B-631

KEPCO
POWER SUPPLIES

DESIGN GROUP INDEX

	MODEL	DC OUTPUT VOLTS	DC OUTPUT AMPS
ALL-TRANSISTOR MODELS	ABC 2–1M	0–2	0–1
	ABC 7.5–2M	0–7.5	0–2
	ABC 10–0.75M	0–10	0–0.75
ABC GROUP	ABC 15–1M	0–15	0–1
	ABC 18–0.5M	0–18	0–0.5
0.05% REGULATION	ABC 30–0.3M	0–30	0–0.3
	ABC 40–0.5M	0–40	0–0.5
PAGES 14-15	ABC 200M	0–200	0–0.1
	ABC 425M	0–425	0–0.05
HYBRID MODELS	ABC 1000M	0–1000	0–0.02
	ABC 1500M	0–1500	0–0.005
	ABC 2500M	0–2500	0–0.002
CK GROUP	CK 2–8M	0–2	0–8
	CK 8–5M	0–8	0–5
0.01% REGULATION	CK 18–3M	0–18	0–3
	CK 36–1.5M	0–36	0–1.5
	CK 40–0.8M	0–40	0–0.8
PAGES 16-17	CK 60–0.5M	0–60	0–0.5
0.1% REGULATION	HB 2M	0–325	0–0.2
	HB 4M	0–325	0–0.4
HB GROUP	HB 6M	0–325	0–0.6
	HB 8M	0–325	0–0.8
0.01% REGULATION	HB 20M	0–325	0–0.2
	HB 40M	0–325	0–0.4
PAGES 18-19	HB 60M	0–325	0–0.6
	HB 80M	0–325	0–0.8
KO GROUP	KO 12–100M	0–12	0–100
	KO 25–50M	0–25	0–50
1% REGULATION	KO 45–30M	0–45	0–30
PAGES 20-21	KO 70–20M	0–70	0–20
KR GROUP	KR 11M	0–150	0–0.125
	KR 1M	100–200	0–0.125
0.1% REGULATION	KR 2M	195–325	0–0.125
	KR 9M	295–450	0–0.125
PAGES 22-23	KR 12M	0–150	0–0.3
	KR 3M	100–200	0–0.3
	KR 4M	195–325	0–0.3
	KR 10M	295–450	0–0.3
	KR 8M	0–150	0–0.6
	KR 5M	100–200	0–0.6
	KR 6M	195–325	0–0.6
	KR 7M	295–450	0–0.6

INDEX BY OUTPUT VOLTAGE

DC OUTPUT VOLTS	DC OUTPUT AMPS	MODEL	PAGE
0–2	0–1	ABC 2–1M	14-15
0–2	0–8	CK 2–8M	16-17
0–7.5	0–2	ABC 7.5–2M	14-15
0–7.5	0–2	PSC 5–2	28-29
0–8	0–5	CK 8–5M	16-17
0–8	0–15	KS 8–15M	24-25
0–8	0–25	KS 8–25M	24-25
0–8	0–50	KS 8–50M	24-25
0–8	0–100	KS 8–100M	24-25
0–10	0–0.75	ABC 10–0.75M	14-15
0–12	0–100	KO 12–100M	20-21
7.5–12.5	0–2	PSC 10–2	28-29
0–14	0–7	SM 14–7M (X)	32-33
0–14	0–15	SM 14–15M (X)	32-33
0–14	0–30	SM 14–30M (X)	32-33
0–15	0–1	ABC 15–1M	14-15
0–7.5–15	0–10	PR 15–10M	26-27
0–15	0–30	PR 15–30M	26-27
12.5–17.5	0–2	PSC 15–2	28-29
0–18	0–0.5	ABC 18–0.5M	14-15
0–18	0–1	SC 18–1M	30-31
0–18	0–2	SC 18–2M	30-31
0–18	0–3	CK 18–3M	16-17
0–18	0–4	SC 18–4M	30-31
0–18	0–10	KS 18–10M	24-25
0–18	0–15	KS 18–15M	24-25
0–18	0–25	KS 18–25M	24-25
0–18	0–50	KS 18–50M	24-25
0–20	0–100	PR 20–100M	26-27
17.5–22.5	0–2	PSC 20–2	28-29
0–25	0–50	KO 25–50M	20-21

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DESIGN GROUP INDEX

KS GROUP — 0.01% REGULATION — PAGES 24-25

PR GROUP — 1-PHASE MODELS ±1% REGULATION; 3-PHASE MODELS ±2% REGULATION — PAGES 26-27

PSC GROUP — 0.02% REGULATION — PAGES 28-29

SC GROUP — 0.1% REGULATION — PAGES 30-31

MODEL	DC OUTPUT VOLTS	DC OUTPUT AMPS
KS 8—15M	0—8	0—15
KS 8—25M	0—8	0—25
KS 8—50M	0—8	0—50
KS 8—100M	0—8	0—100
KS 18—10M	0—18	0—10
KS 18—15M	0—18	0—15
KS 18—25M	0—18	0—25
KS 18—50M	0—18	0—50
KS 36—5M	0—36	0—5
KS 36—10M	0—36	0—10
KS 36—15M	0—36	0—15
KS 36—30M	0—36	0—30
KS 60—2M	0—60	0—2
KS 60—5M	0—60	0—5
KS 60—10M	0—60	0—10
KS 60—20M	0—60	0—20
PR 15—10M	0—7.5—15	0—10
PR 15—30M	0—15	0—30
PR 38—5M	0—19—38	0—5
PR 38—15M	0—38	0—15
PR 80—2.5M	0—40—80	0—2.5
PR 80—8M	0—80	0—8
PR 155—1M	0—78—155	0—1
PR 155—4M	0—155	0—4
PR 310—0.6M	0—165—310	0—0.6
PR 310—2M	0—310	0—2
PR 20—100M	0—20	0—100
PR 40—50M	0—40	0—50
PR 50—40M	0—50	0—40
PSC 5—2	0—7.5	0—2
PSC 10—2	7.5—12.5	0—2
PSC 15—2	12.5—17.5	0—2
PSC 20—2	17.5—22.5	0—2
PSC 28—1	22.5—32.5	0—1
PSC 38—1	32.5—42.5	0—1
SC 18—1M	0—18	0—1
SC 18—2M	0—18	0—2
SC 18—4M	0—18	0—4
SC 33—5M	0—33	0—5
SC 36—1M	0—36	0—1
SC 36—2M	0—36	0—2
SC 3672—0.5M	36—72	0—0.5
SC 3672—1M	0—36—72	0—1

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DC OUTPUT VOLTS	DC OUTPUT AMPS	MODEL	PAGE
0—30	0—0.3	ABC 30—0.3M	14-15
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0—32	0—2.5	SC 32—2.5	30-31
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22.5—32.5	0—1	PSC 28—1	28-29
0—33	0—5	SC 33—5M	30-31
0—36	0—1	SC 36—1M	30-31
0—36	0—1.5	CK 36—1.5M	16-17
0—36	0—2	SC 36—2M	30-31
0—36	0—5	KS 36—5M	24-25
0—36	0—5	SM 36—5M (X)	32-33
0—36	0—10	KS 36—10M	24-25
0—36	0—10	SM 36—10M (X)	32-33
0—36	0—15	KS 36—15M	24-25
0—36	0—15	SM 36—15M (X)	32-33
0—36	0—30	KS 36—30M	24-25
0—19—38	0—5	PR 38—5M	26-27
0—38	0—15	PR 38—15M	26-27
0—40	0—0.5	ABC 40—0.5M	14-15
0—40	0—0.8	CK 40—0.8M	16-17
0—40	0—50	PR 40—50M	26-27
32.5—42.5	0—1	PSC 38—1	28-29
0—45	0—30	KO 45—30M	20-21
0—50	0—40	PR 50—40M	26-27
0—60	0—0.5	CK 60—0.5M	16-17
0—60	0—2	KS 60—2M	24-25
0—60	0—5	KS 60—5M	24-25
0—60	0—10	KS 60—10M	24-25
0—60	0—20	KS 60—20M	24-25
0—70	0—20	KO 70—20M	20-21
36—72	0—0.5	SC 3672—0.5M	30-31

