Standard Parameters Of Operation:

Design & Standard Codes: Transformer and rectifier system will meet or exceed all applicable NEMA, ANSI, NEC, JIC, OSHA, EPA & NFPA standard and codes.

Operation/Maintenance Manuals: A manual specific to each rectifier system is provided that includes: system/component description, troubleshooting guide, drawings of system and circuit boards to the component level and unit bill of materials with recommended spare parts list.

Parallel Operation: Kinetics rectifiers have the capacity to operate on a common DC bus with other rectifiers or motor generator sets. Optional feature of an output bus blocking diode can be added if desired.

Testing: Kinetics manufactured transformers tests include: high potential, open circuit radio, excitation and short circuit regulation. Test to conform to ANSI/IEEE standards C57.12.01 for dry type transformers.

Rectification tests to include: Operational feature diagnostics testing of all control functions, output regulation at no-load and load, percent of output ripple and system protective feature operational tests. Full current at reduced voltage or full current at full voltage service factor heat run loading test performed as an option. If service factor testing is desired, the test must be specifically quoted in Kinetics engineering proposal of the system to be provided.


Standard DC Output Voltages: 120, 125, 230, 240, 250, 500, 600, 750, 1100, 1500. Half voltage, half wave, “three wire” output is available on all standard units from either of the two output buses to the neutral of the secondary of the units isolation transformer. Half of the rectifier full rated current can be drawn through either bus. Full rated current “four wire”, dual voltage output can be provided as an option feature.

Standard Output Regulation: ±0.6% based on 10% to 110% load variation and with 0% AC line variation.

Voltage Variation Tolerance: 5% without changing transformer taps. Four taps are provided: two 2.5% above and below nominal rated voltage tap.

Service Factors: 1.15 load continuous at 40°C ambient.
1.00 load continuous at 50°C ambient.
1.25 load for two hours at 40°C ambient.
2.00 load for two minutes at 40°C ambient.

Efficiency: 97% or better at 100% load, 100% volts for convection cooled units.

Power Factor: 96% at 100% load, 100% volts.

Ripple: Nominal 4.5% RMS at 100% volts, resistance load. For applications requiring lower percentage ripple, or detailed data and definition of unit output voltage and current ripple parameters contact Kinetics' factory sales engineering. If rectifier is to be applied powering: DC chopper circuits, inverters, lasers or DC brushless motors consult Kinetics engineering for proper rectifier wave form requirement specifications.

Since 1939

CVR
Line Regulated
DC Power Supplies
General & Mill Duty Applications
16 to 2000 Kw

The Kinetics Control Systems CVR model type is a line regulated, solid state, full wave, six pulse diode DC power supply. Units are designed and components sized to provide dependable long lasting service for the demanding application requirements of heavy industry, military, utilities and commercial applications.

The model CVR rectifier is designed to provide an economical and efficient means of converting AC power to line regulated DC power. For applications requiring adjustable voltage or current Kinetics manufactures regulated DC output units, reference model types SFR, SCR, VVR, SMG, and PVR.

The constant potential, diode rectifier provides a nominally fixed DC output voltage. The unit's DC output voltage is in direct relation to the AC input voltage within the limiting characteristics of the impedance of the rectifier system's isolation transformer.

Kinetics is a self contained manufacturer; transformers, enclosures and circuitry are all manufactured in house to Kinetics' stringent quality control standards. Kinetics' integrated manufacturing enables Kinetics to be a versatile manufacturer providing enclosure profiles, input & output voltage and system requirements that are specific to a customer's needs while maintaining reasonable delivery lead time and cost effective pricing.

Common Applications: 16 to 2000 Kw
- Battery forming charging/discharge.
- Common DC bus power supply.
- Control power for switchgear, contactors, etc.
- Cranes: power room or bridge mounted.
- Elevators: commercial and freight.
- Field speed controlled DC motors: shunt or compound wound.
- Heating.
- Lighting.
- Magnet power supplies.
- Machine tools: lathes, boring mill, etc.
- Mining.
- Original equipment manufacturer or maintenance facility DC power test station.
- Ship to shore, dockside and shipboard power supplies.
- Synchronous machine field excitation.
- Traction/tranist substations.

