





Innovative power solutions

PBF is a worldwide operating company specialised in switched-mode power supplies, inductive coil applications and power cabinets. PBF develops, manufactures and delivers high level power solutions for original equipment manufacturers and system suppliers. Applications range from defense & security systems and analytical, medical & scientific equipment, to semiconductor equipment, precision metal machining and electronic manufacturing services. Customers are the likes of Philips, Bosch, Thales, FEI Company and Coherent.

Technology-driven by nature, PBF develops tailor-made power solutions in close collaboration with its customers. Integrating electrical engineering, electronics, mechanical constructions and software, PBF's engineers translate new power concepts into concrete products. These range from relatively simple to highly complex systems, depending on the customer's specifications. Drawing on its large R&D potential and its vast manufacturing expertise, PBF can act as a co-developer with oem's, and as a co-maker with system suppliers. Starting from its focus on low volume custom-made products, PBF can call in its worldwide sourcing network to cover the medium volume, medium price range (up to 10.000's).

PBF Group emanated from Royal Philips Electronics through a Management Buy Out in 1999. As an independent company, PBF more than ever concentrates on market demands. Through collaborations with international supply chain partners, PBF covers the European market and increasingly other parts of the world. The fast growing company now employs more than 50 people in Almelo, The Netherlands, and Shenzhen, China. Production facilities are in Almelo, and Shenzhen acts as PBF's low-cost sourcing foothold in the Far East.





Research and Development

Key to PBF is the R&D into technologies for power conversion. Research is devoted to increasing the efficiency and power density of our power supplies. The target is to further improve product reliability and lower product cost. Starting a design with extensive computer simulations and calculations leads to almost first time right. This will shorten time to market significantly.

The R&D team of PBF has extensive experience in development of power solutions up to 100 kW. Our engineering team is responsible for the design of mechanics, overall construction, wiring, special coils and transformers. Also they are responsible for the Technical Product documentation.



Production

PBF has in-house a wide range of production facilities for all production steps. These include:

- Soldering of SMD and through-hole components on prototypes or small PCB series.
- Winding of a variety of special coils and transformers.
- Potting and casting with epoxy, polyurethane and silicon materials.
- Production of wiring assemblies
- Assembly of prototype and small series power supplies, power cabinets and external transformer units.
- Fully automated testing.

Quality assurance

PBF defines quality firstly in terms of meeting customers' requirements and expectations, regarding performance, price, lead time. In order to achieve maximum customer satisfaction, PBF closely collaborates with their customers and subcontractors in a long term relationships. And secondly, but no less important, PBF Group strictly adheres in all its activities to the highest standards in quality, health, safety and environment (QHSE). The PBF Group management system has been certified since 2000 in accordance with the international ISO 9001 and ISO 14000 standards. PBF has many years of experience with CE, UL, CSA and SEMI testing and certification of their products. Testing to all the functional specifications includes the environmentals, safety and EMC.





Standard power supplies

Standard high-efficiency power supplies for 19" rack systems for 300W and 6500W. The 300W PRS300 series is fanless and can be used in a convection cooled environment. The 6.5kW PRS6000 series has a 3-phase input.



Custom designed power supplies

Main part of PBF's portfolio is custom designed high-performance power supplies. Specifications may include ultra low ripple, high voltage, high current, pulsed voltage or current, high efficiency, high accuracy in voltage or current, low volume or weight.



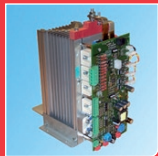
External transformer units

Tools to adapt electrical equipment to mains voltages all over the world, designed to meet all the relevant Safety and EMC standards.



Power cabinets

Power cabinets tailored to specific customer applications, such as industrial systems, medical systems, electron microscopes or scientific systems.



Special power systems

Tailored to customer specifications, PBF's special power systems include DC motor controllers, inverters, current drivers, ultra low noise current controllers, MPP converters for solar applications, and power for lighting purposes.