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	MODEL	DC OUTPUT VOLTS	DC OUTPUT AMPS
SC GROUP 0.01% REGULATION PAGES 30-31	2SC 32–1.5	0–32	0–1.5
	Dual Output	0–32	0–1.5
	SC 32–2.5	0–32	0–2.5
	SC 32–5	0–32	0–5
	2SC 100–0.2	0–100	0–0.2
	Dual Output	0–100	0–0.2
SM GROUP 0.1% REGULATION PAGES 32-33	SM 14–7M	0–14	0–7
	SM 14–15M	0–14	0–15
	SM 14–30M	0–14	0–30
	SM 36–5M	0–36	0–5
	SM 36–10M	0–36	0–10
	SM 36–15M	0–36	0–15
	SM 75–2M	0–75	0–2
	SM 75–5M	0–75	0–5
	SM 75–8M	0–75	0–8
	SM 160–1M	0–160	0–1
	SM 160–2M	0–160	0–2
	SM 160–4M	0–160	0–4
	SM 325–0.5M	0–165–325	0–0.5
	SM 325–1M	0–325	0–1
	SM 325–2M	0–325	0–2
SM GROUP 0.01% REGULATION PAGES 32-33	SM 14–7MX	0–14	0–7
	SM 14–15MX	0–14	0–15
	SM 14–30MX	0–14	0–30
	SM 36–5MX	0–36	0–5
	SM 36–10MX	0–36	0–10
	SM 36–15MX	0–36	0–15
	SM 75–2MX	0–75	0–2
	SM 75–5MX	0–75	0–5
	SM 75–8MX	0–75	0–8
	SM 160–1MX	0–160	0–1
	SM 160–2MX	0–160	0–2
	SM 160–4MX	0–160	0–4
	SM 325–0.5MX	0–165–325	0–0.5
	SM 325–1MX	0–325	0–1
	SM 325–2MX	0–325	0–2
WR GROUP < 0.1% REGULATION PAGES 34-35	2400 B #1	Bias 0–150	0–0.005
	#2	0–400	0–0.15
	#3	0–400	0–0.15
	Parallel #2 & #3	0–400	0–0.3
	Series #2 & #3	0–800	0–0.15
	400 B	0–400	0–0.15
		Bias 0–150	0–0.005

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DC OUTPUT VOLTS	DC OUTPUT AMPS	MODEL	PAGE
0–36–72	0–1	SC 3672–1M	30-31
0–75	0–2	SM 75–2M (X)	32-33
0–75	0–5	SM 75–5M (X)	32-33
0–75	0–8	SM 75–8M (X)	32-33
0–40–80	0–2.5	PR 80–2.5M	26-27
0–80	0–8	PR 80–8M	26-27
Dual 0–100 0–100	0–0.2 0–0.2	2SC 100–0.2	30-31
0–150	0–0.125	KR 11M	22-23
0–150	0–0.3	KR 12M	22-23
0–150	0–0.6	KR 8M	22-23
0–78–155	0–1	PR 155–1M	26-27
0–155	0–4	PR 155–4M	26-27
0–160	0–1	SM 160–1M (X)	32-33
0–160	0–2	SM 160–2M (X)	32-33
0–160	0–4	SM 160–4M (X)	32-33
0–200	0–0.1	ABC 200M	14-15
100–200	0–0.125	KR 1M	22-23
100–200	0–0.3	KR 3M	22-23
100–200	0–0.6	KR 5M	22-23
0–300 0–300	0–0.075 0–0.075	103 Unregulated	34-35
0–165–310	0–0.6	PR 310–0.6M	26-27
0–310	0–2	PR 310–2M	26-27
0–165–325	0–0.5	SM 325–0.5M(X)	32-33
0–325	0–0.2	HB 2M	18-19
0–325	0–0.4	HB 4M	18-19
0–325	0–0.6	HB 6M	18-19
0–325	0–0.8	HB 8M	18-19
0–325	0–1	SM 325–1M (X)	32-33
0–325	0–2	SM 325–2M (X)	32-33
195–325	0–0.125	KR 2M	22-23
195–325	0–0.3	KR 4M	22-23

DESIGN GROUP INDEX

MODEL	DC OUTPUT VOLTS	DC OUTPUT AMPS
430 D #1	0—450	0—0.3
#2	0—450	0—0.3
Parallel #1 & #2	0—450	0—0.6
Series #1 & #2	0—900	0—0.3
800 B #1	0—600	0—0.2
#2	0—600	0—0.2
Parallel #1 & #2	0—600	0—0.4
Series #1 & #2	0—1200	0—0.2
605	0—600	0—0.5
	Bias 0—150	0—0.005
615B	0—600	0—0.3
	Bias 0—150	0—0.005
103 Unregulated #1	0—300	0—0.075
#2	0—300	0—0.075
#3	-50 to +50	0—0.005
Parallel #1 & #2	0—300	0—0.150
1250 B	0—1000	0—0.5
1220 C	0—1200	0—0.05
1520 B	0—1500	0—0.2
HB 2050	0—2000	0—0.5
HB 2500	0—2500	0—0.05

WR REGULATED DC SUPPLY GROUP

<0.1% REGULATION

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195—325	0—0.6	KR 6M	22-23
0—400 0—150 bias	0—0.150 0—0.005	400B	34-35
0—400 0—400 0—150 bias	0—0.150 0—0.150 0—0.005	2400B Multiple Output	34-35
0—425	0—0.05	ABC 425M	14-15
295—450	0—0.125	KR 9M	22-23
295—450	0—0.3	KR 10M	22-23
295—450	0—0.6	KR 7M	22-23
0—450 0—450	0—0.3 0—0.3	430D Multiple Output	34-35
0—600 0—150 bias	0—0.3 0—0.005	615B	34-35
0—600 0—600	0—0.2 0—0.2	800B Multiple Output	34-35
0—600 0—150 bias	0—0.5 0—0.005	605	34-35
0—1000	0—0.02	ABC 1000M	14-15
0—1000	0—0.5	1250B	34-35
0—1200	0—0.05	1220C	34-35
0—1500	0—0.005	ABC 1500M	14-15
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KEPCO... a reliable source for all of your Regulated DC Power Supply needs

ORDERING INFORMATION

All of the power supplies described in this catalog are regular production items, not specials, not "built to order". Our inventory will, at almost any given time, contain substantial quantities of 80-85% of all of the listed models. Your local Kepco Field Engineering Office receives weekly inventory reports and is equipped to quote price and delivery directly.

Communications:

Kepco maintains complete communication facilities including postal, telephone, Western Union (WUX) and teletype (TWX) facilities:

Mail Address and WUX ..... **131-38 Sanford Ave., Flushing 52, N. Y.**
Telephone Number ..... **(212) IN 1-7000**
TWX Number **212-539-6623**
Cable Address ..... **KEPCOPOWER NEW YORK**

Orders:

Please use the Kepco model number to describe the power supply that you want. If your organization has assigned specification control numbers to our standard models, please list our model number also to assist our order processing department in filling your order with least delay. Unless otherwise specified, orders are shipped via motor freight. Liaison is maintained with all shipping agencies and Metropolitan New York Airports.

Warrantee:

All Kepco products are backed by a *valid, unconditional* repair guarantee — for one year after date of sale. Our entire staff of nationwide representative field engineers are factory trained to assist you in obtaining the best performance from each Kepco Power Supply. Each field engineer is prepared to render on-the-spot field service and many of our representative organizations maintain full service centers for overhaul and maintenance. For the address and telephone number of your local Kepco Field Engineer, refer to the back cover of this catalog.

Parts:

Recognizing the importance of providing proper equipment support after delivery to our customers, Kepco maintains a complete inventory of every component needed to service any Kepco Power Supply *regardless of age*. When writing to us or to our local field representative organization concerning spare parts, please refer to the model and serial number of the equipment involved. Also give a description of the part and the Kepco part number.

kepco®

is today, the leading manufacturer of wide range precision Regulated DC Power Supplies

The organization, comprising a complete manufacturing facility, is supported by a highly competent staff of engineering and technical liaison personnel. In addition to a complete assembly, wiring and testing operation, the plant contains complete transformer manufacturing and sheet metal fabrication facilities.

