alarms, etc.)

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan tray for 13 U, 16 slot systems</td>
<td>1</td>
<td>21594-143</td>
</tr>
</tbody>
</table>

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

Fan tray for 12 U, 14 slot AdvancedTCA system

- Fan tray with 2 fans (330 m³/h = 195 cfm each) for cooling of front and rear boards in system
- Extractor handle and LED display (hot-swap, alarms, etc.)

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan tray for 12 U, 14 slot systems</td>
<td>1</td>
<td>21596-236</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Order Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air filter</td>
</tr>
<tr>
<td>for 12 U, 14 slot systems (11592-40x, 11596-30x)</td>
</tr>
<tr>
<td>for 13 U, 14 slot systems (11596-10x)</td>
</tr>
<tr>
<td>for 13 U, 16 slot systems (11592-50x)</td>
</tr>
<tr>
<td>for 6 U, 5 slot system (11596-045)</td>
</tr>
<tr>
<td>for 5 U, 5 slot system (11596-012)</td>
</tr>
<tr>
<td>for 3 U, 3 slot systems (11596-010, 11596-012)</td>
</tr>
<tr>
<td>for 2 U, 2 slot system (11596-004)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Order Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Shelf alarm panel for 14 slot systems (1159610xx)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Order Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Shelf alarm panel for 12 U, 14 slot systems (11592-40x, 11596-30x)</td>
</tr>
</tbody>
</table>

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**

- For output of all Telco alarm signals in accordance with the AdvancedTCA Specification
- One D-Sub connector

**Order Information**

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelf alarm panel for 13 U, 16 slot systems (11592-50x)</td>
<td>1</td>
<td>21596-025</td>
</tr>
</tbody>
</table>

**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**

- 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**

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelf alarm display for 14 and 16 slot systems (11592-5xx, 11596-1xx)</td>
<td>1</td>
<td>21596-026</td>
</tr>
</tbody>
</table>

**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**

- 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**

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chassis data module for systems 11592-50x, 11596-30x, 11596-10x</td>
<td>1</td>
<td>21596-023</td>
</tr>
</tbody>
</table>

**Note**

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

- 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

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

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

www.schroff.biz/serviceplus/
Carrier mechanics for compact and full-size AdvancedMC modules

- 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)

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

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrier mechanics for AdvancedMC compact and full-size modules with struts, ESD clips and guide rails</td>
<td>10849-001</td>
</tr>
<tr>
<td>Microswitch, normally closed, for AdvancedMC carrier (compact and full-size modules) for soldering (SMD), PU 10 pieces</td>
<td>20849-236</td>
</tr>
<tr>
<td>Microswitch, normally open, for AdvancedMC carrier (compact and full-size modules) for soldering (SMD), PU 10 pieces</td>
<td>20849-235</td>
</tr>
</tbody>
</table>

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.
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)

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

Order Information

- 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
- 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

For further information www.schroff.biz/oneclick
oneClick code = Order no.
Board guidance/struts for AdvancedMC compact and full-size modules

- 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

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strut between cover A (left) and B (right), Zn die-cast, nickel-plated</td>
</tr>
<tr>
<td>2</td>
<td>Splitting (strut) for cover A (on the left), Zn die-cast, nickel-plated</td>
</tr>
<tr>
<td>3</td>
<td>Splitting (strut) for cover B (on the right), Zn die-cast, nickel-plated</td>
</tr>
<tr>
<td>4</td>
<td>AdvancedMC guide rail, PBT, UL 94 V-0, red</td>
</tr>
<tr>
<td>5</td>
<td>ESD clip, spring steel, corrosion-free, for deflection of electrostatic charges</td>
</tr>
</tbody>
</table>

Qty/PU | Order no.  |
-------|-----------|
10     | 20849-009 |
10     | 20849-010 |
10     | 20849-011 |
10     | 20849-008 |
50     | 20849-021 |

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

- 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)

- 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)

**NEW**

Microswitch to solder in (SMD)

## Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microswitch, normally closed, for AdvancedMC carrier (compact and full-size modules)</td>
<td>10</td>
<td>20849-236</td>
</tr>
<tr>
<td>Microswitch, normally open, for AdvancedMC carrier (compact and full-size modules)</td>
<td>10</td>
<td>20849-235</td>
</tr>
</tbody>
</table>

## Technical data

- **Max. switch current**: 15 mA
- **Operating temperature**: -15 °C ... +70 °C
- **Electrical life**: $10^6$

For further information [www.schroff.biz/oneclick](http://www.schroff.biz/oneclick)

oneClick code = Order no.
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

ServicePLUS see page 82
Carrier mechanics for mid-size AdvancedMC 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)

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

For further information [www.schroff.biz/oneclick](http://www.schroff.biz/oneclick)
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 B
- ESD clip is pushed into strut (1 piece each)
- Guide rails are clipped into the cover

Order Information

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strut between cover A (left) and B (right), Zn die-cast, nickel-plated</td>
<td>10</td>
<td>20849-242</td>
</tr>
<tr>
<td>2</td>
<td>AdvancedMC guide rail for mid-size carrier, PBT, UL 94 V-0, green</td>
<td>10</td>
<td>20849-166</td>
</tr>
<tr>
<td>3</td>
<td>ESD clip, spring steel, corrosion-free, for deflection of electrostatic charges</td>
<td>50</td>
<td>20849-021</td>
</tr>
</tbody>
</table>

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

Microswitch for carriers (mid-size AdvancedMC modules)

- Microswitch to solder in (SMD)

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microswitch (normally closed) for carrier (mid-size AdvancedMC modules)</td>
<td>10</td>
<td>20817-853</td>
</tr>
</tbody>
</table>

Dimensions

- Max. switch current: 100 mA, 12 VDC
- Operating temperature: -20 °C ... +60 °C
- Electrical lifespan: $5 \times 10^6$

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

- AdvancedTCA
- MicroTCA
- AdvancedMC
- Applications
- Systems
- Chassis
- Backplanes
- Shelf manager
- Cooling designs

AdvancedTCA

AdvancedMC carriers

MicroTCA

AdvancedMC modules

VARISTAR LHX 20 with air/water-heat exchanger

Internet

www.a-tca.com

ServicePLUS

Standards

- AdvancedTCA
- MicroTCA

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

**MicroTCA development systems**
- For single and double full-size AdvancedMC modules
- Active fan cooling
- Backplane with Dual Star topology
- Power supply units

**MicroTCA systems**
- Different designs
- For single and double AdvancedMC modules
- Active fan cooling
- Backplanes with different topologies
- Power supply

**MicroTCA subracks**
- For single and double AdvancedMC modules
- Backplane with star topology

**ServicePLUS** (more details see page 82)
- assembly: Assembled by professionals. Double benefit!
- modification: Small changes. Large impact.
- solution: Simple. Everything. From one source.
- lifecycle: Bespoke service. For the entire life of the product.

www.schroff.biz/serviceplus/
Development systems, 6 U (9 single full-size) and 8 U (9 double full-size)

- 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 Schorff power input module
  - 2 power supply slots to accommodate Schorff plug-in power supplies, AC wide range input and DC output (12 VDC or -48 VDC)
- Active cooling
  - Hot-swap fan tray with three 12 VDC 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)

Order Information

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

- 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

- 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 SEEPRM and carrier number 2x on rear side of backplane, connected to the MCHs via I2C bus

Delivery comprises

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Backplane</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Slots AMC Width</th>
<th>Height</th>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>425.0</td>
<td>169.9</td>
<td>23005-419</td>
</tr>
</tbody>
</table>

9 full-size AdvancedMC slots, 2 MCH slots, 2 PM slots (9 HP)

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

- 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)

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroTCA system for 9 single full-size AdvancedMC modules</td>
<td>1</td>
<td>10849-005</td>
</tr>
<tr>
<td>MicroTCA power input module, single full-size 6 HP, 1 piece</td>
<td>1</td>
<td>23098-561</td>
</tr>
</tbody>
</table>

