Models MP-1 and MP-10 are mechanical drives for a 10-turn servo-mount potentiometer installed within. A synchronous motor drives the shaft through an 8-speed gear-box with adjustable limits.

<table>
<thead>
<tr>
<th>MODELS</th>
<th>SECONDS PER REVOLUTION (MAXIMUM: 10 REVOLUTIONS, 360°)</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP-1</td>
<td>0.1 0.3 1.0 3.0 10.0 30.0 100.0 300.0 1000.0 3000.0</td>
<td>$595.00</td>
</tr>
<tr>
<td>MP-10</td>
<td>1.0 3.0 10.0 30.0 100.0 300.0 1000.0 3000.0</td>
<td>$595.00</td>
</tr>
</tbody>
</table>

TIMING ACCURACY: ± 5% referenced to 60 cps line frequency.

INPUT: 105-135V AC, 60 cps

LIMITS, (Mechanically Adjustable):
- Low Limit: Range from 0-9½ turns.
- High Limit: Range from ½ to 10-turns.
- Minimum Sweep Range: ½ turn (120°)

OVERIDE: Manual override buttons reverse the sweep at any desired point—or manually stop the programmer.

DIRECTION SIGNALS: Pilot lights signal the direction of sweep up and down. With dwell and retrace off, sweep cycles symmetrically between limits.

DOWELL: Stops the sweep at either the high or low limit, (selectable).

RETRACE: Selector causes the sweep to retrace up or down at maximum speed—no matter what the speed selected.

AVAILABLE POTENTIOMETERS: Any ¼" shaft, ½" servo-mount potentiometer. Standard values: 10, 25, 50, 100 and 500 ohms; 1, 2, 5, 10, 30, 50, 75, 90, 100 and 125 kilohms. Other resistance values on special order.

TERMINALS: Rear mounted barrier strip contains speed changing connections: high and low limit contacts, dwell and retrace, and the output of the linear potentiometer.

DIMENSIONS: 4½"H x 9½"W x 9½"D.


MOUNTING: Bench style, single and dual rack mounting adapters available.

Data subject to change without notice.

PATENT NOTICE: Applicable Patent Nos will be supplied on request.

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KEPCO, INC. • 131-38 SANFORD AVENUE • FLUSHING, N.Y. 11352 • (212) 461-7000 • TWX #710-582-2631 • Cable: KEPCOPOWER NEWYORK
**KEPCO PAR MODULAR POWER SUPPLIES**

- overload current cutoff
- out-of-band programming
- precision regulator
- conventional transformer

**INPUT:**
105-125V AC or 210-250V AC (selected), 50-440 cps single phase, approximately 2 amperes, 200 watts.

**TEMPERATURE, AMBIENT OPERATING:**
- Uncased: -20°C to + 65°C maximum (see rating chart).
- Cased: -20°C to +55°C maximum (see rating chart).

**TEMPERATURE, STORAGE:**
- -40°C to +85°C.

**COOLING:**
Convection.

**ISOLATION VOLTAGE:**
500 volts to chassis.

**CONTROL/PROGRAMMING:**
- ±5% internal trimmer (voltage or current). External resistance programming ratio is 1000 ohms per volt. A 1% fixed resistor is supplied to program the tabulated nominal voltage. When programmed below the ±5% output band, derate current per operating region graph.
- ±5% output band, derate current per operating region graph.

**VOLTAGE RECOVERY (for step load current):**
<50 microseconds.

**OVERLOAD CURRENT CUTOFF:**
Adjustable cutoff locus pivots about the Eo = 0, Ieo = ±5% point, reducing the output current into an overload. Note: Nonlinear loads drawing a high starting current may be locked out by the cutoff locus, and require a starting resistance to be contained within the shaded regions of the operating region graph.

**REMOTE ERROR SENSING:**
Compensates for up to 0.5 volt drop per output lead.

**Overshoot (Turn-on/off):**
None in ±5% operating band. When output is set below 25%, load to approximately 10% to maintain negligible overshoot.