Through more than 16 years of experience in the development, testing and manufacture of equipment of the highest quality, Kepco, Inc., has gained an unparalleled background in the power supply industry. The dependable service that Kepco's Power Supplies provide, derives from Kepco's exceptional background of specialized engineering experience, continuous laboratory tests and field studies.

Kepco has pioneered both in the development of new circuitry and in extending the limits of classic circuit techniques leading to many U.S. Patents.*

KEPCO'S CONTRIBUTIONS TO THE POWER SUPPLY FIELD

- **Precision Regulation**
- **The Voltage Comparison Bridge Regulator**
- **Full Voltage Range Regulation**
- **Short Circuit Protection by Current Limiting**
- **Elimination of Voltage Overshoot**
- **Remote Programming**
- **Remote Error Sensing**
- **The Switching Type Regulator**
- **Wide Range Magnetic Regulators**
- **Hybrid Regulators**
- **Voltage Correcting Systems**
- **Proportional Control of Multiple Supplies**
- **Thermal Protection**
- **High Efficiency Lateral Cooling**

To maintain Kepco's traditional product superiority, a Quality Assurance Program is in effect through all phases of the manufacturing operation. This program, conforming basically to MIL Q-9858, is approved by leading contractors to the U.S. Military Services. Many thousands of power supply installations, reporting *negligible down time,* are testimonials to Kepco's engineering and manufacturing skills.

Having set the pace in the power supply field, Kepco continues to improve concepts and design techniques to meet the needs of advanced electronic systems.

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

SELECTION AND APPLICATION OF POWER SUPPLIES

This catalog has been designed to facilitate your selection of the right Power Supply.

On Pages 2, 3, 4 and 5 there is a tabulation of all models according to DESIGN GROUP and PERCENT REGULATION, with a corresponding list showing the output voltage and current. The index also includes a complete listing according to OUTPUT VOLTAGE and CURRENT. All PROGRAMMABLE supplies are listed on page 37 with an adjoining page of programming application notes. The body of the catalog covers each model in detail, by design groups, completely delineating electrical and mechanical characteristics, plus specific features.

Below and on the following pages, are some application notes, a nomograph to determine voltage drop across power supply leads and a glossary of terms to assist the engineer in the proper selection, application and understanding of Regulated Power Supplies.

APPLICATION NOTES

DC WIRE LOSSES: Load Regulation and other performance characteristics can be measured at any point in a system. However the results obtained will apply only to the specific point at which they are measured, and may differ from what is specified for the output of the Supply. If it is desired to measure or to verify the performance of the Supply itself, the measurements should be made at the terminals on the Supply, using instrumentation and procedures capable of measuring with the desired accuracy.

As an example, consider a Kepco Model SC 32–5, 32 volt 5 ampere Supply which has 0.01% regulation. At 32 volts, the output voltage at the terminals will not change more than 3.2 millivolts (0.0032 v) for a change from no-load to full-load. If the load were to be connected by only 12 inches of #12 gauge wire in each lead, at full load the total drop across the resistance in these wires would amount to 16 millivolts, equivalent to 5 times the voltage regulation change. The regulation measured at the terminals would be 0.01% while at the load it would measure 0.05%. A Nomograph of Wire Loss can assist in the selection of the proper wire size. *(See page 9.)*

By use of the Remote Error Sensing feature of the power supply, optimum regulation can be achieved at the load by correcting for wire losses.

DYNAMIC IMPEDANCE: The source impedance presented to a load is a combination of the power supply's impedance and the distributed resistance, inductance, and capacitance of the load connecting leads. For very low frequency load currents, the connecting leads may present an insignificant reactive loss; but, as the load frequency increases this loss increases and results in degraded regulation. Reducing wire lengths and applying by-pass capacitors at the load are general solutions to this problem.

The significance of the power supply's dynamic impedance is apparent when several branch circuits are tied to the supply's terminals. A low source impedance is desirable in these cases to minimize cross-coupling between the various loads.

A well regulated DC power supply typically will have a source impedance of only a few milliohms throughout most of the audio frequency range. The decoupling effect of such a source when powering several branch circuits can therefore be very good.

DYNAMIC WIRE LOSSES: It is instructive to consider the inductive reactance of a simple length of connecting wire. X_L is calculated by means of the formula:

$$X_L = j\omega L \text{ where L (in microhenries)}$$
$$\text{is } 0.005l \left[2.3 \log \left(\frac{4l}{d} - 0.75\right)\right]$$
$$(l = \text{length, } d = \text{wire diameter in inches})$$

from which we determine that a 24″ length of ordinary #18 gauge hook-up wire will put 0.58 ohms (reactive) in series with the source at a load frequency of 100 kc. This is many times the source impedance of the power supply itself thus destroying the important decoupling effect of that source.

Again, by-pass capacitors—placed directly at the load—is the general solution. Such a capacitor provides a local energy storage, restoring the apparent low source impedance.

VENTILATION: Both convection cooled and forced air cooled equipment are listed in this catalog. Forced air cooling is used in high power units to insure reliable performance over the specified temperature ranges. It is furthermore, a significant advantage where the equipment is to be stacked, as in an enclosed cabinet rack.

With the LATERAL (side to side) ventilation design used in all KEPCO forced-air cooled units, a cabinet rack installation may require nothing more than venting perforations in the cabinet to encourage natural convection. When other highly dissipative equipment is installed within the same enclosure, a cabinet venting fan may be indicated to reduce the interior temperature to safe limits. The air movement created by the power supply fan may often be adequate to accomplish this cooling.

RACK MOUNTING: Most models are equipped with front mounting panels designed to enable the unit to be mounted directly in a standard 19 inch rack or cabinet. The half-rack size bench models may be mounted with accessory rack adapters which are available to mount a single unit, or two units side by side.* With the exception of some vacuum-tube units, all models come fully encased, suitable for portable or bench use. **See Accessory Page* 39.

STORAGE: Irrespective of their rated operating temperature range, all Kepco Power Supplies may be stored under ambient temperature conditions that range from −40 degrees C as a lower limit to +85 degrees C for an upper limit. Under conditions of high humidity or condensation, suitable protective measures should be taken (vapor proof seals, etc.). If prolonged storage or operation under high moisture conditions is anticipated, Power Supplies can be ordered with full moisture and fungus proofing varnish (MFP) applied to all exposed and unprotected surfaces.

APPLICATION ENGINEERING ASSISTANCE

Over the years Kepco has developed a series of unique Power Supply interconnections to satisfy our customer's requirements. Some examples are: Slaved Tracking in the parallel or series mode, Complementary Tracking, Over-Voltage and Over-Current Load Protection, etc. Kepco engineers are available to study your specific power supply requirements towards recommending an optimum solution.

A new 40-page REFERENCE HANDBOOK "Notes on Systems Applications of Regulated Power Supplies" is available from Kepco for additional technical power supply data. A description of this material is on Page 43.

NOMOGRAPH OF VOLTAGE DROP ACROSS LOAD SUPPLY LEADS
(as a function of wire size and load current)

THIS NOMOGRAPH CAN BE USED TO FIND:

Maximum current carrying capacity recommended for any standard wire size.*

1) With a straight edge, connect from the wire size on Scale 2 to the point "A" on Scale 3.
2) Read I_{max} on Scale 1.