Special coils and transformers

PBF's experience in design and manufacturing of special coils and transformers, includes orthocyclic winding, forming to different shapes, improving thermal performance by special potting or liquid cooling technologies, special setups for testing, and high voltage technology. Applications range from electron microscope lenses and deflection coils, and linear motors, to transformers for contactless energy transfer.





Applications

PBF's Products can be used in the following applications:

- Electron microscopy
- Military appliances
- Semiconductor equipment
- Industrial equipment
- Test & measurement equipment
- Public address systems
- Security systems
- Medical equipment



Technologies/capabilities

- **High efficiency:** Due to the use of special resonant and ZVS converters switching losses are almost zero. Innovative synchronous rectifiers can increase the efficiency even more, especially for low voltage outputs.
- **High power density:** A high efficiency combined with a good packaging technology leads to a high power density. Power densities of up to 15W/q.inch can be obtained for AC/DC power supplies.
- **High reliability and lifetime:** MTBF and lifetime calculations are used to obtain reliability and lifetime figures. Designs have been worstcase calculated and sufficient margin is used for component stress. Because of the high efficiency temperatures can be kept low, which has a positive effect on reliability.
- **Ultra low ripple and/or low EMI:** PBF has the knowledge how to design switch mode power supplies with extremely low output noise and ripple. Noise levels up to 0.5ppm can be obtained. Also conducted and radiated emissions can be designed at a much lower level as the EMC standards require.
- **High voltage:** Experience and knowledge of high voltage power supplies up to 100kV and up to 30kW is available at PBF. Resonant topologies are used for high voltage.
- **High pulse current:** Power systems with pulsed currents up to 12000A at a maximum voltage of 20V integrated in one 19" is an example for this product category. The design of these current sources with a very low current ripple at almost no output capacitance is one of our capabilities.
- **High voltage or current stability:** Power supplies can be designed with a very high current- or voltage stability of up to 0.5ppm/°C.
- **Ultra low noise current or voltage sources:** Current or voltage sources can be designed with a low noise level up to 0.1ppm-rms.



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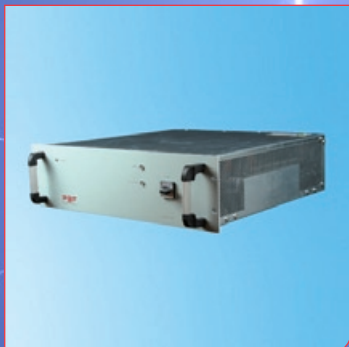
Standard power supplies



PRS300 Series

For use in 19" racks

- 300W 19" rack power supply
- 90...264Vac with PFC
- Free convection cooling
- 5V, 12V, 15V, 24V, +/-12V, +/-15V 48V outputs available
- Efficiency up to 93%
- UL/CSA certified



PRS6000 Series

- 65V 100A output
- Remote sense
- Ripple 500uVrms
- 400Vac 3 phase input
- Efficiency 95%
- 19" 3HE format

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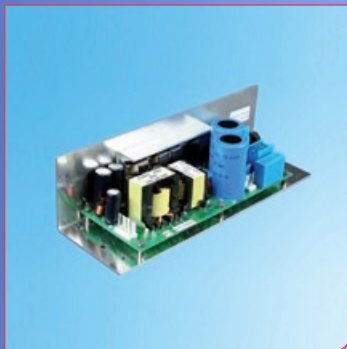
Custom designed power supplies

100 - 400W



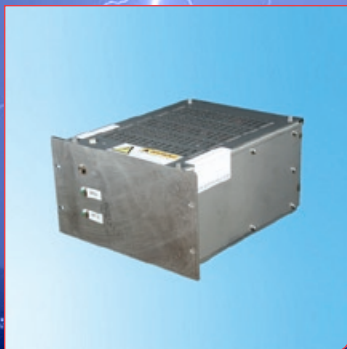
160W ACDC power supply

- Input 90...264Vac
- Output:
 - +/-180V / 0,1A; ripple 500uVrms
 - +/-150V / 0,2A; ripple 500uVrms
 - +/-15V / 2A ; ripple 500uVrms
 - +5V / 1,5A ; ripple 2mVrms
- Efficiency > 75%
- EMC EN61000-6-3, EN61000-6-2
- Size 2HE, 84TE; for VME-rack
- Ultra low EMI levels