**SERIES/PARALLEL:**
Connections are provided for parallel operation of identical units. Series operation to rated isolation.

**OVERVOLTAGE PROTECTOR:**
Protection is made for attachment of an optional crowbar overvoltage protector, type VP-PAR. See accessory listing for detailed description of protector.

**TERMINALS:**
All input, output, sense and control connections are made via a single multiterminal barrier strip.

**DIMENSIONS:**
Uncased: 6"H x 4"W x 10"D.
Cased: 6"H x 5"W x 10"D.

**Finish:**
Case: Royal blue epoxy.

**Mounting:**
Rack mounting panel adapters available.

---

<table>
<thead>
<tr>
<th>SPECIFICATION</th>
<th>VOLTAGE MODE</th>
<th>CURRENT MODE** (External Sensing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTPUT RANGE</td>
<td>±5%</td>
<td>1 mA to Imax cutoff locus</td>
</tr>
<tr>
<td>REGULATION, LINE</td>
<td>&lt;0.005%</td>
<td>&lt;0.005% at rated sample**</td>
</tr>
<tr>
<td>REGULATION, LOAD</td>
<td>&lt;0.01% or 0.5 mV</td>
<td>&lt;0.01% at rated sample**</td>
</tr>
<tr>
<td>STABILITY (8 HR.)</td>
<td>&lt;0.02% or 3 mV</td>
<td>&lt;0.02% or 3 mA</td>
</tr>
<tr>
<td>TEMP. COEFFICIENT</td>
<td>&lt;0.02% per °C</td>
<td>&lt;0.02% per °C at rated sample**</td>
</tr>
<tr>
<td>RIPPLE, rms</td>
<td>&lt;0.25 mV</td>
<td>&lt;0.01% of Io max.</td>
</tr>
</tbody>
</table>

*Remote error sensing compensates for up to 0.5 volt drop per output lead.*

---

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**(212) 461-7000 • TWX #710 582 2631**

**Cable: KEPCOPOWER NEW YORK**
**KEPCO CK-HS**

**UNIPOLAR AMPLIFIER**

**POWER SUPPLIES**

- Fast slewing
- Automatic crossover
- Adjustable offsets

---

**Parameter** | **Voltage Regulation** | **Current Regulation** | **Voltage Amplifier Offsets**
---|---|---|---
**Output Range** | 0-100% | 0.2% to 100% | 0.1% to 100% |
**Line** | 105-125/210-250V AC | <0.005% or 0.1mV | <0.005% or 0.2mA |
**Load** | No load/full load | <0.01% or 0.3mV | <0.01% or 0.2mA |
**Time** | 8 hours (Stability) | <0.01% or 2.0mV | <0.005% or 1mA |
**Temp:** Per °C (Coefficient) | <0.01% | <0.005% of IP max. | <500μV |

*<sub>*VIX* CIRCUIT: Mode indicators display operating conditions, also produce a ±8V, ±1mA control signal.*

**REMOTE ERROR SENSING:** Compensates up to 0.5V drop per output lead.

**PROGRAMMING:** 1mA control current, by resistance at 100 ohms per volt. May be operationally controlled as an amplifier using external voltage or current signals; common negative.

**Input:** 105-125V AC or 210-250V AC (selectable), 50-65Hz single phase.

**Temperature, Ambient Operating:** −20°C to +50°C.

**Temperature, Storage:** −40°C to +85°C.

**Cooling:** Forced lateral circulation, built-in blower.

**Isolation Voltage:** 500 volts to chassis.

**Control:** 10-turn voltage and current controls, 0.05% resolution.

**Meters:** 10-turn voltage and current controls, 0.05% resolution.

**Cable:** KEPCOPOWER NEW YORK

**Dimensions:** 4½″ H x 8½″ W x 13¼″ D. Half-rack. Mounting accessories available.

**Finishing:** Panel: brushed aluminum; Housing: gray hammer tone.

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**Notice:** Applicable Patent Nos. will be supplied on request.