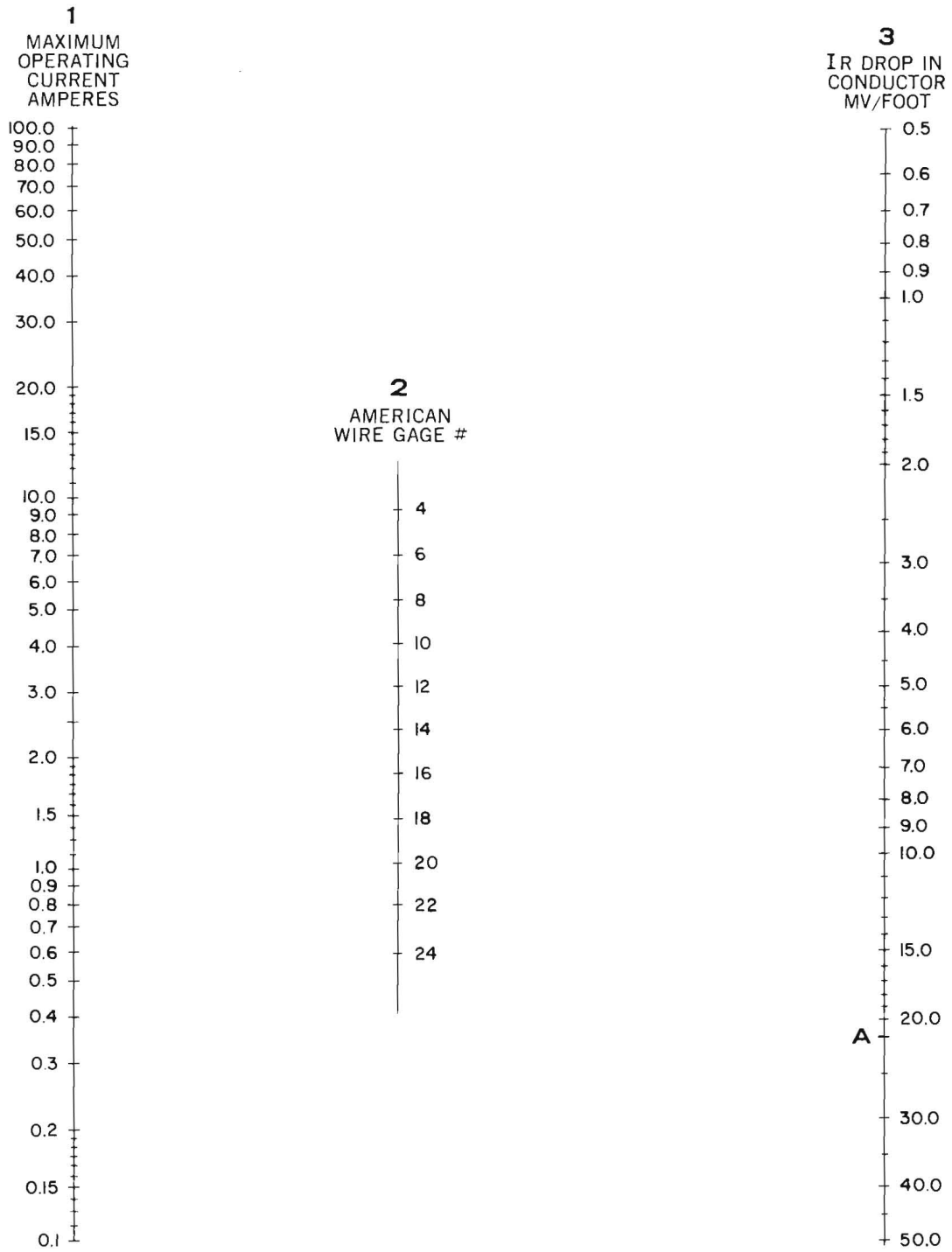
Voltage drop in millivolts per foot for known wire size and operating current.

1) With a straight edge, connect the known current on Scale 1 and the wire size on Scale 2.
2) Read voltage drop on Scale 3.

Wire size required for known operating current and known maximum tolerable voltage drop across supply leads.

1) Determine maximum tolerable drop in millivolts **per foot** of lead (sum of positive and negative leads).
2) Connect the value on Scale 3 (as determined in step 1) to the known current on Scale 1.
3) Read wire size on Scale 2.

*Based on an arbitrary minimum 500 circular mils per ampere. High-temperature class insulation will safely allow higher currents.



NOTE: A voltage regulated Power Supply controls the voltage across its output terminals. Hence the wire conductors used to connect the load must be considered as part of the load. At high load currents the voltage drop across the supply leads may appreciably degrade regulation at the load. Kepco models equipped with the **remote error sensing** feature can automatically compensate for voltage drops of up to 500 mv across each load supply lead.

GLOSSARY
OF POWER SUPPLY TERMS

This glossary is published to assist the engineer in the proper application and understanding of Kepco Regulated Power Supplies. The glossary gives the precise definitions and meaning for every term that is used in describing and specifying Kepco Power Supplies.

AMBIENT OPERATING TEMPERATURE (range):

The range of environmental temperatures in which a power supply can be safely operated. For units with forced air cooling, the temperature is measured at the air intake.

COMPARISON BRIDGE:

A type of voltage comparison circuit whose configuration and principle of operation resemble a four-arm electrical bridge *(Figure 1)*. The elements are so arranged that, assuming a balance exists in the circuit, a zero error signal is derived. Any tendency for the output voltage to change in relation to the reference voltage creates a corresponding error signal, which, by means of negative feedback, is used to correct the output in the direction toward restoring bridge balance.

This comparison bridge is capable of achieving better than 0.01% regulation and stability.

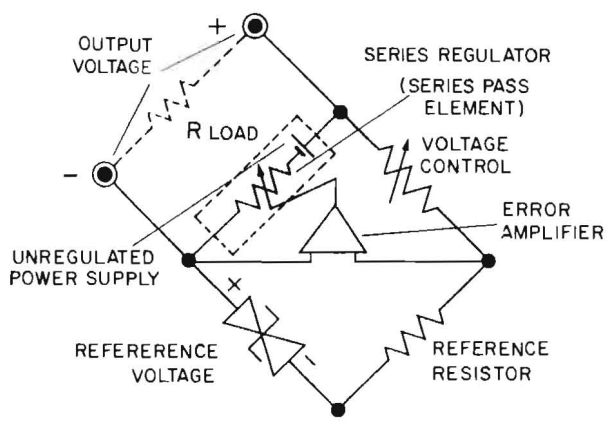


Figure 1: Comparison Bridge for constant voltage operation.

COMPLEMENTARY TRACKING:

A system of interconnection of two regulated supplies in which one (the master) operates to control the other (the slave). The slave supply voltage is made equal (or proportional) to the master supply voltage and of opposite polarity with respect to a common point.

COMPLIANCE VOLTAGE (range):

The output voltage range of a DC power supply operating in constant current mode. Compliance voltage is the voltage range required to sustain a given value of constant current throughout a range of load resistances.

CONSTANT CURRENT POWER SUPPLY:

A Power Supply that is capable of maintaining a preset current through a variable load resistance. This is achieved by automatically varying the load voltage in order to maintain the ratio, V_{load}/R_{load} constant.

CONSTANT VOLTAGE POWER SUPPLY:

A Power Supply that is capable of maintaining a preset voltage across a variable load resistance. This is achieved by automatically varying the output current in order to maintain the product of load current times load resistance constant. *(Figure 1)*.

CONTROL RATIO:

The required change in control resistance to produce a one volt change in the output voltage. The control ratio is expressed in ohms per volt.

COOLING:

In power supplies, the cooling of regulator elements refers to the method used for removing heat generated in the regulating process. Methods include radiation, convection, and conduction or combinations thereof.

COOLING, CONVECTION:

A method of heat transfer which uses the natural upward motion of air warmed by the heat dissipators.

COOLING, LATERAL FORCED AIR:

An efficient method of heat transfer by means of side to side circulation which employs blower movement of air through or across the heat dissipators.

CROSSOVER, VOLTAGE/CURRENT (automatic):

The characteristic of a power supply that automatically changes the method of regulation from constant voltage to constant current (or vice versa) as dictated by varying load conditions. *(Figure 2)*.

The constant voltage and constant current levels can be independently adjusted within the specified voltage and current limits of the power supply. The intersection of the constant voltage and constant current lines is called the crossover point (V,I) and may be located anywhere within the volt-ampere range of the power supply.

