

Specific Equipment for Demanding Scientific Applications



MAGNET POWER SUPPLIES

WME Power Systems GmbH is specialised in custom power electronic devices for professional applications since 1982.

The main focus is on high and low voltage power supplies as well as high voltage and power amplifiers.

We develop for you with the same diligence you exercise with your products, from cost-efficient standard products to individual applications that meet the highest demands.

Products developed and manufactured by WME Power Systems are deployed world-wide. Amongst others we supply products for medical applications – a sensible domain placing high demands regarding price and reliable solutions.

Customers in the fields of research as well as industrial applications also benefit from this know-how.

Among our satisfied customers are well-known institutions and companies like Airbus KID Systeme, Bielomatik, Bosch, BSH, Comet, DESY, DLR, Elektrisola, Fraunhofer, GSI/FAIR, HZB /BESSY, Infineon, Intel, FZ Jülich, KIT, Lufthansa Technik, MPI, Philips Medical Systems, Physikalisch Technische Bundesanstalt, Siemens, XFEL, Yxlon International.

Our proven QA system and the quality-oriented mindset of our employees ensure the constant high quality of our products.

The products made by us are designed for a lifetime of more than 15 years of continuous operation without failure.

All of our existing products can be modified or complete new designs can be developed to meet your requirements.

PULSED MAGNET POWER SUPPLY

250 A_P / 100 V_P

FEATURES

- Precision Pulse Generator
- Programmable Ramp Generator
- External Triggering
- Ethernet/SCPI Interface
- Current-Mode Control
- Precision Monitoring Outputs
- Complete Protection
- Air Cooled



The PA1025P is a highly stable pulsed magnet power supply unit that is used to feed the chicane dipole magnets of the cooler synchrotron COSY at FZ Jülich.

Based on a linear, air cooled pulse amplifier, the power supply provides output currents of 0 to 250 A_P at output voltages of up to 100 V_P. The polarity of the pulses can be selected. Typical pulse timing is in the range of 1 ms to 100 ms.

The accuracy of the output current pulses is better than 1000 ppm at 10 ms ramps. This figure includes peak to peak ripple and noise, reproducibility, as well as thermal and long-term drift.

An Ethernet interface is provided to control the unit by means of an SCPI command set. A second Ethernet interface is used as a monitor/service interface. Local mode control is possible via the monitor interface.

Precision monitoring outputs pinpoint the actual values on additional connectors on the front panel.

A programmable ramp generator produces the shape of the current pulses. The ramp generator is triggered by external trigger signals assuring very low jitter. For testing purposes or applications requiring less strict timing ramp generator can also be triggered by SCPI commands or manually.

The unit is fully protected against overload, over temperature and short circuit. Many operational parameters like internal supply voltages, internal temperatures, magnet leakage current, load current oscillation, DCCT operation and external interlock inputs are monitored. In case of a malfunction the unit will shut down and the status is stored. For a quick overview, the complete status information is indicated on the front panel. Detailed status information is available via the monitor or via SCPI.

The construction is based on a 19" housing, 4 units high.

TECHNICAL DATA

Output Current	-250 - +250 A _P
Output Voltage	-100 - +100 V _P
Average Output Current	< 2 A
Overall Pulse Accuracy	< $\pm 1 \cdot 10^{-3}$
Rise Time	1 - 100 ms (load dependent)
Overshoot	< $\pm 1 \cdot 10^{-3}$
Common Mode Voltage	-50 - +50 V
Mains Voltage	230 V _{AC} / $\pm 10\%$ / 47 - 63 Hz
Ambient Temperature	+10 - +35°C (operating)
Dimensions (w x h x d)	483 x 176 x 555 mm ³ (19", 4 U)
Weight	25 kg

LINEAR 4-Q MAGNET POWER SUPPLY

±40 A / ±25 V

FEATURES

- Very High Precision Power Amplifier
- Current-Mode Control
- Overall Stability: < 100 ppm
- Very Low Drift / Noise
- High Power Bandwidth
- Slew-Rate Control
- Precision Monitoring Outputs
- Complete Protection
- Water Cooled



The PA2540 is a highly stable 4-quadrant power supply unit that is used to feed different magnets of the storage rings of BESSY II and the PTB Metrology Light Source in Berlin.

