



PILLER
Power Systems



APOTRANS AT
Static Transfer Switch

Nothing protects quite like Piller

piller.com

Next generation Static Transfer Switches



APOTRANS
represents the
latest evolution
of redundancy

About Piller

Founded in Hamburg, Germany over 100 years ago by Anton Piller, the company has a long history in the manufacturing of exceptionally high quality electrical machines and power quality equipment. Today, Piller is a world leader and innovator in a number of power protection technologies, specialising in UPS systems for 'mission critical' applications and Frequency Converters for Aircraft Ground Power amongst other uses. For the past 30 years, the company has designed and manufactured static technology products alongside their rotary counterparts, giving it a unique position in today's power protection market.

Piller UPS systems are found in applications where continuous high quality power is paramount such as computer data centres, financial institutions, broadcasting, telecommunication networks, airports, healthcare facilities and continuous process production sites.

Piller Frequency Converters and related products are widespread in both military and civil applications providing 400Hz ground power systems to airports, ship-to-shore supplies in ports and on-board power systems for both submarine and surface vessels.

Since 1919, Osterode in Germany has been the home of Piller Research, Development and Manufacturing and a source of pride where all products can be seen in manufacture, from raw material through to finished goods. The Piller Group is part of the family of leading engineering companies belonging to the British multi-discipline group Langley Holdings Plc. (www.langleyholdings.com).

The Problem

All around the globe complex electrical and electronic processes, information technology and automation, govern our manufacturing, service industries, data management and communications.

In today's fast-moving world, Piller continues to develop new and innovative solutions to meet the challenge. As the requirement for resilient and redundant power supplies is growing, the Piller APOTRANS represents the latest evolution of redundancy.

The Solution

The APOTRANS static transfer switch is suitable for both new and existing power distribution systems. By either retrofitting APOTRANS into an existing system or designing a new system, the

Piller APOTRANS supports critical loads by automatically switching to an alternative power source should the preferred source become out of tolerance or fail completely. The changeover occurs within milliseconds ensuring that the load is supplied with continuous power.

The APOTRANS Principle

- Thyristor-based static transfer switch
- Very fast transfer
- Rugged and highly reliable SCR technology
- Bypass and isolation switches
- Internal redundancy



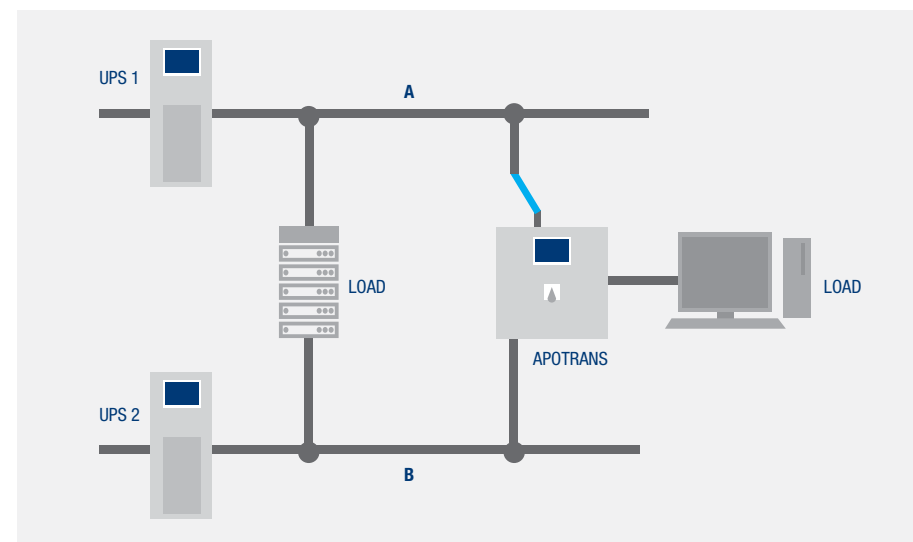
One step ahead

Benefits

- Fuseless design
- Safe 4-pole transfer
- Shortest transfer times, typically 3 ms per phase
- Fully redundant, monitored electronics
- Thyristors monitored in every operating state
- Natural air cooling
- Low noise
- High efficiency
- Easy to operate
- User-friendly operating panel
- Adjustable operating criteria
- Event memory
- Comprehensive communications options
- Remote monitoring
- Integration with building management system
- Easy to maintain
- Built-in manual bypass
- Quick-swap components