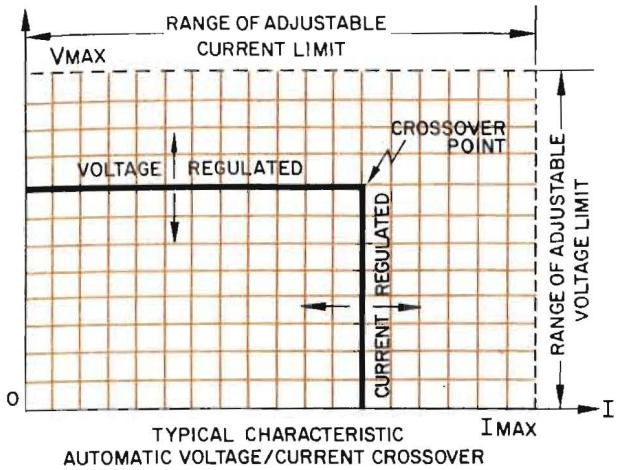


Figure 2: Automatic voltage/current crossover.

CURRENT LIMITING (automatic):

An overload protection mechanism which limits the maximum output current to a preset value, and automatically restores the output when the overload is removed. (See short circuit protection; *Figure 3*).

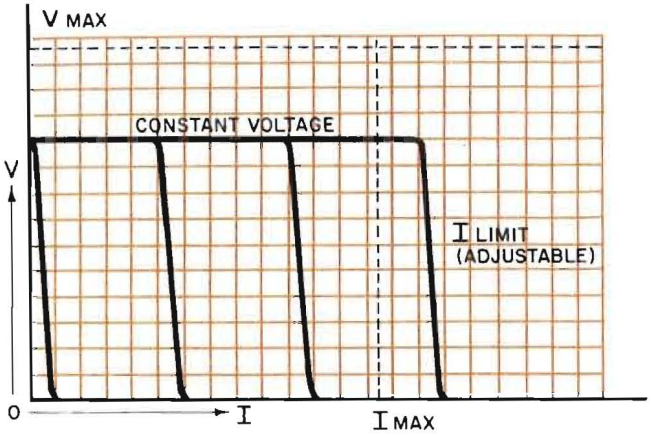


Figure 3: Plot of typical current limiting curves.

CURRENT SENSING RESISTOR:

A resistor of low value placed in series with the load to develop a voltage proportional to the output current. A current regulated DC power supply regulates the current in the load by regulating the voltage across this sensing resistor.

DRIFT: See Stability.

ERROR SIGNAL:

The error signal is the output of the comparison bridge. It is amplified to drive the series Pass Elements.

HYBRID:

A combination of disparate elements to form a common circuit. In power supplies, the combination of vacuum tubes and transistors in the regulating circuitry.

LINE REGULATION:

The maximum amount that the output voltage or current will change as the result of a specified change in line voltage, usually for a step change between 105-125 volts, unless otherwise specified. (Regulation is given either as a percentage of the output voltage or current, or as an absolute change, ΔV or ΔI).

LOAD REGULATION:

The maximum amount that the output voltage or current will change as the result of a specified change in output load, generally from no-load to full-load unless otherwise specified. (Regulation is given either as a percentage of the output voltage or current or as an absolute change, ΔV or ΔI). *(Figure 4.)*

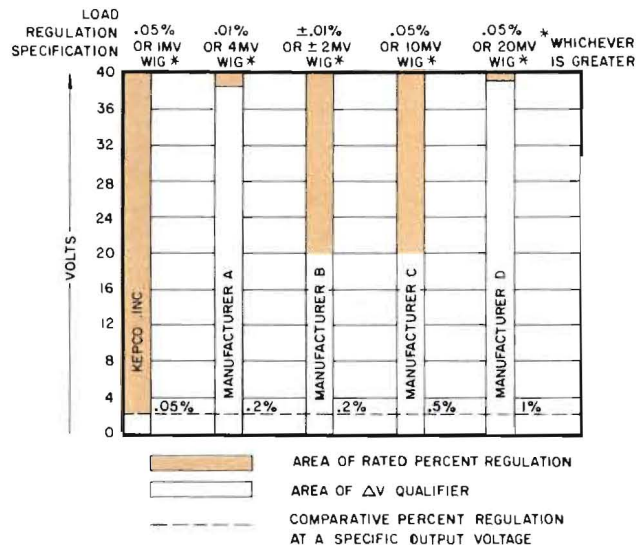


Figure 4: Comparison of the meanings of several different ways of writing load regulation specification.

OUTPUT IMPEDANCE:

The effective dynamic output impedance of a power supply is derived from the ratio of the measured peak-to-peak change in output voltage to a measured peak-to-peak change in alternating load current. Output impedance is usually specified throughout the frequency range DC–100 kc.

OVERSHOOT:

A transient rise beyond regulated output limits, occurring when the AC power input is turned on or off, and for line or load step changes. *(See Figures 5, 7a, 7b)*

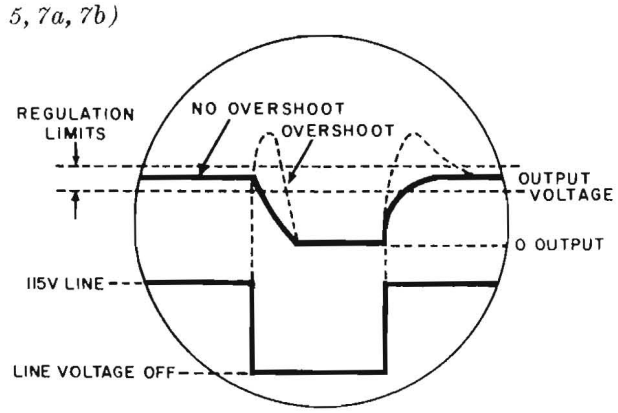


Figure 5: Scope view of turn off-turn on effects on supply.

OVER-TEMPERATURE PROTECTION:

A thermal relay circuit which turns off the power automatically should an over-temperature condition occur.

PARALLEL OPERATION:

The output of two or more power supplies connected together so that their individual output currents are added and flow in a common load. In feedback controlled supplies, the control input to the pass elements of all of the supplies are connected in parallel, to be driven by a common error signal from one master control unit.

PASS ELEMENT:

An automatic variable resistance device, either a vacuum tube or power transistor, in series with the source of DC power. The pass element is driven by the amplified error signal to increase its resistance when the output needs to be lowered or to decrease its resistance when the output must be raised. (See series regulator.)

POWER SUPPLY (AC to DC):

Generally, a device consisting of transformer, rectifier and filter for converting available AC mains to a prescribed DC voltage or current.

PROGRAMMING:

The control of any power supply function, such as output voltage or current, by means of an external or remotely located variable control element. Control elements may be variable resistances, conductances, or variable voltage or current sources. *(Figure 6.)*

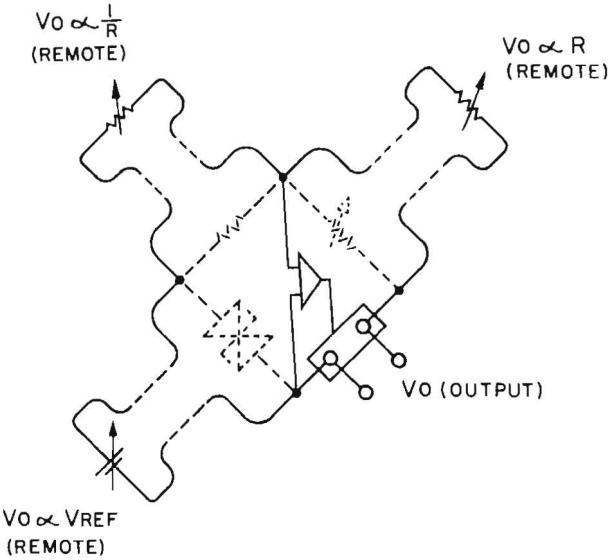


Figure 6: Remote Programming Connections

RECOVERY TIME:

Specifies the time needed for the output voltage or current to return to a value within the regulation specification after a step load or line change. Recovery time, rather than response time, is the more meaningful and therefore preferred way of specifying power supply performance, since it relates to the regulation specification. *(Figures 7a and 7b.)*

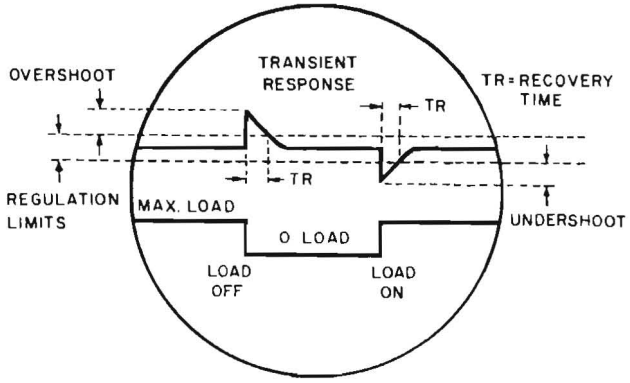


Figure 7a: Scope view shows the effects of a step load change.