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

- 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)
  - Schröff 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 EMC)
  - Air circulation from right to left
  - Air filter (exchangeable from front)

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroTCA system for 2 single and 4 double full-size AdvancedMC modules</td>
<td>1</td>
<td>11850-011</td>
</tr>
<tr>
<td>MicroTCA power input module, single full-size 6 HP, 1 piece</td>
<td></td>
<td>23098-561</td>
</tr>
</tbody>
</table>

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

- 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

<table>
<thead>
<tr>
<th>Description</th>
<th>Backplane Slots</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroTCA case system for 4 single full-size AdvancedMC modules</td>
<td>4 full-size, 1 x MCH</td>
<td>1</td>
<td>21850-045</td>
</tr>
<tr>
<td>MicroTCA subrack system for 4 single full-size AdvancedMC modules</td>
<td>4 full-size, 1 x MCH</td>
<td>1</td>
<td>21850-046</td>
</tr>
</tbody>
</table>

### 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

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

- 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)

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

Order Information

<table>
<thead>
<tr>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>HP</td>
<td>mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>84</td>
<td>197</td>
<td>1</td>
<td>20849-204</td>
</tr>
<tr>
<td>4</td>
<td>84</td>
<td>197</td>
<td>1</td>
<td>20849-205</td>
</tr>
</tbody>
</table>

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/

ServicePLUS see page 82
MicroTCA backplane for subracks

- In accordance with PICMG MicroTCA.0 R1.0

Delivery comprises

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>Backplane</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Slots AMC</th>
<th>Width</th>
<th>Height</th>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>425.0</td>
<td>3</td>
<td>8 full-size slots, 4 single compact, 2 MCH slots, 2 PM slots</td>
<td>23005-414</td>
</tr>
<tr>
<td>12</td>
<td>425.0</td>
<td>4</td>
<td>8 full-size slots, 4 double compact slots, 2 MCH slots, 2 PM slots</td>
<td>23005-415</td>
</tr>
</tbody>
</table>

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
- IPMB: Radial IPMB connections from both MCH slots to all AdvancedMCs, bussed redundant IPMB connections between both MCH and both PM slots
- Clock: 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, 12 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 panel

**Delivery comprises (Kit)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>Mounting rail, St, 1.5 mm, zinc-plated, M3 thread in 3 HP increments</td>
</tr>
</tbody>
</table>

**Order Information**

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting rail for single backplane in double subrack</td>
<td>20849-206</td>
</tr>
</tbody>
</table>

**Note**

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

**For further information** www.schroff.biz/oneclick

oneClick code = Order no.

Mounting aid for guide rails

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

**Delivery comprises**

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>Assembly aid, plastic, black</td>
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</tbody>
</table>

**Order Information**

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting aid for guide rails</td>
<td>20849-124</td>
</tr>
</tbody>
</table>

**Note**

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

**For further information** www.schroff.biz/oneclick

oneClick code = Order no.
MicroTCA guide rails

- 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
  - 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 (identification on guide rail: 3)

Order Information

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

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**

- Input of +12 V\textsubscript{DC} supply voltage from external source via D-Sub connector (front panel) to 16 x 12 V\textsubscript{DC} outputs of MicroTCA backplane
- Generation of +3.3 V\textsubscript{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

**Order Information**

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroTCA power input module, single full-size</td>
<td>23098-561</td>
</tr>
<tr>
<td>Connection cable Power supply, 12 V\textsubscript{DC} output to power input module, length 260 mm, 1 piece</td>
<td>23204-176</td>
</tr>
<tr>
<td>Connection cable Power supply 12 V\textsubscript{DC} output to power input module, length 550 mm, 1 piece</td>
<td>23204-182</td>
</tr>
<tr>
<td>Connection cable from power supply module (-12 V\textsubscript{DC}) to ring cable eye M5, length 2 m, 1 pce</td>
<td>23204-802</td>
</tr>
</tbody>
</table>

**Note**

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

**For further information** www.schroff.biz/oneclick

oneClick code = Order no.
MicroTCA filler modules

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.