450 Kw, 250 VDC, NEMA1 enclosure, steel mill bridge crane mounted constant voltage diode rectifier.
Line Regulated DC Power Supplies: Industrial · Military · Commercial

Standard Features Of CVR Systems:

**AC Line Protection:** Standard voltage units (208, 230, 240, 460, 480, 575 volts, 3 phase, 60 Hz) are equipped with a thermal magnetic molded case power circuit breaker that includes an undervoltage trip for electrical disconnect on the AC input to the rectifier. Shunt trips are available upon request. Higher voltage units (3200, 4160, 6000, 7200, 10,200, three phase, 60 Hz) have terminations provided from the rectifier protective trips for interface with AC switchgear electrical trip circuit. As an option, Kinetics offers motor & line unit switchgear units, load break switch and fuse or vacuum contactor.

**Isolation Transformer:** Kinetics manufactured, specifically designed and rated for semiconductors, industrial, and dry type isolation transformers. Service factor is available from the service buffer. Convection-cooled, with an insulation class H (200C), class F (155°C) operated. Over-temperature thermal protection against overloads and single phasing provided in each coil. Thermals interfaced with AC switchgear breaker trip (under 600 VAC) or AC switchgear electrical trip circuit (above 600 VAC). Primary taps of two (2) 25% above and below nominal input voltage.

**Rectifier Elements:**
- Hermetically sealed diodes, industrial rated in excess of NEMA standards, silicon rectifier devices in a three phase, six pulse, full wave bridge configuration.
- Diodes are mounted on oversized, corrosion resistant extruded heat sinks for proper heat dissipation.
- Each diode is individually fused with silver sand fast acting current limiting semi-conductor fuses on the semi-conductors inputs.
- Diode peak inverse voltage to be conservatively rated for a given application. General duty units to have 200% ratings of 3 times the transformer secondaries. Mill duty and highly inductive load duty units to be rated a minimum of 6 times the transformer secondary voltage.
- Thermal over temperature protection is provided on convection cooled rectifier heat sinks.

**Surge Suppression:** Over-sized, semi-conductor, transient surge suppression networks are provided on both the AC and DC output of rectifier elements. Continuous bleed resistance is provided across the rectifier output bus for the absorption of voltage surges and light regeneration on the AC bus.

**Cooling:** NEMA1 or NEMA8 enclosures are designed and rated for convection cooling. Transistors are designed and manufactured with the capability to operate convection cooled within the unit service factors. The rectifier bridge assembly may have low CFM fans mounted on the base of the heatsinks to aid in moving heat from the semi-conductors to out the heatsinks. Air inlet and outlet filters, wind switches or air ducting are not required.

**Enclosures:** Indoor operation units are supplied in NEMA1 steel, free-standing, vented, convection cooled rugged mill duty enclosure. Components have single side access through a hinged full enclosure length door. Enclosures suitable for fork truck lifting. Standard paint is electro-statically applied Kinetics blue industrial enamel finish. (Other colors available per specification). Enclosure types of NEMA13, 4, 4X, 12 and specific dimensions are available to meet the application.

**Enclosure Grounding:** An enclosure grounding lug is provided meeting applicable codes.

**Annunciation:** Standard unit has DC analog ammeter & voltmeter, power on indication light, fuse/semiconductor open indication lights to identify position of open devices, AC circuit breaker through the door operator for ON/OFF of unit power. Annunciation is mounted on the enclosure door. Numerous annunciation options are available to meet the applications requirements.

**System Protection Features:** 600 volt class units have an AC circuit breaker, undervoltage shunt trip circuit breaker trip, current limiting fuses for semi-conductors, AC and DC surge suppression network, and over temperature thermal protection of the transformer and convection aided type bridge assembly.