APOTRANS AT 25 A to 63 A

The Piller APOTRANS supports critical loads by automatically switching to an alternative power source should the preferred source become out of tolerance or fail completely. The changeover occurs within milliseconds ensuring that the load is supplied with continuous power. The AT 25 A to 63 A is a low current four-pole, three-phase transfer switch. The use of oversized thyristors allows a fuseless design. The AT 25 A to 63 A is available in three different housings according to the users needs e.g. a wall-mounted small cabinet with three phase socket outlets, for use in a raised floor or within a 19" rack.





APOTRANS AT 100A to 1600A

Feature	Benefit
Very high reliability	Third generation static transfer switch by the quality leader in high power UPS. The UNIBLOCK™ is the most reliable high power UPS in the world and has been built since 1982 using static switch technology. Based on this long experience the APOTRANS' reliability is assured. Several thousand APOTRANS have been installed since 1996.
Internal redundancy	APOTRANS is used to build systems of the highest reliability to fulfil the highest availability demands. This can only be achieved with internal redundancy. APOTRANS has three power supplies, redundant controllers and double redundant fans.
Fuseless design	Only very robust types of thyristor are used. No semiconductor fuses are needed because of the high short circuit current rating of the thyristors. Such fuseless design simplifies coordination of protection devices.
Fastest transfer	Phase selective transfer minimises the transfer time of every phase. Normal computer loads are sensitive to disruptions, but have no problems with steps in phase angle. APOTRANS can use phase selective transfer even with 180° unsynchronised sources. The changeover occurs typically within 3 milliseconds per phase.
Inrush control	The inrush control limits transformer inrush currents during manual and automatic transfers. This process optimises current limit with transfer time and protects the transformer against stress whilst avoiding over-current in upstream devices.
Seamless interface with a UPS system	With external signals, the behaviour of the APOTRANS can be adapted to the operating status of the UPS system. This allows for flexible and more reliable use in UPS systems.
Continuous thyristor monitoring	Detection of short or open circuit thyristors with immediate action and alarm.
Advanced adaptive	A static transfer switch must not transfer its source under short circuit conditions at the output. External protection devices must clear the fault. Meanwhile, the APOTRANS uses a short circuit detection sophisticated algorithm to detect any short circuit and act accordingly.
True front access	Installation and maintenance of the APOTRANS cabinet version can all be carried out from the front. The units can be installed in front of a wall or side by side with other components. This makes it very flexible and easy to use.
3-pole or 4-pole design	In a TN-S system, the neutrals of independently earthed sources must not be connected and need to be switched so that neutral current only flows through the active source. This requires 4-pole switching. For systems where no neutral is needed, APOTRANS is also available in a 3-pole design.
Cabinet with top or bottom cable entry	Very flexible use due to entry of the installation cables from the top, bottom or both.
Full open frame product line	APOTRANS is available in a cabinet or as an open frame for integration into PDUs and switchgear. The open frame solution allows easy customisation to local electrical standards.

Trusted to provide maximum availability

Reliability

The APOTRANS is used to improve the reliability of a power system and this is achieved by using oversized robust thyristors and internal redundancy:

- Redundant onboard controllers
- Triple redundant power supplies
- Double redundant fans
- Function check of active and inactive thyristors during each cycle

Simple Integration

The use of very robust, correctly sized thyristors allows a fuseless design of the APOTRANS. This simplifies the integration into the power system.

Since there are no built-in semiconductor fuses or current-limiting MCCB's, coordination with upstream and downstream protection devices becomes simple.