- **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 throughput from 60 ... 80 %
  - Same design as AdvancedMC modules
  - Description see page 72

- **MicroTCA filler panel with fixed air baffle**
  - Can be screwed on; inserted into guide rails
  - With air baffle
  - Description see page 65

- **Front panel**
  - Can be screwed on
  - Without air baffle
  - Description see page 65
MicroTCA filler modules with air baffle

- Must be pushed into guide rails; can be screwed on with air baffle

Delivery comprises (assembled)

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

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroTCA filler module single compact</td>
<td>20849-187</td>
</tr>
<tr>
<td>MicroTCA filler module single mid-size</td>
<td>20849-186</td>
</tr>
<tr>
<td>MicroTCA filler module single full-size</td>
<td>20849-185</td>
</tr>
<tr>
<td>MicroTCA filler module double compact</td>
<td>20849-184</td>
</tr>
<tr>
<td>MicroTCA filler module double full-size</td>
<td>20849-183</td>
</tr>
<tr>
<td>MicroTCA filler module double full-size</td>
<td>20849-182</td>
</tr>
</tbody>
</table>

Note
- Not suitable with splitting kit
- CAD data: Please enter order number under www.schroff.biz/oneclick/

MicroTCA front panel

- Must be screwed on

Delivery comprises (assembled)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Front panel, stainless steel, 0.6 mm</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Lateral EMC profile gasketing, core: foam, sleeve: textile cladding with CuNi coating</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Assembly kit</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroTCA filler module single, 2 HP</td>
<td>5</td>
<td>20849-213</td>
</tr>
<tr>
<td>MicroTCA filler module single, 3 HP</td>
<td>5</td>
<td>20849-215</td>
</tr>
<tr>
<td>MicroTCA filler module single, 4 HP</td>
<td>5</td>
<td>20849-217</td>
</tr>
<tr>
<td>MicroTCA filler module single, 6 HP</td>
<td>5</td>
<td>20849-219</td>
</tr>
<tr>
<td>MicroTCA filler module double, 2 HP</td>
<td>5</td>
<td>20849-214</td>
</tr>
<tr>
<td>MicroTCA filler module double, 3 HP</td>
<td>5</td>
<td>20849-216</td>
</tr>
<tr>
<td>MicroTCA filler module double, 4 HP</td>
<td>5</td>
<td>20849-218</td>
</tr>
<tr>
<td>MicroTCA filler module double, 6 HP</td>
<td>5</td>
<td>20849-220</td>
</tr>
</tbody>
</table>

Note
- Not suitable with splitting kit
- CAD data: Please enter order number under www.schroff.biz/oneclick/
Field replaceable units (FRUs)

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

- Plug-in fan unit with 3 axial fans (170 m³/h each), 12 VDC, temperature controllable with NTC
- Air circulation upwards from the front

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-cooling units for development systems (11850-005,11850-007)</td>
<td>1</td>
<td>21850-035</td>
</tr>
</tbody>
</table>

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

- Fan tray with 1 axial fan (225 m³/h), 12 VDC
- With cooling unit enhanced module management controller (CU EMMC)

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-cooling units for 3 U MicroTCA system (11850-003)</td>
<td>1</td>
<td>21850-038</td>
</tr>
</tbody>
</table>

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 m³/h), 12 VDC
- With cooling unit enhanced module management controller (CU EMMC)

#### Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-cooling units for 6 U MicroTCA system (10849-005)</td>
<td>1</td>
<td>21850-036</td>
</tr>
</tbody>
</table>

#### Note

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

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

- Fan tray with 2 axial fans (each 460 m³/h), 12 VDC
- 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

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-cooling units for 6 U MicroTCA system (10849-005)</td>
<td>1</td>
<td>21850-037</td>
</tr>
</tbody>
</table>

#### Note

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

### Air filter

- Material: polyurethane UL 94 HF1
- 45 ppi, 80 % dust reduction under NEBS GR-78 core standard

#### Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air filter for 3 U MicroTCA system (11850-003)</td>
<td>1</td>
<td>21850-034</td>
</tr>
<tr>
<td>Air filter for development systems and 6 U MicroTCA systems (10849-005, 11850-005, 11850-007)</td>
<td>1</td>
<td>21850-033</td>
</tr>
</tbody>
</table>

#### Note

- CAD data: Please enter order number under www.schroff.biz/oneclick/
Overview ................ 2
- AdvancedTCA .......... 4
- MicroTCA ............ 6
- AdvancedMC .......... 8
- Applications .......... 10
- Systems ............... 12
- Chassis .............. 13
- Backplanes ........... 14
- Shelf manager ....... 15
- Cooling designs ...... 16

AdvancedTCA ........ 18

AdvancedMC carriers .......... 42

MicroTCA ........... 52

AdvancedMC modules .......... 68

VARISTAR LHX 20 with air/water-heat exchanger... 74

Internet
www.a-tca.com .. 80

ServicePLUS ...... 82

Standards
- AdvancedTCA ........ 84
- MicroTCA ........... 86

AdvancedMC modules adapted to your specifications

- Cut-outs
- Finish
- Printing
- Assembly

Handle with interlocking mechanism

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

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 %

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

- 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)

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

Order Information

- 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

- 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

For further information www.schroff.biz/oneclick
oneClick code = Order no.
AdvancedMC™-Module

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

- 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))

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

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AdvancedMC module mechanics single compact, 3 HP</td>
<td>20849-127</td>
</tr>
<tr>
<td>AdvancedMC module mechanics single mid-size, 4 HP</td>
<td>20849-128</td>
</tr>
<tr>
<td>AdvancedMC module mechanics single full-size, 6 HP</td>
<td>20849-129</td>
</tr>
<tr>
<td>AdvancedMC module mechanics double compact, 3 HP</td>
<td>20849-130</td>
</tr>
<tr>
<td>AdvancedMC module mechanics double mid-size, 4 HP</td>
<td>20849-131</td>
</tr>
<tr>
<td>AdvancedMC module mechanics double full-size, 6 HP</td>
<td>20849-132</td>
</tr>
<tr>
<td>Microswitch for AdvancedMC modules normally open, for soldering (SMD), PU 10 pieces</td>
<td>20849-209</td>
</tr>
</tbody>
</table>

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

For further information www.schroff.biz/oneclick
oneClick code = Order no.
AdvancedMC filler modules (filler panels)

- 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 throughput can be adjusted from 60 ... 80 % (please order separately)

Delivery comprises (assembled)

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

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AdvancedMC filler module single compact</td>
<td>20849-022</td>
</tr>
<tr>
<td>AdvancedMC filler module single mid-size</td>
<td>20849-106</td>
</tr>
<tr>
<td>AdvancedMC filler module single full-size</td>
<td>20849-024</td>
</tr>
<tr>
<td>AdvancedMC filler module double compact</td>
<td>20849-023</td>
</tr>
<tr>
<td>AdvancedMC filler module double mid-size</td>
<td>20849-107</td>
</tr>
<tr>
<td>AdvancedMC filler module double full-size</td>
<td>20849-025</td>
</tr>
</tbody>
</table>

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

Air baffle for AdvancedMC filler modules

- Air throughput adjustable between 60 ... 80 %
- Retrofittable

Delivery comprises

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Metal sheet with perforation, Al</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Sliding metal sheet with perforation, Al</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Assembly kit</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air baffle for AdvancedMC filler module compact</td>
<td>10</td>
<td>20849-016</td>
</tr>
<tr>
<td>Air baffle for AdvancedMC filler module mid-size and full-size</td>
<td>10</td>
<td>20849-017</td>
</tr>
<tr>
<td>Air baffle for AdvancedMC filler module full-size, cutaway printed boards</td>
<td>10</td>
<td>20849-018</td>
</tr>
</tbody>
</table>
Microswitch for AdvancedMC modules

- Microswitch for soldering (SMD)

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty/PU</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microswitch for AdvancedMC module</td>
<td>10</td>
<td>20849-209</td>
</tr>
</tbody>
</table>

Dimensions

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. switch current</td>
<td>1 mA, 5 V DC</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-15 °C ... +70 °C</td>
</tr>
<tr>
<td>Electrical lifespan</td>
<td>$10^5$</td>
</tr>
</tbody>
</table>

For further information www.schroff.biz/oneclick
oneClick code = Order no.
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 air/water heat exchanger.