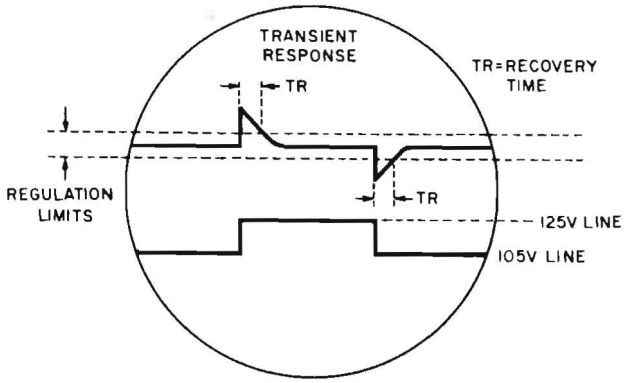


Figure 7b: Scope view shows the effects of a step line change.

REGULATED POWER SUPPLY:

A power supply which maintains a constant output voltage (or current) for changes in the line voltage, its output load, ambient temperature and time.

REGULATION, OVERALL:

The maximum amount that the output will change as a result of the specified change in line voltage, output load, temperature, and time. (See line regulation, load regulation, stability, and temperature coefficient.)

REMOTE ERROR SENSING:

A means by which the regulator circuit senses the voltage directly at the load. This connection is used to compensate for voltage drops in the connecting wires.

RESPONSE TIME (Time Constant):

Specifies the time required for the voltage or current excursion to be reduced to 37% of its peak value after a step load or line change.

RESOLUTION:

The minimum voltage (or current) increment within which the Power Supply's output can be set using the panel controls. For continuous controls, the minimum increment is taken to be the voltage (or current) change caused by 1 degree of shaft rotation.

RIPPLE:

Stated either in peak-to-peak or in rms value, "ripple" specifies the maximum AC component that appears in a DC output. Unless specified separately, ripple includes unclassified noise.

SERIES OPERATION:

The output of two or more power supplies connected together to obtain a total output voltage equal to the sum of their individual voltages. Load current is equal and common through each supply. The extent of series connection is limited by the maximum specified potential rating between any output terminal and ground.

SERIES REGULATOR:

A device placed in series with a source of power that is capable of controlling the voltage or current output by automatically varying its series resistance. (See Pass Element.)

SHORT CIRCUIT PROTECTION (Automatic):

Any automatic current limiting system which enables a power supply to continue operating at a limited current, and without damage, into any output overload including short circuits. The output voltage is restored to normal when the overload is removed, as distinguished from a fuse or circuit-breaker system which opens at overload and must be closed to restore power. (See current limiting, *Figure 3.*)

SHUNT REGULATOR:

A device placed across the output, which controls the current through a series dropping resistance to maintain a constant voltage or current output.

SLAVED TRACKING:

A system of interconnection of two or more regulated supplies in which one (the master) operates to control the others (the slaves). The output voltages of the slave units may be equal or proportional to the output voltage of the master unit. (The slaved output voltages track the master output voltage in a constant ratio.) (See Complementary Tracking.)

STABILITY:

The change in output voltage or current as a function of time, at constant line voltage, load and ambient temperature (sometimes referred to as drift).

STEP LINE VOLTAGE CHANGE:

An instantaneous change in line voltage (e.g. 105-125V AC); for measuring line regulation and transient response.

STEP LOAD CHANGE:

An instantaneous change in load current (e.g. 0 to full load); for measuring the load regulation and transient response.

STORAGE TEMPERATURE:

The range of environmental temperatures in which a power supply can be safely stored (e.g. −40°C to +85°C).

TEMPERATURE COEFFICIENT:

The % change in the output voltage or current as a result of a 1°C change in the ambient operating temperature (% per °C).

VOLTAGE CORRECTOR:

An active source of regulated power placed in series with an unregulated supply to sense changes in the output voltage (or current); and to correct for these changes by automatically varying its own output in the opposite direction, thereby maintaining the total output voltage (or current) constant. *(Figures 8a and 8b.)*

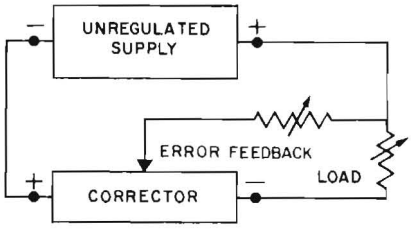
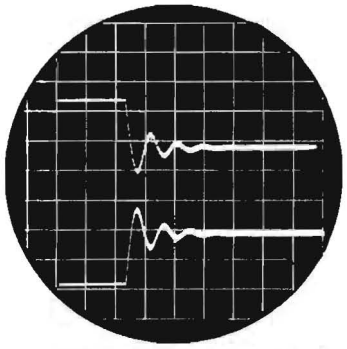


Figure 8a: Circuit used to sense output voltage changes.

LOAD TRANSIENTS: (NO LOAD — FULL LOAD)

The upper trace shows the response of an unregulated power supply to a LOAD ON step transient. The lower trace is the corrector acting within 50 microseconds to exactly compensate for the output changes.

Scale: Vertical sensitivity 5 V per division horizontal 0.2 seconds per division.



The combined output is fully corrected by the opposing response of the corrector power supply and results in the trace to the right (same scale).

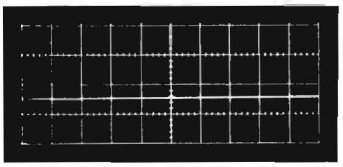


Figure 8b: Scope views show an automatic corrector compensating for changes.

VOLTAGE REFERENCE:

A separate, highly regulated voltage source used as a standard to which the output of the power supply is continuously referred.

WARM-UP TIME:

The time (after power turn on) required for the output voltage, or current to reach an equilibrium value within the stability specification.

kepco ABC REGULATED DC SUPPLY GROUP

TRANSISTORIZED

- *voltage/current regulation*
- *full range programming*
- *laboratory or systems use*
- *versatile, compact design*

0.05% REGULATION and STABILITY

ALL-TRANSISTOR MODELS

MODEL	DC OUTPUT RANGE		RIPPLE RMS	OUTPUT IMPEDANCE OHMS MAX.			*MAX. INPUT
	VOLTS	AMPS	MV	DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	AMPS
ABC 2–1M	0–2	0–1	0.25	0.001	0.01	0.1 + 0.5	0.3
ABC 7.5–2M	0–7.5	0–2	0.25	0.002	0.01	0.05+ 0.5	0.5
ABC 10–0.75M	0–10	0–0.75	0.25	0.007	0.02	0.1 + 1	0.3
ABC 15–1M	0–15	0–1	0.25	0.008	0.01	0.02+ 0.2	0.5
ABC 18–0.5M	0–18	0–0.5	0.25	0.02	0.02	0.1 + 1	0.3
ABC 30–0.3M	0–30	0–0.3	0.25	0.05	0.02	0.1 + 1	0.3
ABC 40–0.5M	0–40	0–0.5	0.25	0.04	0.02	0.04+ 0.2	0.5