**Additional Features Available:**
1. Customized Enclosures: Kinetics' in-house fabrication department manufactures NEMA3R, 4, 4X and 12 classification mill duty enclosures. Fitting systems into a given enclosure footprint dimension or special profile is available.
2. DC Heater With Thermostat Control: For environments where condensation may be a problem (i.e. dookside or hydro-electric generation stations) or units having voltages of 600 volts and higher, enclosures can be provided with thermostatically controlled strip heaters.
3. Magnetic Primary Contactors: For application requiring remote actuation of an AC line connection from pushbutton or other pilot device.
4. DC Output Circuit Breaker: Manual or electrical trip, station or drawout DC switchgear with switchgear enclosure can be provided on the output bus of the rectifier.
5. DC Bolted Pressure Switch: Manual or motor operated no-load operation can be provided to isolate the rectifier off the DC distribution bus. DC fusing of the switch can be added.
6. Redundant Diode, N-1 System: Unit rectifier bridge system will have the capacity to operate at 100% voltage and current with one diode/fuse assembly failed per phase position of the bridge. The second diode/assembly fails per phase position of the unit is tripped off line. The loss of N-1 diode assembly sounds a warning horn and illuminates an indication light indicating position in the bridge of the failed diode/assembly. A horn override switch is provided to turn off the horn after the failure has been acknowledged.
7. Annunciation: Customized motor (digital or analog), alarms, unit status indication lights, terminal ports for remote annunciation/control, key switch/digital readout system and remote operation stations are available.
8. Ripple Filter: Output R-C DC ripple filters to meet the application requirements.
9. 12 & 24 Diode Pulse Bridge Systems: For applications requiring 'lower' DC output ripple is desired without the use of R-C DC ripple filters consult with Kinetics engineering for a system to meet the application.
10. Micro-processor or Computer Interface: Interface ports for unit control and/or unit status annunciation.
11. Regenerative Absorption Protection: For applications where the load has the capability to regulate the power source supplying it or raise the bus voltage due to load electrical parameters. Industry standard for specification of capacity is 10% of the rating of the rectifier kilowatts or if a single motor, 25% of the motor horsepower. Applications such as these include cranes, elevators, and rotating mechanical tools. Power supplies that require larger capacity units, please consult Kinetics engineering for capacity and duty cycle sizing assistance. For elevator applications capacity units should be sized at continuous duty and 25% of the rectifier kilowatt rating.
- Standard or intermittent duty: for relatively "light" duty applications where regeneration is infrequent or the load has a significant dis-ipation characteristic, i.e. multiple cranes running simultaneously on a common bus.
- Continuous duty: for applications where regeneration is frequent over a one minute time period, bus voltage stays elevated for extended time periods and/or intense in voltage rise. Common continuous duty applications: mill ladle cranes, elevators, rotating mechanical tools, etc.
12. Motorized or Manual Adjustable Variable Auto-Transformer: For applications where DC voltages needs to be adjustable and the speed of voltage can be comparatively slow to an SCR system, a power variable auto-transformer can be added into the primary of the rectifier system. Ideal for motor testing applications.

**Other Kinetics Rectifier Model Types:**

**Diode Rectifiers**

- MVR — Small DC loads 1 to 15 Kw, scaled down version of CVR.
- JVR — Fuseless, bolted fault rated, ideal for scrap lifting magnets or where shorts on the DC bus are probable.
- WVR — 500VA or 1000VA, DC output voltage, or current limitation.

**Regulated or Variable SCR Rectifiers**

- SFR — Full current for 110% to 850% voltage, limited range rectifier, ideal for application requiring stabilized DC voltage or current, within ±1%.
- SCR — DC motor drive.
- VVR — DC motor drive system with isolating transformer.

**Other Products**

- SynchApp-C — Contactor type synchronous motor field application control panels.
- SynchApp-SS — Totally solid state synchronous motor field application control panels.
Common DC Grid Retirement
Building Specific Rectifiers 1 - 2000 Kw
AC to DC Power Conversion For Elevators, Fire Pumps & Misc. Loads

- Most reliable fuseless rectifier on the market! Kinetics has manufactured more DC grid retirement rectifiers across the USA than all other manufactures combined.

- Kinetics has designed and manufactured a system that has the lowest cost of installation & startup available for the installing contractor.

- Combination systems of fuseless rectifiers & elevator duty regeneration circuits in a common enclosure package reduces space requirements & installation costs.

- Provide your customers with a state of the art 90’s designed system. Avoid startup and maintenance prone systems of old designs that have problematic fuses and auto-transformers. Kinetics’ fuseless rectifier system provides maximum protection to the building’s DC & AC power systems from voltage interactions.

- Kinetics; manufacturing and product engineering facility is located only 1 hour from NY city.

- Kinetics; manufacturer of the #1 selling fuseless rectifier in the world.

For NY City rectifier sales contact:
Keith Secrest
609-883-9700 ext. 122

Manufacturer of: Rectifier 1-2000
Synchronous motor & generator motor field excitation systems.

140 Stokes Ave.
Trenton, NJ 08638
609-883-0025 fax
E-Mail: Heatingsinking@MSN.com
DC Grid Retirement-Rectifiers
Building Specific Rectifiers 1 - 2000 Kw

AC to DC Power Conversion For Elevators, Fire Pumps & Misc. Loads


140 Stokes Ave.
Trenton, NJ 08638
Phone: 609/883-9700
FAX: 609/883-0025
Standard Parameters of Operation:

Design & Standard Codes: Transformer and rectifier system will meet or exceed all applicable NEMA, ANSI, NEC, JIC, OSHA, EPA & NFPA standards and codes.

