

MODULAR RECTIFIER UNITS IN SWITCH-MODE POWER SUPPLY TECHNOLOGY
AND THYRISTOR DESIGNS
FOR E-COATING

AMERICAN
PLATING POWER



FLEXIBLE

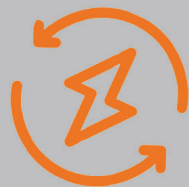
MODULAR

REDUNDANT

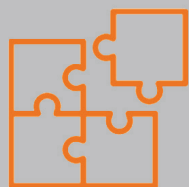
SCALABLE

SWITCH-MODE POWER SUPPLY TECHNOLOGY
(IGBT AND MOSFET TECHNOLOGY)

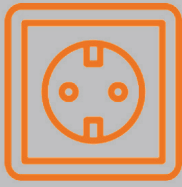
The KTL Rectifier from American Plating Power is on the cutting edge of technology advancement in DC power supplies. The KTL Rectifier is a modular type, high efficiency, switch-mode, digital rectifier specifically designed for E-Coat applications. The System consists of controls and modular power modules that provide smooth, reliable DC required for today's E-Coat systems.



Energy Efficiency
• 95% Efficiency
• Constant high power factor



Retrofittability
• Quick and simple module replacement
• Redundancy



Power Supply
• 3 x 380 - 480 V

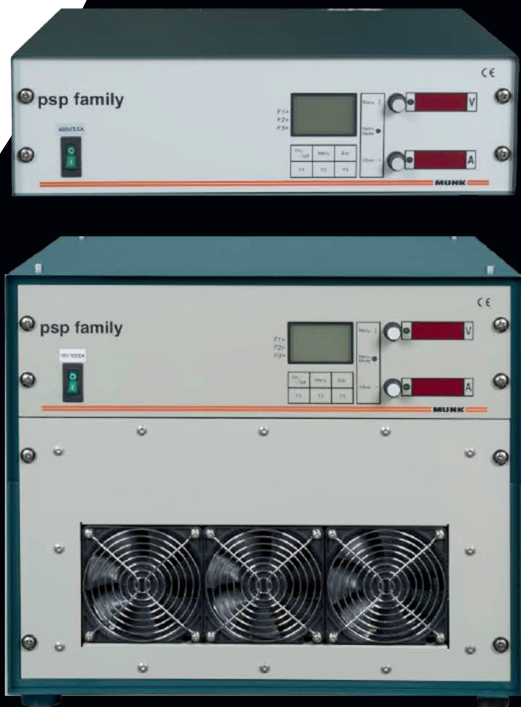


Residual Ripple
Constant < 2 %

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SMALLER E-COAT SYSTEMS/ LABORATORY DC POWER SUPPLIES



In addition to DC power supplies used in larger paint lines, American Plating Power also carries lower current power supplies for use in small painting systems and laboratory environments. There are many different sizes and configurations available. Please contact us for more information.

ELECTRICAL SPECIFICATIONS:

Input Power: 120V 1 Phase or 480V 3 Phase 50/60 Hz

Output Voltage: 0 to 400V

Output Current: 0 to 3.5A, 0 to 50A

Output Ripple: <1%

Voltage Regulation: <1%

- + Intuitive control panel
- + Compact design with small footprint
- + Case width of 19 inches

THYRISTOR TECHNOLOGY

The classic rectifier is a thyristor based, E-coat rectifier utilizing decades of proven technology and reliability. The rectifier incorporates the classic design of a transformer, thyristors and filter. These designs are more prevalent when powering E-Coat systems over 1000A or output voltages over 500V. All classic thyristor rectifiers are specifically engineered to deliver smooth and reliable DC for E-Coat system environments.



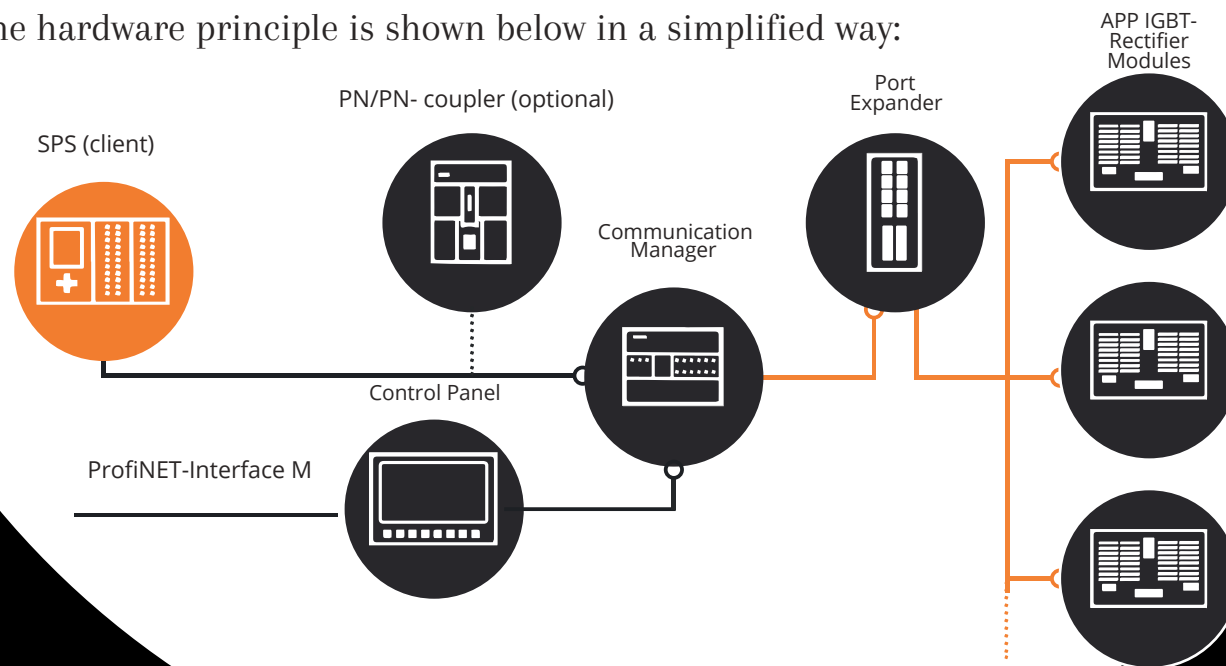
ELECTRICAL SPECIFICATIONS:

- Output Voltages Available: 300V DC-600V DC
- Available Output Currents: 500A-5000A
- Available Input Voltages: 380V-600V 3 Phase, 50 or 60Hz
- AC Input Protection: Thermal Magnetic Circuit Breaker with Shunt Trip and/or AC Safety Contactor
- Output Ripple: <5% Standard, <2% Optional
- Voltage Regulation (Voltage control mode) <1%
- Galvanic Mains Isolation via internal Transformer

PROGRAMMABLE PROCESS CONTROL KTL 1200

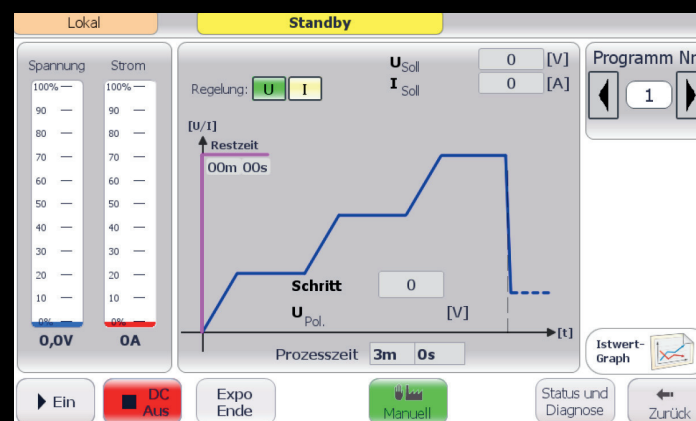
The KTL 1200 programmable process controller enables precise voltage, current or layer thickness control (current density control) for cathodic and anodic dip painting processes. In combination with the American Plating Power IGBT rectifier modules, the KTL 1200 ensures a smooth process flow with reproducible painting results.

The hardware principle is shown below in a simplified way:

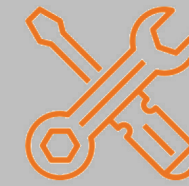


FEATURES OF THE PROCESS CONTROL KTL 1200

The KTL Rectifier system can be configured to provide individual voltage control to multiple anodes or higher current to multiple anodes. The modular system has the flexibility to be configured for single zone, 2 zone or multiple zone configurations. i.e. automotive MAC systems

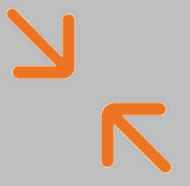


E-Coat Rectifier Module Gamma L3+



maintenance and reliability

- Low maintenance (High MTBF) Components and fans)



space requirement

- Compact design (19" plug-in module)

The modular concept is characterized by the parallel connection of several modules to increase the power. In addition, modules can be connected directly to anodes or anode pairs. The actual currents are permanently reported via ProfiNET or Ethernet TCP/IP.

ELECTRICAL SPECIFICATIONS:

- Output Voltages Available: 400V, 450V, 500V
- Available Output Currents 125A-1875A
- Max. Module Output Power: 45kW
- Available Input Voltages: 380V-400V, 480 VA 3 Phase 50/60 Hz
- AC Input Protection: Thermal Magnetic Circuit Breaker with Shunt Trip and/or AC Safety Contactor
- Efficiency: >95% (SiC Based Semi-Conductors)
- Pf: >.95
- Output Ripple: <2% (Resistive Load), <1% (E-Coat Operation)
- Voltage regulation (voltage control mode): <1%
- Galvanic Mains Isolation via Internal Transformer
- Digital interface via RJ45 connector, Plug and Play



Single Anode Control

This enables precise control of individual anode cells or pairs in the E-Coat bath.



Coating Thickness Control (KTL 1200)

Automatic rectifier voltage adjustment to optimize paint usage and reduce or eliminate rework.



Amp-Second Counter (KTL-1200)

The amount of charge (in Amp-Sec) is recorded during the coat process and is the basis for controlling the pumps for paste and resin pumps.



Earth Current Monitoring

Monitoring the ground current is an important prerequisite to ensure operational safety.



Data Documentation

With the help of a data logger, relevant process data can be permanently recorded.

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