150W ACDC power supply

- Input 115 / 230Vac
- Output 40V / 3.8A
- 300W peak
- Efficiency > 90%
- Size 185 x 70 x 60 mm
- Convection cooled
- UL/CSA certified



ACDC power supply 120W

- Input 180...264Vac
- Output:
 - 2 x 5kV / 10mA
 - +/- 15V / 100mA
 - +5V / 100mA
- Size 238 x 132 x 250 mm
- UL/CSA certified

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Custom designed power supplies

100 - 400W



300W ACDC power supply

- Input 90...264V
- Output:
 - 3.3V / 25A ; ripple 500uVrms
 - 5V / 15A ; ripple 1mVrms
 - +15V / 5A ; ripple 500uVrms
 - 15V / 2A ; ripple 1mVrms
 - +5V / 5A ; ripple 300uVrms
- Efficiency > 80%
- MTBF 160000hrs (45gr.C)
- EMC to MIL461E, EN61000-6-4, EN61000-6-2
- Size 6HE, 10TE; for VME-rack



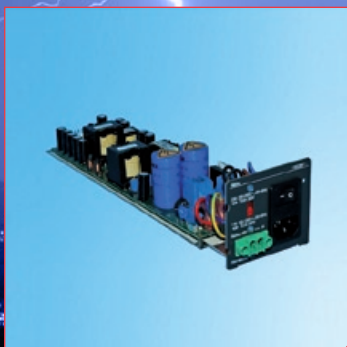
300W ACDC power supply

- Input 90...264V
- Output:
 - +/-12V / 6A, +5V / 20A, +5.5V / 9A
- Efficiency 90%
- Convection cooling
- Size 425x112x60 mm
- Ultra low EMI levels



150W rack mounted

- For use in a military application*
- Power supply 150W
 - Vin 90...264Vac / Nobreak input
 - Vout +/- 15V / 5A, +5V / 1A, +3.3V / 12A
 - Efficiency > 82%
 - 19" rack mount 6HE, 8TE



150W power supply

- Input 90...264Vac
- Output 48V / 3A
- Peak power 300W
- Isolated battery backup input 42V...58V
- Efficiency 90%

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Custom designed power supplies

1500 - 10000W



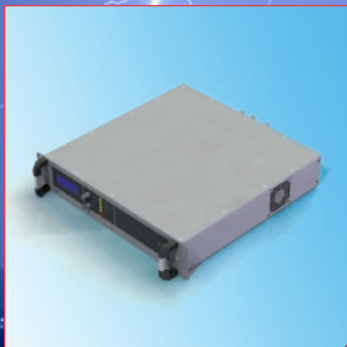
6000W ACDC power supply

- Input 180...264Vac
- Output 8...60V
- Output current 0...100A
- Pulsed current capability
- Power factor > 0.98
- Efficiency 92%
- Size 367x131x300mm



1200A current source

- 400Vac 3 phase input
- Power factor 0.94
- 20V / 1200A output
- Pulsed current capability
- Pulsed output current
- Ultra low ripplecurrent
- Efficiency 88%
- Output capacitance < 60uF
- 19" 4HE format



100A current source

- 400Vac 3 phase input
- 20V / 100A output
- Pulsed current capability
- Pulsed output current
- Ultra low ripplecurrent
- Efficiency 88%
- 19" 2HE format

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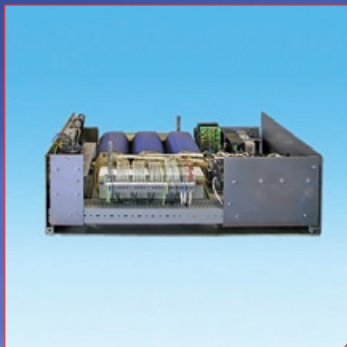
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External Transformer Units