Operation/Maintenance Manuals: A manual specific to each rectifier system is provided that includes: system/component description, troubleshooting guide, drawings of system and circuit boards to the component level and unit bill of materials with recommended spare parts list.

Standard DC Nominal Output Voltages: 125, 250, 500, 600, 750, 1100, 1500, "low voltage" 28.5, 32 & 40

Standard Output Voltage Range: +10% to 80% of full rated output volts with full rated current. Reduced current ratings at reduced voltage.

Standard Output Regulation: +/-1% using voltage or current feedback over the regulated range from 10% to 110% load change and maximum AC line fluctuation of +/-10%. Tighter regulation is available per the application. IEEE 421A and Mil. Std. 704E.

Service Factors: 1.15 load continuous at 40°C ambient.
1.00 load continuous at 50°C ambient.
1.25 load for two hours at 40°C ambient.
1.50 load for two minutes at 40°C ambient.

Efficiency: 95% or better at 100% load, 100% volts for convection cooled units.

Power Factor: 95% at 100% load, 100% volts.

Ripple: 6% RMS at 110% volts. Into a resistance load for a three pulse SCR diode hybrid bridge system, non-filtered output. For applications requiring lower percentage ripple, or detailed data and definition of unit output voltage and current ripple parameters contact Kinetics' factory sales engineering. If rectifier is to be applied powernet, DC chopper circuits, inverters, lasers or DC brushless motors consult Kinetics engineering for proper rectifier wave form requirement specifications.

Response: Less than 50 milliseconds. IEEE 421A.

System Protection Features: 600 volt class units have an AC circuit breaker, undervoltage or short circuit breaker trip in units 20 Kw and larger, current limiting fuses for semiconductors, AC and DC surge suppression network, solid state control limit and immense overload shut-off of semi-conductor circuitry and over temperature thermal protection of the transformer and convection cooled type bridge assembly.

Parallel Operation: Kinetics regulated rectifiers have the capacity to operate on a common DC bus with other rectifiers or motor generator sets. Optional feature of current balance circuit can be added if desired to have controlled load sharing with other DC sources.

Transformer Testing: Kinetics manufactured transformers tests include: high potential, open circuit radio, excitation and short circuit regulation. Tests to conform to ANSI/IEEE standards C57.12.01 for dry type transformers.

Rectification Testing: Operational feature diagnostics testing of all control functions, output regulation at no-load and load percent, output ripple, system protective feature operational tests, wave form analysis comparison test. Full current at reduced voltage or full current at full voltage service factor heat run loading test performed as an option. If service factor testing is desired, the test must be specifically quoted in Kinetics engineering proposal of the system to be provided.

Regulated Rectifier
1 to 2000 Kw

The Kinetics Control Systems SVR model type is a closed loop, solid state, fully controlled phase shift regulated, semiconductor limited range, DC power supply. Units are designed and components sized to provide dependable long lasting service for the demanding application requirements of heavy industry, military, utilities and original equipment manufacturers.

The model SVR rectifier is designed to provide an economical and efficient means of converting AC power to DC power within a limited voltage range at full current. Standard regulation range is 80% to 110% volts at 100% current, below 80% voltage current capacity is reduced proportionally. 110% to 100% output voltage capacity is provided to accommodate low AC input voltage of up to -10% without loss of full rated output capacity. Units designed with extended operating range are available to meet the application. Standard unit system is 3 pulse, SCR-diode hybrid bridge rectifier circuit with free wheeling or commutating diode. 6, 12 and 24 pulse systems are available.

Units are available as having closed loop output regulation based on either voltage, current, or both voltage and current by selection of a mode of operation switch. Per application requirement, system regulation control loops can be provided that close the regulation control loop on power factor, VARs, thermostatic output or other feedback control signals. The rectifier regulator can also be made to respond to a remotely supplied control signal(s). (i.e. 4-20mA or 0.10 volts).

Standard unit systems are power and electronic isolated systems provided in rugged mill duty enclosures. Open chassis regulator/SCR power bridge assemblies and core & coil isolation transformers are available.

Common Applications: 1 to 2000 Kw
- Common DC bus power supply where stabilized or regulated output is desired. Crane applications where voltage drop over distance or due to load variations is a problem.
- Synchronous machine field excitation. AC synchronous motor, AC generator or DC generator fields.
- Limited range variable speed DC motor drive control. Ideal for DC applications with variable torque loads (Pumps or blowers).
- When equipped with a motor kit, the SVR can be used as a combination power supply and reduced voltage starter for use with field controlled motors by taking advantage of the controlled ramp-up and current limit features.
- Original equipment manufacturer or maintenance facility DC power test station.
- Electrolytic process.
- Battery forming. Battery trickle charging systems.