**NOTICE:** Applicable Patent Nos. will be supplied on request.

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**KEPCO INC. • 1330 SANFORD AVENUE • FLUSHING, NY, 11352**

**Cable: KEPCOPower NEW YORK**
**KEPCO**

**BHK**

**HIGH VOLTAGE POWER SUPPLIES**

- fast slewing capability
- operationally controlled
- hybrid design
- 10-turn voltage and current controls

### Specifications

<table>
<thead>
<tr>
<th></th>
<th>DC Output Range</th>
<th>Output Impedance</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td><strong>Volts</strong></td>
<td><strong>Ohms</strong></td>
<td><strong>Price</strong></td>
</tr>
<tr>
<td>BHK 500-0.4M</td>
<td>0-500</td>
<td>&lt;0.005% or 1 mV*</td>
<td>$740.00</td>
</tr>
<tr>
<td>BHK 1000-0.2M</td>
<td>0-1000</td>
<td>&lt;0.01% or 20 mV*</td>
<td>$740.00</td>
</tr>
<tr>
<td>BHK 2000-0.1M</td>
<td>0-2000</td>
<td>&lt;0.05% of 10 max.</td>
<td>$740.00</td>
</tr>
</tbody>
</table>

* *E0 is the output voltage and I0 is the offset current referred to the input of the voltage comparison amplifier.*

**Automatic Crossover:** Selects voltage regulation or current regulation operating mode automatically.

**VIX Circuit:** Voltage/Current mode indicators display operating conditions; also 115V AC control signal (0.5A max.)

**Remote Error Sensing:** Compensates up to 0.5V drop per output load.

**Temperature, Ambient Operating:** -20°C to +55°C

**Temperature, Storage:** -40°C to +65°C

**Cooling:** Convection.

**Input:** 105-125 V AC or 210-250V AC [selected].

**Control Resolution:** Voltage: 0.01% 10-turn vernier control and 10 position selector. Current: 0.05% 10-turn control.

**Overshoot:** (Turn-on/off): None above 10% voltage setting; negligible below 10% when preloaded to 10% minimum.

**Series/Parallel:** Series operation to rated isolation; also master/slave capability. Current limiting design permits self-determined parallel load sharing.

**Meters:** Suffix "M" designates a pair of 2V, 2% meters. Delete suffix "M" for unmetered unit.

**Terminals:** Safety (recessed) output connections on front panel; two multi-terminal barrier strips at the rear contain output, sensing and control functions. Fast slewing/normal strapping is internal.

**Dimensions:** 5/4"H x 19"W x 16"D (behind panel).

---

**Voltage Regulation (internal Sensing)**

- **VOLTAGE AMPLIFIER OFFSETS:**
  - V<sub>offset</sub> <1 mV
  - I<sub>offset</sub> <100 µA

**Output Range:** 0-100% E<sub>max</sub> max. 0.2% -100% 10 max.

**Line:** 105-125 V AC < 0.005 % or 1 mV* < 100 µA

**Load:** No load/full load < 0.01 % or 100 µA

**Time:** 8 hours (Stability) < 0.01 % or 100 µA

**Temperature (Coefficient):** < 0.01 % of 10 max. < 100 µV < 50 nA

**Ripple:** rms (Normal Speed) < 1 mV

---

**Voltage Gain:** More than 100 db.

**Output Slewing Rate:** (Fast slewing connection): Greater than 500,000 volts per second, measured as the chord to the first time constant on the exponential response.

**Sinusoidal Frequency Response:**

- **Fast Slewing Connection:** f<sub>max</sub> = 100 kc.
  - (f<sub>max</sub> is the peak-to-peak excursion).