ETU8KVA

- Input 208V/230V/400V/480V
- Output 400Vac 3 Ph. 5KVA
- Output 250Vdc/12A
- Output 24Vdc/10A
- Size 500x320x1000 mm
- EMO circuits
- Voltage/phase monitoring



ETU15KVA

- Input 208V/230V/400V/480V
- Output 400Vac 3 Ph. 15KVA
- Output 24Vdc/8A
- Size 500x600x800 mm
- EMO circuits
- Voltage/phase monitoring
- UL/CSA certified



ETU30KVA

- Input: 190/200/208V/220V/360/380/400V/420/480Vac
- Output 400Vac 3 Ph. 30KVA
- Output 24Vdc/10A
- Size 600x800x800 mm
- EMO circuits
- Voltage/phase monitoring



ETU60KVA

- Input: 190/200/208V/220V/360/380/400V/420/480Vac
- Output 400Vac 3 Ph. 60KVA
- Output 24Vdc/10A
- Size 800x973x880 mm
- EMO circuits
- Voltage/phase monitoring

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Power Cabinets



36kW Power Cabinet

Used for industrial Electrochemical Processes

- Input 400Vac, 3 phase
- Output 8...60V
- Output current 0...600A
- Pulsed current capability
- Power factor > 0.98
- Efficiency 92%
- Size 1800x600x800mm



12000A pulsed current source

*Used for industrial Processes
(In development)*

- Input 400Vac, 3 phase
- Power factor 0.94
- Output 0...20V
- Output current 0...12000A
- Real current source output
- Pulsed current capability
- Output capacitance < 600uF
- Efficiency 88%
- Size 2200x900x800mm
- Up to 10 units in parallel
- Redundant system
- All units are pluggable

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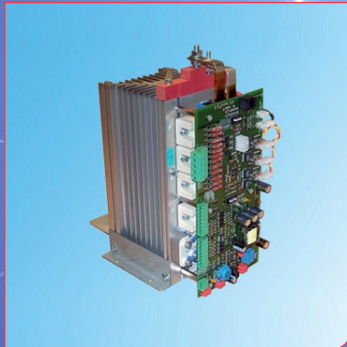
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DC Servo amplifier

For military radar system

- Input 230Vdc
- Output current max.:
90A pulsed, 40Arms
- DSP controlled
- Input -7.5 & +7.5V
- Gain 12A/V



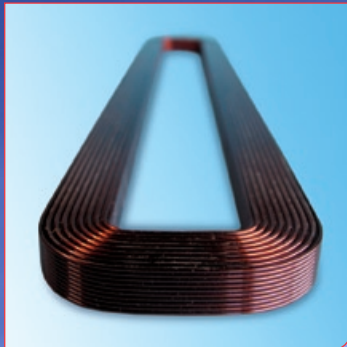
500A Current Source

For use in rotary UPS systems

- 320...600Vac 3 phase input
- 0...500A output
- Pulsed output current
- Settling time
- Efficiency >99%
- To be used with input inductor
- Size 150 x 250 x 300 mm

Special coils and transformers

Electronic microscope / Linear motors / Measuring equipment



- Coil design
- Coil winding with one, two or more wires parallel
- Single or multilayer
- With or without coil former
- Many different shapes
- Outside dimensions 1 - 600..... mm
- Wire size 0,04 - 3mm
- Round, square or rectangular wire

- Bending coils
- Assemble and adjusting coils
- Tool design
- Automatic or manual test facilities
- Tests: - High voltage
- Inductance
- Resistance
- Magnetic field direction

- Potting - casting experience and facilities
- In or outer vacuum
- With or without housing
- Epoxy, Polyurethane or silicon casting materials
- Design casting tools

- Technologies for water cooling of coils
- Water pressure and flow testing
- Knowledge of materials and surface treatment

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