DC Substation: 1500 Kw, 250 VDC steel mill hot metal ladle crane regulated rectifier.
Regulated Voltage or Current Rectifier

Standard Features Of SVR Systems:

- **AC Line Protection**: Standard voltage units (208, 230, 240, 460, 480, 575 volts, 3 phase, 60 Hz) are equipped with a thermal magnetic molded case power circuit breaker. Units 20 Kw and larger come standard with an under-voltage trip for electrical disconnect on the AC input to the rectifier.

- Higher voltage units (2300, 4160, 6900, 7200, 13,200, three phase, 60 Hz, 12-T) have terminations provided from the rectifier protective trips for interface with AC switchgear electrical trip circuit. As an option Kinetics offers match & line unit switchgear units, load break switch and fuse or vacuum contactor.

- **Isolation Transformer**: Kinetics manufactured, specifically designed and rated for semi-conductor application, industrial duty, dry type isolation transformer. Service factor to correspond with rectifier system services rating. Depending on the load, the transformer operates between Class H (200°C) and the Class F (155°C) spectrums. Over-temperature thermal protection against soakovers and single phasing provided in each coil. Thermals interfaced with AC circuit breaker trip (under 600 VAC) or AC switchgear electrical trip circuit (above 600 VAC). Primary taps of one (1) 5% above and below nominal input voltage.

- **Rectifier Elements**: Hermetically sealed, industrial rated in excess of NEMA standards, silicon rectifier devices in a three phase SCR (3) diode (3) hybrid system.

- Rectifier devices are mounted on oversized, corrosion resistant extruded heatsinks for proper heat dissipation.

- Each semi-conductor will be individually fused with silver sand to assure current limiting semi-conductor fuses on the semi-conductors input.

- Rectifier units will be kept in a cooled environment to conserve temperature and over-voltage conditions for a given application. General duty units to have IIV ratings of 3 times the transformer secondary voltage. Mill duty units to be rated a minimum of 5 times the transformer secondary voltage.

- Thermal over-temperature protection is provided on convection cooled rectifier bridge heatsinks.

- **Free Wheeling Or Commutating Diode**: Used to reduce the current ripple into a highly inductive load, such as a motor or generator field.

- **Surge Suppression**: Oversized, semi-conductor, transient surge suppression and R-C dv/dt snubber networks are provided on both the AC and DC output of rectifier elements. Continuous bleed resistance is provided across the rectifier output bus for the absorption of voltage surges and "light" over-voltage conditions.

- **SCR Control Circuitry**: Systems incorporate the use of Kinetics' solid state electronics SCR pulse width modulation, SCR trigger and referencing, firing circuitry. Circuitry provides adjustable current limiting control and immune to current over-voltage and circuit shutoff, protective circuitry.

- **DC Output Control**: Standard unit has a control potentiometer mounted on the enclosure door. Option of unit output control from a 0-20 milliramp, 0-10 volt or computer/microprocessor generated signal is available. Unit can be provided with a local or remote output control switch selection.

- **Cooling**: NEMA1 or NEMA3R enclosure are designed and utilized for convection cooling. Transformers are designed and manufactured with the capacity to operate convection cooled within the unit service factors. The rectifier bridge assembly may have low CFM fans mounted on the face of the heatsinks to aid in moving heat from the semi-conductors to the outside the heatsinks. Air inlet and outlet filters, wind switches or automatic ducting are not required.

- **Enclosures**: Indoor operation units are supplied in NEMA1 steel, freestanding, vented, convection cooled, rugged mill duty enclosures. Components to have single side access through a hinged full enclosure length door. Enclosures suitable for fork truck lifting. Standard paint is electro-statically applied Kinetics Blue industrial enamel finish. (Various colors available per specification). Enclosure types of NEMA1, 4, 4X, 12 and specific dimensions are available to meet the application.

- **Enclosure Grounding**: An enclosure grounding lug is provided meeting applicable codes.

- **Annunciation**: Standard units have DC analog ammeter & voltmeter, power on indication light, fuse/semi-conductor open indication lights to identify position of open device (20 Kw and larger), on/off pushbutton and AC circuit breaker through the door operator. Annunciation is mounted on the enclosure door. Numerous annunciation options are available to meet the applications requirements.