**Ripple, Fast Slewing Connection:**

- Ungrounded: More than 80 db below peak output.
- Grounded: More than 100 db below peak output.

**Transient Response:**

- Voltage Mode, Fast Slewing: For step load current, recovery is an exponential with a 50 microsecond time constant.
- Current Mode, Fast Slewing: For step load voltage, recovery is at the rate of 0.5 volt per microsecond.

**Voltage Mode, Normal Speed:** For step load current, recovery to regulation band within 50 microseconds.

**Output Impedance:**

- Voltage Mode, Normal Speed: See table.
- Voltage Mode, Fast Slewing: Above 1 kc, add the reactive impedance of 500 microhenries.

**Offset Nulling:** The initial part of the input offset voltage and input offset current can be swelled with internal controls.

**References:**

- Two: +6.2 volts and -6.2 volts; maximum current 1 milliampere.

**Programming:** 1 mA control current, by internal controls at 1000 ohms per volt. May be operationally controlled as an amplifier using voltage or current signals. Common positive.

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All terms used in the specifications are defined in the Kepco Glossary. Refer to Kepco’s Catalog or Handbook.

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Cable: KEPCOPOWER NEWYORK
POWER SUPPLIES

- Complementary or series output
- Single control, adjustable tracking
- Voltage, current and error metering

### COMPLEMENTARY DUAL TRACKING POWER SUPPLIES

<table>
<thead>
<tr>
<th>MODEL</th>
<th>TWIN OUTPUTS* SERIES</th>
<th>INDIVIDUAL SUPPLIES OUTPUT IMPEDANCE</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VOLTS</td>
<td>AMPS</td>
<td>VOLTS</td>
</tr>
<tr>
<td>CDT 15-1.5M</td>
<td>0-15</td>
<td>0.001</td>
<td>0.002</td>
</tr>
<tr>
<td>CDT 40-0.5M</td>
<td>0-40</td>
<td>0.008</td>
<td>0.002</td>
</tr>
<tr>
<td>CDT 100-0.2M</td>
<td>0-100</td>
<td>0.02</td>
<td>0.002</td>
</tr>
</tbody>
</table>

*Each Power Supply contains two sources with a common voltage control. May be used as complementary (plus and minus) supplies or in series for double voltage.

### SPECIFICATION

**VOLTAGE MODE**

| OUTPUT RANGE | COMPLEMENTARY SERIES | VOLTAGE
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to +E0 and 0 to -E0</td>
<td>0 to twice E0</td>
<td></td>
</tr>
</tbody>
</table>

**REGULATION, LINE**

- < 0.005 %

**REGULATION, LOAD**

- < 0.01 % or 1mV

**STABILITY (8 hr)**

- < 0.1 % or 2mV

**TEMP. COEFFICIENT**

- < 0.01 % per C

**RIPPLE, rms**

- < 0.25mV

**DATA**

- whichever is greater

**Specifications are for the individual supplies, changes in the master supply (plus output) are repeated 1:1 in the slave supply.**

**INPUT:** 105-125V AC or 210-250V AC (selected) 50-440 cps.

**TEMPERATURE, AMBIENT OPERATING:** -20°C to +65°C.

**COOLING:** Convection.

**ISOLATION VOLTAGE:** 500 volts to chassis.

**OUTPUT:** The individual power supplies are wired in series, controlled with a single voltage control. They may be loaded in series or separately.

**CONTROL RESOLUTION:** < 0.005%, 10 turn voltage control adjusts the output of the positive supply; designated "master," this voltage in turn controls the negative supply or "slave" in a 1:1 ratio. The two power supplies are connected in series.

**TRACKING:** ±5% range of adjustment is controlled by a recessed front panel control. Units can be adjusted to within ±0.5% using panel meter. Close adjustment with external instrumentation.