Based on a linear, water-cooled amplifier, the power supply provides output currents of ±40 A at output voltages of ±25 V. The overall stability of the output current is better than 100 ppm. This figure includes peak to peak ripple and noise, as well as thermal and long-term drift.

Its linear nature makes it possible to use the power supply for applications requiring highly dynamic output currents, too. Up to 1000 Hz power bandwidth can be achieved via the additional modulation input. The modulation signal is summed to the current setpoint. Optionally, the current setpoint can be multiplied by the modulation signal.

Current setpoint, actual values, control and status signals are exchanged via a control interface. A slot is allocated to accommodate the customer's proprietary control interface or a standard interface card. It allows for the integration of the unit into the control system of the facility. Precision monitoring outputs pinpoint the actual values on additional connectors on the front panel. In case of sudden setpoint changes, the rate of change is restricted by means of an adjustable precision slew-rate limiter.

Two DCCTs are used to measure the output current for regulation and for monitoring independently. This allows the control system to detect even small deviations in the output current.

The unit is fully protected against overload, over temperature and short circuit. Many operational parameters like internal supply voltages, internal temperatures, coolant flow rate, magnet leakage current, load current oscillation, DCCT operation and external interlock inputs are monitored. In case of a malfunction the unit will shut down and the status is stored. For a quick overview, the complete status information is indicated on the front panel.

The construction is based on a 19" housing, 3 units high.

TECHNICAL DATA

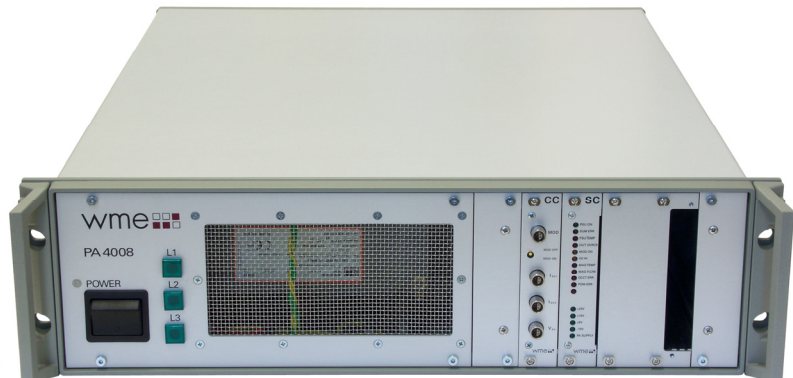
Output Current	-40 - +40 A
Output Voltage	-25 - +25 V
Overall Stability	< ±100 ppm (over ambient temperature range; including ripple, noise and 8 h drift)
Ripple + Noise	< 50 ppm _{PP} (load: 1 mH / 200 mΩ)
Absolute Accuracy	< ±5·10 ⁻³
Power Bandwidth (-3dB)	DC - 1000 Hz (via modulation input; into a suitable load)
Slew-Rate	8 A/s (adjustable)
Common Mode Voltage	-50 - +50 V
Mains Voltage	3x 400 V _{AC} / ±10% / 47 - 63 Hz
Power Factor	> 0.9
Ambient Temperature	+10 - +40°C (operating)
Dimensions (w x h x d)	483 x 132.5 x 554.5 mm ³ (19", 3 U)
Weight	40 kg

LINEAR 4-Q MAGNET POWER SUPPLY

±8 A / ±40 V

FEATURES

- Very High Precision Power Amplifier
- Current-Mode Control
- Overall Stability: < 100 ppm
- Very Low Drift / Noise
- High Power Bandwidth
- Slew-Rate Control
- Precision Monitoring Outputs
- Complete Protection
- Air Cooled



The PA4008 is a highly stable 4-quadrant power supply unit that is used to feed different magnets of the storage rings of BESSY II and the PTB Metrology Light Source in Berlin.

Based on a linear, air-cooled amplifier, the power supply generates output currents of ±8 A at output voltages of up to ±40 V. The overall stability of the output current is better than 100 ppm. This figure includes peak to peak ripple and noise, as well as thermal and long-term drift.