Additional Features Available:

1. **Customized Enclosures**: Kinetics in-house fabrication department manufactures NEMA 1, 3R, 4, 4X and 12 classification mill duty enclosures. Fitting systems into a given enclosure footprint or specific profile is available.

2. **Strip Heater With Thermostat Control**: For environments where condensation may be a problem (e.g., dockside or hydro-electric generation stations) or units having voltages of 600 volts and higher, enclosures can be provided with thermostatically controlled strip heaters.

3. **Magnetic Primary Contactor**: For application requiring remote actuation of an AC line connection from pushbutton or other pilot device.

4. **DC Output Circuit Breaker**: Manual or electrical trip, station or drawout DC switchgear with switchgear enclosure can be provided on the output bus of the rectifier.

5. **DC Bolted Pressure Switch**: Manual or motor operated no-load operation can be provided to isolate the rectifier off the DC distribution bus. DC fusing of the switch can be added.

6. **Motor Kit**: Consists of addition of a loop contactor and field supply to make a limited voltage range motor drive or combination power supply and reduced voltage starter. Motor drive feature adds as field resistors, field regulators, dynamic braking or slow down and field loss relay are available.

7. **Annunciation**: Customized meters (digital or analog), alarms, unit status indication lights, terminal ports for remote annunciation / control, keypad / digital readout system and remote operation stations are available.

8. **Ripple Filter**: Output R-C DC ripple filters to meet the application requirements. For aircraft hanger support application Kinetics offers filtered systems that meet military standard 704E.

9. **6, 12 & 24 SCR Pulse Bridge Systems**: For applications where "low" DC output ripple is desired without the use of R-C DC ripple filters and "faster" regulation response time; consult with Kinetics engineering for a system to meet the application.

10. **Ramp On and/Or Off Of Output**: Linear adjustable time interval ramp control of rectifier output circuitry.

11. **Micro-processor or Computer Interface**: Interface ports for unit control and/or unit status annunciation.

12. **Power Factor Control**: Monitoring circuit kit, circuitry regulates output of rectifier based on monitoring of load power factor.

13. **Current Balance**: Solid state control circuit balances current loading between other rectifiers or motor generators on a common DC bus network.

14. **Extended Voltage or Current Range**: Standard operating range is 110% to 80% volts with full rated current. Below 80% volts, current capacity is reduced proportional to voltage reduction. If an application requires an operation range greater than 110% to 80%, a wider capacity of operating range can be designed into the unit.

15. **Regenerative Absorption Protection**: For applications where the load has the ability to override the power source supplying it or raise the bus voltage due to load electrical parameters. Industry standard for specification of capacity is 10% of the rating of the rectifier kilowatts or a single motor, 25% of the motor horsepower. Applications such as steel mill ladle cranes, elevators and rotating inertia machine tools may require larger capacity units, please consult Kinetics engineering for capacity and duty cycle sizing assistance.

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Kinetics
CONTROL SYSTEMS

140 Stokes Ave.
Trenton, NJ 08638
Phone: 609/883-9700
Fax: 609/883-0025

Since 1939
Standard Unit Parameters:

Panel Dimension: 14" high x 10" wide x 8" deep. Rugged 12 ga. steel mounting panel.

Enclosure Mounting: Existing switchgear NEMA1, 2A, 3R, 4, 4X and 12. Kinetics can provide power pack panels in Kinetics manufactured NEMA1, 2A, 3R, 4, 4X and 12 enclosures.

The PPB unit’s rugged construction offers a wide range of mounting and operating environment applications.

** If mounting the Kinetics power pack panel in an enclosure other than a “standard” switchgear enclosure, consult Kinetics’ engineering to assure that adequate convection / ventilation space is available for transformer and heatsink cooling.

AC Input Voltages Available: Model PPB1 -
Single phase voltages 120, 208, 220, 240, 277, 380, 480, 600.
Frequency: 60, 50, 100 and 25 Hz.
** Non-standards available upon request.

DC Output Voltages Available: 12, 24, 64, 125 or 250.

DC Current Capacities: 35, 70, 100 amps DC. Greater than 100 ADC capacity units available upon request.

Power Transformer: Kinetics designed and manufactured, high current in-rush, copper conductor, semi-conductor application transformer. Voltage adjustment taps at 5% above and below nominal.

Rectification: Diode power supply configuration mounted on an over sized aluminum heatsink. Each diode has current limiting fuse. Diode peak inverse voltage rating to be a minimum of 6 times the AC RMS voltage into the diodes for highly inductive load application duty operation.

Surge Suppression: AC and DC spike surge suppression by metal oxide varistors across the DC output bus.