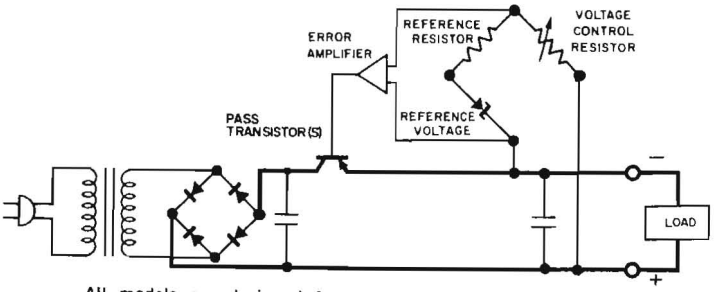
*At 125V AC

HYBRID MODELS

MODEL	DC OUTPUT RANGE		RIPPLE RMS	OUTPUT IMPEDANCE OHMS MAX.			*MAX. INPUT
	VOLTS	MA.	MV	DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	AMPS
ABC 200M	0–200	0–100	0.5	1	0.5	2.0 + 2.0	0.5
ABC 425M	0–425	0–50	0.5	4	0.5	2.0 + 2.0	0.5
ABC 1000M	0–1000	0–20	1.0	25	1.0	2.0 +10.0	0.5
ABC 1500M	0–1500	0–5	1.0	150	1.0	2.0 +10.0	0.3
ABC 2500M	0–2500	0–2	1.0	625	1.0	2.0 +10.0	0.3

*At 125V AC

All-Transistor Circuit is illustrated below. The Hybrid Circuit is a unique design which achieves high efficiency and reliability through the use of Transistorized Reference and Amplifiers combined with a Vacuum Tube series pass element for reliable high voltage operation.



All models are designed for continuous operation without derating under all specified line, load and temperature conditions.

Data subject to change without notice

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

SPECIFICATIONS (for all models)

REGULATION (All-Transistor Models): LINE: Less than 0.05% or 1 millivolt output voltage change whichever is greater for 105–125V AC line variation, at any output voltage within the specified range.

REGULATION (Hybrid Models): LINE: Less than 0.05% or 5 millivolts output voltage change whichever is greater for 105–125V AC line variation, at any output voltage within the specified range.

LOAD **(All-Transistor Models)**: Less than 0.05% or 1 millivolt output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

LOAD **(Hybrid Models)**: Less than 0.05% or 5 millivolts output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

STABILITY (All-Transistor Models): Output varies less than 0.05% or 3 millivolts, whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

STABILITY (Hybrid Models): Output varies less than 0.05% or 50 millivolts, whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE: See table for maximum specification applicable to each model.

RECOVERY TIME: 50 microseconds.

AMBIENT OPERATING TEMPERATURE: –20°C to +50°C maximum.

TEMPERATURE COEFFICIENT: Output voltage changes less than 0.05% per °C.

OUTPUT IMPEDANCE: Specified for each model within the load frequency range shown in the table.
Above 10 kc include the reactive impedance of the effective series inductance as indicated.

INPUT REQUIREMENTS: 105–125 V AC 50–440 cps single phase.

AUXILIARY OUTPUT: 6.5 VAC, unregulated, at 2 amperes available at the rear terminals of Models ABC 200M and ABC 425M.

PERFORMANCE FEATURES (for all models)

ADJUSTABLE WIDE RANGE OUTPUT: Continuously adjustable voltage control permits output settings from zero to the maximum output voltage. The voltage control on All-Transistor Models is a single turn control except for Model ABC 2–1M, which has a high resolution 10-turn control useful in Tunnel Diode work. Multi-turn controls are available on special order for the other models.
The Hybrid Models are equipped with high resolution 10-turn voltage controls as standard equipment. A 10-position step switch, with a 10-turn control interpolating between the switch position, is provided on Models ABC 1000M, ABC 1500M and ABC 2500M.

RESOLUTION: < 0.5% of maximum output voltage for units with single turn voltage control. < 0.05% for units with 10-turn control.

CURRENT LIMIT CONTROL: A single turn control provides adjustable current limiting from 25% to 150% of rated full-load current. Fixed current limiting, set to approximately 150% of maximum rated current is provided on Models ABC 1000M, ABC 1500M and ABC 2500M.

SHORT CIRCUIT PROTECTION: Unique current limiting circuitry permits continuous operation into a short circuit without the aid of fuses, circuit breakers or relays. Output returns instantly to the operating voltage when the overload is removed.

REMOTE PROGRAMMING: Special terminals provide for resistive voltage or current programming at 1000 ohms per volt. Programming terminals are also provided for programming by means of a remotely located voltage source.

CONSTANT CURRENT OPERATION (external sensing): Current Regulated Output range: 1 milliampere to the maximum rated output current.

Voltage Compliance: 100% of maximum output voltage. (For any selected current value the output voltage is automatically varied from 0 to the maximum output voltage, as required to regulate the output current.)

Current Regulation: LINE: Less than 0.1% output current change for 105–125V AC line variation, at any output current within the current regulated range.

LOAD: (All-Transistor Models: <0.5%), (Hybrid Models: <0.1%) output current change, for maximum change in load resistance at any output current within the current regulated range.

Current Ripple: Less than 0.1% of maximum current rms.

REMOTE ERROR SENSING: Separate sensing terminals enable specified regulation to be maintained directly at the load by compensating for voltage drops across the load supply leads. Sensing terminals provided on All-Transistor models only.

PARALLEL CONNECTION: Connections available for parallel operation in a master-slave configuration.

CONVECTION COOLING: Heat removal is by natural convection, no blowers.

NO VOLTAGE OVERSHOOT: No output voltage overshoot from turn on, turn off or power failure.

ISOLATION VOLTAGE: Units can be connected in series up to 500 volts between chassis and either output terminal. Up to 1000 volts for Hybrid Models.

PHYSICAL SPECIFICATIONS (for all models)

METERS: Model numbers in table include volt/amp meter. Models ABC 1000M, ABC 1500M and ABC 2500M include a voltmeter only. To specify an unmetered unit delete the suffix "M" from the model no. eg: (ABC 30–0.3 for unit without meter).

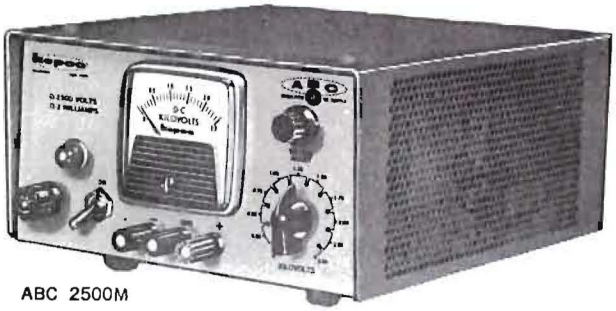
TERMINALS AND CONTROLS: *On Front Panel:* DC output and ground (5-way) terminals. AC on-off switch, pilot light and fuse. A volt/amp meter, meter selector switch and short circuit current adjusting control are provided on all models except Models ABC 1000M, ABC 1500M and ABC 2500M, which contain a voltmeter only plus the 10-position voltage step switch. Voltage control (s).

On Rear of Chassis: Barrier strip terminations are provided for DC output and ground connections, resistive or voltage programming, current regulator connections, and remote error sensing (All-Transistor Models only). Voltage calibration control. Output terminals are isolated from the chassis, either positive or negative terminal may be grounded.

DIMENSIONS: 4¼" H x 8$\frac{5}{32}$" W. See outline drawing for the depth dimensions of each model.

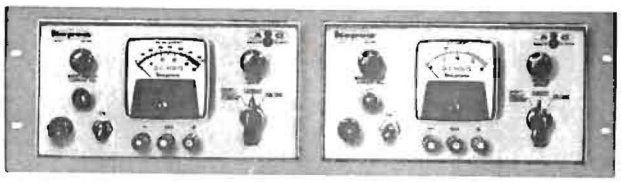
STANDARD FINISH: Panel, etched aluminum — brushed and coated. Case, gray hammertone. (Special case finishes to order.)