Its linear nature makes it possible to use the power supply for applications requiring highly dynamic output currents, too. Up to 1000 Hz power bandwidth can be achieved via the additional modulation input. The modulation signal is summed to the current setpoint. Optionally, the current setpoint can be multiplied by the modulation signal.

Current setpoint, actual values, control and status signals are exchanged via a control interface. A slot is provided to accommodate the customer's proprietary control interface or a standard interface card. This allows for the integration of the unit into the control system of the facility. Precision monitoring outputs pinpoint the actual values on additional connectors on the front panel. In case of sudden setpoint changes, the rate of change is restricted by means of an adjustable precision slew-rate limiter.

Two DCCTs are used to measure the output current for regulation and for monitoring independently. This allows the control system to detect even small deviations in the output current.

The unit is fully protected against overload, over temperature and short circuit. Many operational parameters like internal supply voltages, internal temperatures, output fuse, load current oscillation, DCCT operation and external interlock inputs are monitored. In case of a malfunction the unit will shut down and the status is stored. For a quick overview, the complete status information is indicated on the front panel.

The construction is based on a 19" housing, 3 units high.

TECHNICAL DATA

Output Current	-8 - +8 A
Output Voltage	-40 - +40 V / -20 - +20 V (switch selectable)
Overall Stability	< ±100 ppm (over ambient temperature range; including ripple, noise and 8 h drift)
Ripple + Noise	< 50 ppm _{PP} (load: 100 mH / 1.5 Ω)
Absolute Accuracy	< ±5·10 ⁻³
Power Bandwidth (-3dB)	DC – 1000 Hz (via modulation input; into a suitable load)
Slew-Rate	1.6 A/s (adjustable)
Common Mode Voltage	-100 - +100 V
Mains Voltage	3x 400 V _{AC} / ±10% / 47 - 63 Hz
Power Factor	> 0.6
Ambient Temperature	+10 - +30°C (operating)
Dimensions (w x h x d)	483 x 132.5 x 554.5 mm ³ (19", 3 U)
Weight	36 kg

HYBRID MAGNET POWER SUPPLY 100 A / 20 V

FEATURES

- Overall Stability: < 10 ppm
- Current-Mode Control
- Ultra Low Drift / Noise
- Slew-Rate Control
- Precision Monitoring Outputs
- Complete Protection
- Air Cooled



The PA20100 is an ultra stable magnet power supply unit. It is used to feed quadrupole magnets of the PTB Metrology Light Source storage ring in Berlin.

Based on a hybrid, air-cooled power stage, the power supply provides output currents of 100 A at output voltages of up to 20 V. The overall stability of the output current is better than 10 ppm. This figure includes peak to peak ripple and noise, repeatability, thermal drift and drift over 24 hours.

The hybrid power stage consists of a switched-mode preregulator followed by linear output stage. This configuration ensures high efficiency and lowest ripple and noise.

Current setpoint, actual values, control and status signals are exchanged via a control interface. A slot is allocated to accommodate the customer's proprietary control interface or a standard interface card. This allows for a smooth integration of the unit into the control system of the facility. Precision monitoring outputs indicate the actual values on additional connectors on the front panel. In case of sudden setpoint changes, the rate of change is restricted by means of an adjustable precision slew-rate limiter.

Two DCCTs are used to measure the output current for regulation and for monitoring independently. This allows the control system to detect even small deviations in the output current.

The unit is fully protected against overload, over temperature and short circuit. Many operational parameters like internal supply voltages, internal temperatures, magnet ground leakage, load current oscillation, DCCT operation and external interlock inputs are monitored. In case of a malfunction the unit will shut down and the status is stored. For a quick overview the complete status information is indicated on the front panel. A deep insight, showing the detailed operational status, is gained via a service interface.

The construction is based on a 19" housing, 3 units high.