Input Voltage Variation Tolerance: 5% without changing transformer taps.

Output Regulation: +/- 6% base on 10% to 100% load variation.

Efficiency: 96%

Service Factor: Intermittent and matched to the coil / relay of operation service factor. Designed and rated for operation in a 50°C ambient.

Connections: Input and output connection points are located for ease of installation. Termination points are located to minimize the need for retro-fit re-wiring of existing switchgear wire to and from the DC power source.

AC input to 600 volt rated splice lug type terminal strip. DC output to a 600 volt rated reddy lug - screw down / pressure connection.

Grounding: Panel grounding lug provided.

Designed Per Applicable Codes and Standards Of: NEC, IEEE, ANSI, JIC, OSHA, EPA, NFPA, and CSA. UL and CUL approved components will be used where ever applicable.

Nameplate: Stainless steel. Includes: model number, date of manufacture, manufacturing system number, input and output ratings and operational duty cycle.

Operation and Maintenance Manuals: As is standard for all Kinetics products, each unit be provided with an operation maintenance manual that includes: operational description, troubleshooting guide, electrical schematic, mechanical layout drawing and spare parts list with recommended spare parts for product support.

The Kinetics Control Systems’ PPB model type is a line regulated, high current in-rush loading, diode power supply, designed specifically for the operation of circuit breaker trip coils and relays. The panel mounted power supplies are suitable for a wide variety of breaker manufacturers, breaker styles and vintages.

The Kinetics PPB is a replacement for selenium and older diode rectifiers that have become obsolete or have hard to find parts.

Heavy industrial duty operational design and packaging that provide the benefits of:
* Compact design.
* High current in-rush capacity.
* Cost effective package change-out of old and / or obsolete selenium or diode DC power supplies.
* Eliminates problem of hard to find selenium rectifier parts or plates.
* Current and voltage ratings for operation with “major” breaker manufacturers.

Tel: 609-883-9700 Sales Ext. 122 Fax: 609-883-0025
Optional Features:
* AC power on indication light.
* DC power on indication light.
* Fuse / diode, blown / failure, indication light(s).
* AC input circuit breaker.
* DC metering shunt.
* AC contactor.
* Enclosures: NEMA1, 2A, 3R, 4, 4X and 12.
* Enclosure wheels with wheel locks.
* Ring lug terminal strip connections.

Information Needed for a Quotation:
Name: ______________________ Date: ____________
Company: ____________________ Tel: ______________
Fax: ________________________ AC input voltage available: ____________
DC output voltage required: ____________
DC current load: ____________
Duty cycle of coil(s) to be operated: ____________
Manufacturer of the circuit breaker: ____________
Option features: ____________
Mechanical restrictions: ____________

Other Kinetics Rectifier Model Types:
MVR - Small DC loads 1 to 15 Kw.
JVR - Fuseless, bolted fault rated.
WVR - Separation magnet applications.
AVR - Diode rectifier with a motorized or manual variable autotransformer in the primary of the unit to provide adjustable DC output voltage.
CVR - DC power supplies, line regulated, for general & mill duty application, 16 to 2000 Kw.
SVR - Full current for 100% to 80% voltage, limited range rectifier, ideal for application requiring stabilized DC voltage, or current power factor within +/- 1%.
DC Substations - 1 - 2000 Kw.
Excitors for Synchronous Motors & Generators.
SynchApp-C - Contactor type synchronous motor field application control panels.
SynchApp-SS - Totally solid state synchronous motor field application control panels.

Kinetics Industries Inc.
140 Stokes Avenue
Trenton, New Jersey 08638
PHONE: 609-883-9700 SALES EXT.: 122
FAX: 609-883-0025
Standard Unit Parameters:

**Enclosure:** 50°C rated, NEMA12, wall type mounting, mill duty, non-vented, steel, hinged door and screw down latch enclosure. Units can be provided as open panels for mounting by other.

**AC Input Voltages Available:**
- Single phase: 120, 208, 220, 240, 277, 380, 480, 600.
- Three phase: 240, 380, 480, 600.
- Frequency: 60, 50, 25 and 100 Hz.

**AC Input Protection:** Line fuses

**Power Transformer:** Kinetics designed and manufactured, PPT copper coil tapped transformer for installation in a NEMA12, non-vented, high vibration installation enclosure as commonly found on mill crane applications. Minimum five hold voltage taps are provided.

**“Charge” to “Holding” Voltage Switching:** Full capacity heavy industrial duty AC contactors with thermal overload protection.