APOTRANS can be programmed to match system requirements:

- Transfer windows
- Input voltage tolerance
- Input frequency tolerance

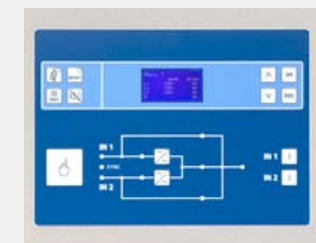
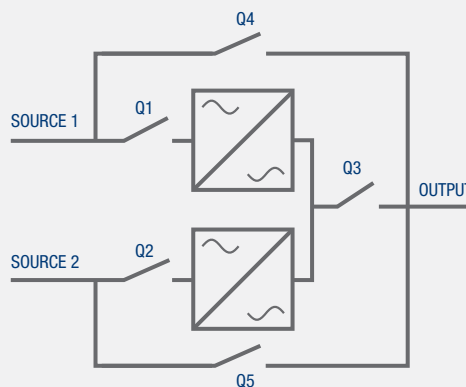
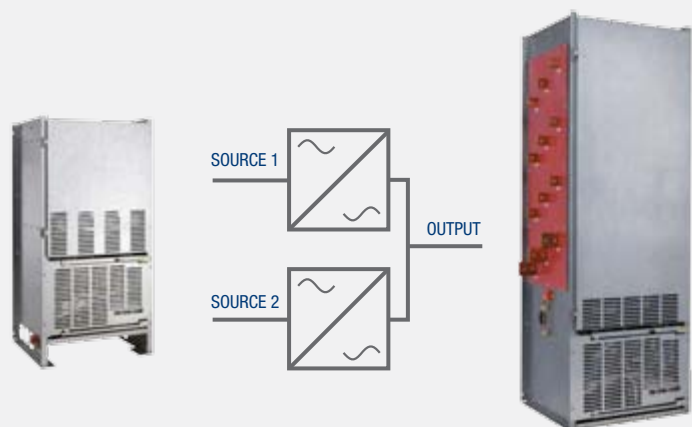
Top or bottom cable access simplifies installation
Full product range available as open frame for integration into power distribution panels.

Unsynchronised Sources

Fast and safe transfer of 180 degree "out-of-phase" sources.

3-pole or 4-pole Versions

In a TN-S system the neutrals of independently earthed sources must not be connected. The 4-pole version of APOTRANS accounts for this demand by switching the neutral also.



APOTRANS configurations

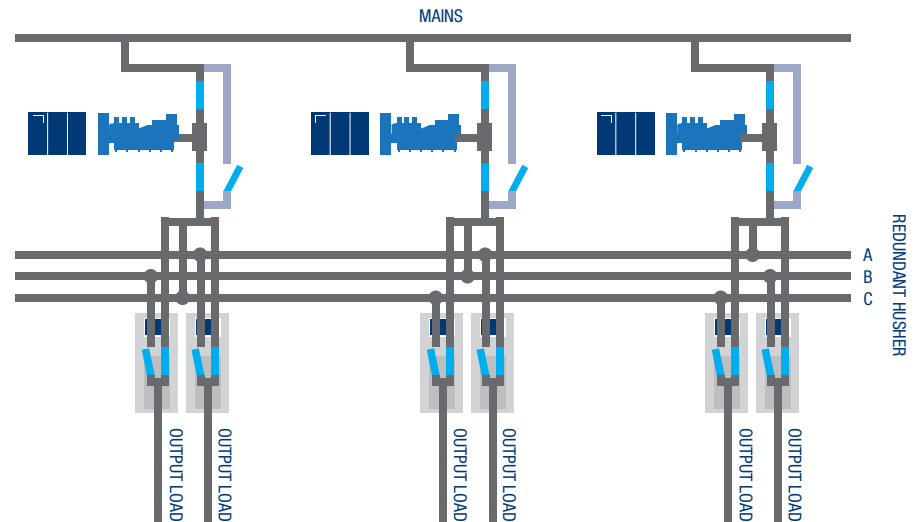
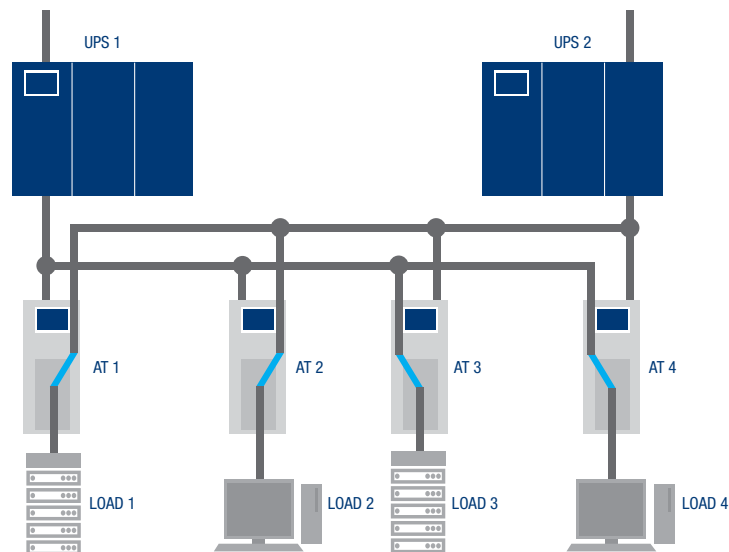