TECHNICAL DATA

Output Current	1 – 100 A
Output Voltage	0 - 20 V
Overall Stability	< ±10 ppm (over ambient temperature range; including ripple, noise, repeatability and drift over 24 h)
Ripple + Noise	< 5 ppm _{PP} (load: 40 mH / 150 mΩ)
Absolute Accuracy	< ±100 ppm
Slew-Rate	3 – 100 A/s (adjustable)
Common Mode Voltage	-100 - +100 V
Mains Voltage	230 V _{AC} / ±10% / 47 - 63 Hz
Power Factor	> 0.98
Ambient Temperature	0 - +40°C (operating); +20 - +30°C (maintaining drift specifications)
Dimensions (w x h x d)	483 x 132.5 x 554.5 mm ³ (19", 3 U)
Weight	40 kg

30kW MAGNET POWER SUPPLY 600 A / 50 V

FEATURES

- > 97% Efficiency
- Complete Protection
- Water Cooled



The PP1006 is a magnet power supply unit that is used to feed the quadrupole magnets of the storage ring of DESY / PETRA III in Hamburg.

The water-cooled power supply provides output currents of 600 A at output voltages of up to 50 V. It consists of a DC/DC converter power part including protection and supervision circuits.

The 2-phase step down DC/DC converter features excellent efficiency > 97% at high load voltages. High efficiency and water-cooling leads to low operating temperatures within the system racks. Using the 2-phase power stage concept results in low output ripple.

Precision current regulation and control of the unit is carried out by a DESY control interface. A slot is allocated to accommodate this control interface or a standard interface card. This allows for the integration of the unit into the control system of the facility.

The unit is fully protected against overload, over temperature and short circuit. Many operational parameters like internal supply voltages, internal temperatures, power switch desaturation, input and output overvoltage and driver status are monitored. In case of a malfunction the unit will shut down and the status is stored. For a quick overview, the complete status information is indicated on the front panel.

Input and output power lines are connected via bus-bars on the rear.

The construction is based on a 19" housing, 8 units high.

TECHNICAL DATA

Output Current	1 – 600 A
Output Voltage	0 - 50 V
Input Voltage	50 - 70 V _{DC}
Efficiency	> 0.97 (V _o > 45 V / I _o > 50 A)
Common Mode Voltage	< 100 V
Ambient Temperature	+10 - +40°C (operating)
Dimensions (w x h x d)	483 x 355 x 645 mm ³ (19", 8 U)
Weight	45 kg

DIPOLE MAGNET POWER SUPPLY 1100 A / 50 V

FEATURES

- Overall Stability: < 10 ppm
- Complete Protection
- Water Cooled

The PP0512 is a magnet power supply unit that will be used to feed the chicane dipole magnets of the High Energy Storage Ring for Antiprotons HESR at the Facility for Antiproton and Ion Research FAIR in Darmstadt.

The water-cooled power supply provides output currents of up to 1100 A at output voltages of up to 50 V. It consists of a transformer/rectifier/filter unit and a consecutive DC/DC converter power part including protection and supervision circuits.

The 4-phase step down DC/DC converter features excellent efficiency > 97 % at high load voltages. High efficiency and water-cooling leads to low operating temperatures within the system racks. The 4-phase power stage concept results in very low output ripple.

Precision current regulation and control of the unit is carried out by the GSI control interface ACU.

A high precision DCCT is integrated into the unit. The power stage communicates via GSI's proprietary USI interface.

The unit is fully protected against overload, over temperature and short circuit. Many operational parameters like mains voltages, water flow, internal supply voltages, internal temperatures, power switch desaturation, input and output overvoltage and driver status are monitored. In case of a malfunction the unit will shut down and the status is stored. For a quick overview, the complete status information is indicated on the front panel.

The construction is based on a twin 19" cabinet.



TECHNICAL DATA

Output Current	1 – 1100 A
Output Voltage	0 – 50 V
Overall Stability	±10 ppm
Input Voltage	3x 400 V _{AC} / ±10% / 47 - 63 Hz
Ambient Temperature	+10 - +40°C
Dimensions (w x h x d)	1200 x 2250 x 800 mm ³
Weight	ca. 700 kg

WME Power Systems GmbH

Oehleckerring 40

D-22419 Hamburg, Germany

📞 +49 40 527 40 91

📠 +49 40 527 40 93

✉ info@wme.de

💻 www.wme.de