**PROGRAMMING:** 1 millampere control current, or resistance: 1000 ohms per volt. Common positive.

**VOLTAGE RECOVERY:** (for step load current): < 50 μseconds.

**CURRENT LIMITING:** Each supply is individually limited with a 10 to 105% range of adjustment.

**REMOTE ERROR SENSING:** Compensates for up to 0.5 volt drop per output lead.

**METERS:** Voltmeter monitors output of MASTER, or the difference between MASTER and SLAVE, displayed as a percentage error (range ±5%). Ammeter monitors current from either supply (selectable).

**TERMINALS:** Binding posts on the front panel for plus, common and minus outputs, also sensing terminals and separate ground. Barrier strip at the rear has duplicate output, sensing and control terminals.

**DIMENSIONS:** 5¼"H x 8½"W x 17½"D (behind panel).

**FINISH:** Panel: Per FED, STD 565, color 26440, light gray.

**Cone:** Gray hammondite.

**MOUNTING:** Rack Adapters available.

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**KEPCO Glossary**

Refer to KeCPO's Catalog or Handbook.

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**KEPCO POWER TOOLS**

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@ KEI
KEPCO
MODULAR POWER SUPPLIES

- Voltage/current regulation
- Full range operationally programmable
- All silicon design

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>DC Output Range</th>
<th>Output Impedance</th>
<th>Max. Input Amps</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAT 7-2</td>
<td>0–7 0–2</td>
<td>0.0005 0.02 0.1–1</td>
<td>0.50</td>
<td>$115.00</td>
</tr>
<tr>
<td>PAT 15-1.5</td>
<td>0–15 0–1.5</td>
<td>0.001 0.03 0.1–1</td>
<td>0.65</td>
<td>115.00</td>
</tr>
<tr>
<td>PAT 21-1</td>
<td>0–21 0–1</td>
<td>0.0025 0.02 0.1–1</td>
<td>0.45</td>
<td>115.00</td>
</tr>
<tr>
<td>PAT 40-0.5</td>
<td>0–40 0–0.5</td>
<td>0.008 0.02 0.1–1</td>
<td>0.40</td>
<td>115.00</td>
</tr>
<tr>
<td>PAT 72-0.3</td>
<td>0–72 0–0.3</td>
<td>0.025 0.02 0.1–1</td>
<td>0.45</td>
<td>115.00</td>
</tr>
<tr>
<td>PAT 100-0.2</td>
<td>0–100 0–0.2</td>
<td>0.050 0.02 0.1–1</td>
<td>0.45</td>
<td>115.00</td>
</tr>
</tbody>
</table>

**Note:** Model PAT 15-1.5

### Ratings

- **Volts:** 125V AC or 210-250V AC (selected), 50-440 cps single phase.
- **Temperature, Ambient Operating:** Cased: –20 C to +71 C.
- **Temperature, Storage:** –40 C to +85 C.
- **Cooling:** Convection.
- **Isolation Voltage:** 500 volts to chassis.
- **Programming:** Approximately 2 mA control current, externally adjustable by resistance at ≈1000 ohms per volt. Specify suffix “R” to obtain model with integral ±10% control current adjustment. May be operationally controlled as an amplifier using voltage or current signals; common positive.
- **Voltage Recovery (for step load current):** ≤0.5 volts in 1 millisecond.
- **Current Limiting:** Adjustable from 10% to 108% of rated full current.
- **Remote Error Sensing:** Compensates up to 0.5 volt drop per output lead.
- **Overshoot (Turn-on/off):** None above 2% voltage setting; negligible below 25% when preloaded to 10% minimum.
- **Series/Parallel:** Series operation to rated isolation; also master/slave capability. Current limiting design permits self-determined parallel load sharing.
- **Terminals:** All input, output and control connections are suffix “R” to obtain model with integral ±10% control current made via a multi-terminal barrier strip.
- **Dimensions:** Cased: 3/4”x 6”x 4”x 4” D.
- **Finish:** Black anodized aluminum.
- **Mounting:** Rack Adapters available.

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