Wide Range of Possibilities

The APOTRANS adds a new level of system resilience, regardless of the source of the electricity supply! All basic and advanced system designs are possible, for example isolated redundancy, distributed redundancy or system + system redundancy. With redundancy brought right up to the load, there are numerous possibilities for system design.

Isolated Redundant or Distributed Redundant Configuration

In the isolated redundant configuration, the redundant unit is normally running at no load. The advantage of such a scheme is simplicity and ease of expansion. The concept can be enhanced with a distributed redundant design where no single module is assigned as a redundant unit. Instead, this role is shared equally among all modules. In the event of a single unit failure, its load will be shared proportionately over the remaining units. The advantage is equal load sharing among all units for improved efficiency.



Taking care of your investment

After Sales Service

Piller believes that manufacturing a first class product with inherent high reliability is simply not enough. A power system with STS must protect the client's interests just as well on its last day as it does on the first. The company prides itself in offering a world-wide network in the professional care of our clients' investment in Piller UPS through a team of highly trained and internationally coordinated technicians. At any moment, Piller technicians are taking care of over 9000 units of high power UPS equipment in over 40 countries, supporting clients' activities in data processing, banking and finance, industry, communications, aviation or defence, 24 hours a day, 365 days a year.

Emergency Response Service

Sometimes, support and expertise is needed when you least expect it. For those times, you need reassurance that help will be available in the shortest possible time. The Piller service centres are strategically positioned in relation to the installed base in order to provide both the best possible response time and local knowledge of the client's installation. Piller offers 24 hour emergency response and has technicians on standby for immediate dispatch at every one of our service centre locations.

Preventative Maintenance Service

Security of supply to the critical equipment is maintained by conducting correctly carried out periodic preventative maintenance. Preventative maintenance also minimises malfunctions and extends the life of the UPS system to 20 years or more.

Parts Availability

Piller preventative maintenance and emergency response services are fully supported by a network of stocked parts held both at the service centres and elsewhere in strategic locations around the world.

Consultation and Other Services

Ever changing demands in business can lead to the need for alteration, expansion or redeployment of a UPS system. Through Technical Support teams Piller can evaluate the requirements and advise on the necessary changes. They can also manage the delivery of these changes and consult with you and your partners to ensure the minimum of disruption.

- Replacement Battery Systems
- Reconfiguration and redeployment
- Upgrades
- Remote Monitoring Systems
- Site surveys

Operator Training

All newly installed systems will involve a degree of operator training conducted either at site or in one of our training centres. Piller offer further training by way of refresher courses and for new employees ensuring that client staff continue to have the skills necessary to operate the UPS system with the minimum of risk.





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- STATIC UPS SYSTEMS
- STATIC TRANSFER SWITCHES
- KINETIC ENERGY STORAGE
- AIRCRAFT GROUND POWER SYSTEMS
- FREQUENCY CONVERTERS
- NAVAL POWER SUPPLIES
- SYSTEM INTEGRATION



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