**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

VARISTAR LHX 20 for AdvancedTCA applications

- Cooling capacity of up to 20 kW
- Air flow capacity 1000 ... 3000 m³/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

ServicePLUS (more details see page 82)

- Configuration: Simple. Fast to the ideal product.
- assembly: Assembled by professionals. Double benefit!
- modification: Small changes. Large impact.
- life cycle: Bespoke service. For the entire life of the product.

www.schroff.biz/serviceplus/
VARISTAR LHX 20 with air/water heat exchanger

VARISTAR LHX 20 for Advanced TCA

- 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 VDC or 230 VAC, 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)

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

Order Information

<table>
<thead>
<tr>
<th>Height</th>
<th>Height H</th>
<th>Width W</th>
<th>Depth D</th>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>2100</td>
<td>800</td>
<td>800</td>
<td>230 VAC</td>
<td>10130-010</td>
</tr>
<tr>
<td>42</td>
<td>2100</td>
<td>800</td>
<td>800</td>
<td>48 VDC</td>
<td>10130-011</td>
</tr>
</tbody>
</table>

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.
**VARISTAR LHX 20 with air/water heat exchanger**

**Technical data LHX20**  
(only air/water heat exchanger)

- **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**: Water  
  - **Water inlet temperature**: 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
- **Air circuit**:  
  - **Airflow volume, temperature**: dependently controlled  
  - **Air outlet LHX 20 (adjustable)**: 18 .... 30° C
- **Electrical data AC**:  
  - **Supply voltage (single phase mains/line)**: 230 VAC (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 VDC  
  - **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

**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**: Water  
  - **Water inlet temperature**: 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
- **Air circuit**:  
  - **Airflow volume, temperature**: dependently controlled  
  - **Air outlet LHX 20 (adjustable)**: 18 .... 30° C
- **Electrical data AC**:  
  - **Supply voltage (single phase mains/line)**: 230 VAC (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 VDC  
  - **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)

*) at constant incoming air temperature of 40 °C

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
VARISTAR LHX 20 with air/water heat exchanger

Ethernet gateway for LHX 20

- Network connection for VARISTAR air/water heat exchanger LHX 20
  - Ethernet 10/100 MHz
  - RS 485
  - RS 232
- Stack SNMPv3 protocol

Delivery comprises (assembled)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Interface in small case, height 46 mm, width 158 mm, depth 100 mm, RAL 7021; mains/line voltage 230 VAC; 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</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Equipment cable SCHUKO/UTE connector, cable length 2 m, Wieland type ST18/3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Mounting bracket</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>User manual</td>
</tr>
</tbody>
</table>

Order Information

- 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.
VARISTAR LHX 20 with air/water heat exchanger

Further information:
www.a-tca.com or AdvancedTCA E-mail hotline:
Europe, Asia: infoATCA@schröff.biz
America: infoATCA@pentair-ep.com

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- error-free choices
- simply ordering

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- Backplanes
- Power supplies

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- order exactly to your requirements

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- save valuable time
- know that everything fits

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- Customized product developments

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- receive your individual solution
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ServicePLUS
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• modification • support

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• error-free choices
• receive extra fast delivery

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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.
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• minimize down time
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(life cycle
Custom service. Throughout a product’s lifetime.

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• Commissioning
• Guarantee extensions
• Maintenance, repairs, replacement parts
• Recycling

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• choose your service
• be well looked after

(Some services might not be available in every country)
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.
- **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 scalable 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).

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

In designing the MicroTCA specification the principal goal was a scalable 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 manufacturers, the compatibility of Schroff systems with these components has been and will continue to be tested and guaranteed.
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.

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