**Voltage Switching Timing:** Heavy industrial duty, adjustable timer. Adjustment control is integral to the unit and field adjustable.

**Rectifier:** Full wave diode bridge designed and rated for highly inductive load operation within a NEMA12 non-vented enclosure within a 50°C continuous operating environment.

**Surge Suppression:** AC and DC spike suppression network for highly inductive load applications.

**DC Output Isolation:** Two pole DC contactor with 120 VAC operating coil and magnetic blowouts. Heavy industrial terminal points are provided for remote operation.

**Efficiency:** 98%

**Continuous Operating Ambient:** 50°C continuously at the nominal “hold” voltage of the transformer. For higher operating ambient or units to be installed at elevations above 5000’ contact Kinetics.

**Designed Per Applicable Codes and Standards Of:** NEC, IEEE, NEMA, ANSI, JIC, OSHA, EPA, NFPA, IEC and CSA. UL, CUL, Ont. Hydro and Que. Hydro approved components will be used where ever applicable.

**Nameplate:** Stainless steel. Includes: model number, date of manufacture, manufacturing system number, input and output ratings and operational duty cycle.

**Manufactured By:** Kinetics is the manufacturer of the BPP system and is a USA owned and operated company.

**Operation and Maintenance Manuals:** As is standard for all Kinetics products, each unit is provided with an operational maintenance manual and includes: an operational description, parameters of operation of adjustment, troubleshooting guide, electrical schematic, mechanical layout and spares list with recommended spare parts for product support.

**Kinetics BPP Brake Power Supply Advantages:**
* Lower maintenance than power supplies with economizing resistors.
* Higher energy efficiency of operation. NO economizing resistors.
* Space efficient design.
* Maximum installation location flexibility.
* Ease of operation parameter adjustment.
* Kinetics FLUX FORCING® inductive load power supply design.
* Designed and manufactured by Kinetics; an established diode and SCR mill duty rectifier manufacturer for over 40 years.

The Kinetics Control Systems BPP model type is a space and energy efficient, constant potential diode, brake power supply with solid state switching from “charge” to “hold” voltages for a DC brake coil operation. The BPP system eliminates the need for energy wasteful economizing resistors and higher maintenance DC voltage contactors by incorporating Kinetics® FLUX FORCING® technology for accelerated brake coil “charge” and voltage drop back to the optimum performance “hold” voltage.

The BPP’s compact design, provided in a NEMA12 non-vented heavy industrial enclosure and lower operating temperature, (DC economizing resistors are not required.) Offers maximum installation flexibility. The units are ideally suited for space constrained applications, such as cranes.

The BPP system incorporates Kinetics® FLUX FORCING® multi-voltage transformer, an industrial timing circuit and mill duty AC contactors. The “charge” and “hold” AC voltages are fed into a Kinetics, convection cooled, full wave diode bridge designed for highly inductive loads, to supply the desired DC output to the brake coil. A highly inductive load rated DC surge suppression network on the output protects the BPP unit from spikes and surges common to brake coil applications in harsh mill environments.

The Kinetics, designed and manufactured, power transformer comes standard with multiple taps above and below the nominal “charge” and “hold” voltages to provide maximum application flexibility for various brake coil ratings, AC utility voltages and brake operating conditions. The “charge” to “hold” voltage time intervals are field adjustable to match application requirements.

Tel: 609-883-9700 Sales Ext. 122 Fax: 609-883-0025
optional Features:
* Open panel for mounting by others.
* Alternate enclosures: stainless steel, aluminum, water tight.
* DC ammeter and voltmeter.
* Input AC contactor or molded case circuit breaker.
* DC output circuit breaker or line fuses.
* Fuse monitoring indication lights.
* Overtemperature warning horn or indication light.

Other Kinetics Rectifier Model Types:
JVRFF - FLUX FORCING® rectifier fuseless BOLTED FAULT rated to optimize magnet operation.
JVR - Fuseless BOLTED FAULT rated power supply. The world’s #1 Magnet Power Supply
MVR - Small DC load, diode rectifier 1 to 15 Kw.
WVR - Separation magnet diode power supply.
CVR - DC power supplies, line regulated, for general and mill duty applications 16 to 2000 Kw.
SVR - Full current from 100% to 80% voltage, limited range rectifier. Output voltage regulation +/-1%.
SVRJ - Fuseless BOLTED FAULT rated SCR regulated rectifier for select-a-pick / select-a-drop magnet control.
SynchAPP-SS Full line of synchronous motor field exciters and application panels.