RACK MOUNTING: Rack mounting adapters (5¼" high x 19" wide) available for single or dual rack mounting:
Model RA–5 for mounting single unit
Model RA–4 for mounting two units side by side
See Accessory Pages 38-39 for outline dimensional drawings of Rack Adapters.



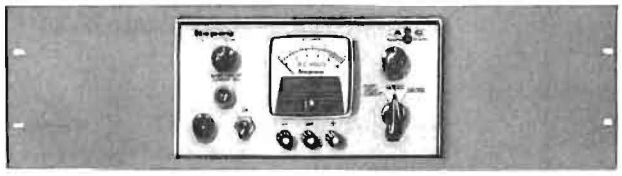
ABC 2500M

ABC 40-0.5M ABC 15-1M

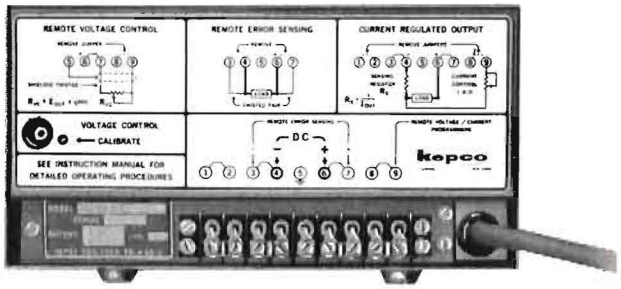


TYPICAL ASSEMBLY IN MODEL RA-4 RACK ADAPTER

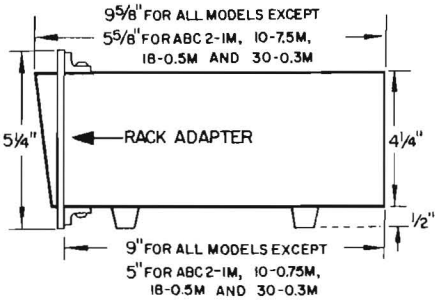
ABC 7.5-2M



TYPICAL ASSEMBLY IN MODEL RA-5 RACK ADAPTER



TYPICAL REAR VIEW SHOWING ACCESSIBLE TERMINAL BLOCK WITH SIMPLIFIED CONNECTION GUIDE.



kepco CK REGULATED DC SUPPLY GROUP

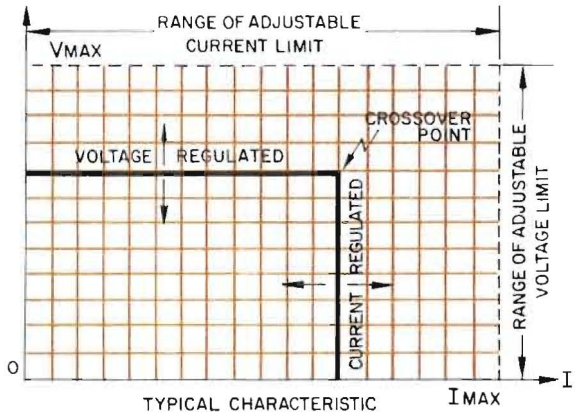
TRANSISTORIZED

- *automatic voltage/current crossover*
- *full range programming*
- *compact half-rack design*

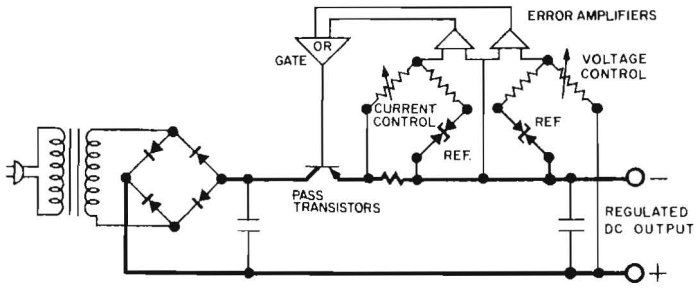
0.01% REGULATION and STABILITY

MODEL	DC OUTPUT RANGE VOLTS	DC OUTPUT RANGE AMPS	OUTPUT IMPEDANCE OHMS MAX. DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	*MAX. INPUT AMPS
CK 2–8M	0–2	0–8	0.065×10^{-3}	0.01	0.05+0.5	1
CK 8–5M	0–8	0–5	0.16×10^{-3}	0.01	0.05+0.5	1.2
CK 18–3M	0–18	0–3	0.6×10^{-3}	0.01	0.05+0.5	1.3
CK 36–1.5M	0–36	0–1.5	2.4×10^{-3}	0.02	0.08+0.8	1.5
CK 40–0.8M	0–40	0–0.8	5×10^{-3}	0.02	0.08+0.8	1
CK 60–0.5M	0–60	0–0.5	12×10^{-3}	0.02	0.08+0.8	1

*At 125V AC



TYPICAL CHARACTERISTIC
AUTOMATIC VOLTAGE/CURRENT CROSSOVER



All models are designed for continuous operation without derating under all specified line, load and temperature conditions.

SPECIFICATIONS (for all models)

REGULATION: LINE: Less than 0.01% output voltage change for 115±10V or 230±20V AC line variation, at any output voltage within the specified range.

LOAD: Less than 0.01% or 0.5 millivolt output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range. Except Model CK 2–8M, where the 0.5 millivolt specification governs throughout the entire range.

STABILITY: Output varies less than 0.01% or 2 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE: Less than 0.5 millivolt rms.

RECOVERY TIME: 50 microseconds.

AMBIENT OPERATING TEMPERATURE: –20°C to +50°C maximum.

TEMPERATURE COEFFICIENT: Output voltage changes less than 0.01% per °C.

OUTPUT IMPEDANCE: Specified for each model within the load frequency range shown in the table.

Above 10 kc include the reactive impedance of the effective series inductance as indicated.

INPUT REQUIREMENTS: 115V±10V or 230V±20V AC 50–65 cps single phase. Units available for 400 cps input, on special order.

PERFORMANCE FEATURES (for all models)

ADJUSTABLE WIDE RANGE OUTPUT: Continuously adjustable 10-turn voltage and current controls permit output settings from zero to the maximum output. Resolution 0.05% of maximum output.

REMOTE PROGRAMMING: Special terminals provide for resistive voltage or current programming at 1000 ohms per volt. Programming terminals are also provided for programming by means of a remotely located voltage source.

CONSTANT CURRENT OPERATION (external sensing): Current Regulated Output range: 1 milliampere to 100% of maximum rated current.

Voltage Compliance: 100% of maximum output voltage. (For any selected current value the output voltage is automatically varied from 0 to 100% of maximum output voltage, as required to regulate the output current.)

Current Regulation: LINE: Less than 0.01% output current change for 115V±10V or 230V±20 V AC line variation, at any output current within the current regulated range.

LOAD: Less than 0.02% output current change, for maximum change in load resistance at any output current within the current regulated range.

Current Ripple: Less than 0.05% of maximum current rms.

CONSTANT CURRENT OPERATION (internal sensing): Panel controls provide automatic cross-over from constant voltage

Data subject to change without notice
PATENT NOTICE:
Applicable Patent Nos. will be supplied on request.

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to constant current from less than 0.2% to 100% of the maximum specified current (see diagram). Voltage compliance range is from 0 to the voltage control setting.

Current Regulation: In the current regulated portion of the crossover characteristic, the current is maintained constant to within 0.02% or 0.2 milliampere, whichever is greater, at any current in the specified range; except models rated for 1 ampere or less output current, where the 0.2 milliampere specification governs throughout the entire range.

Current Ripple: Less than 0.05% of maximum current, rms.

AUTOMATIC CROSSOVER: The automatic crossover circuit switches the operating mode of the power supply automatically from constant voltage to constant current or vice versa depending on the load relationship to the panel voltage and current adjustments.

REMOTE ERROR SENSING: Separate sensing terminals enable specified regulation to be maintained directly at the load by compensating for voltage drops across the load supply leads.

PARALLEL CONNECTION: Units operate automatically to share a load by means of their crossover feature. Connections available for parallel operation in a master-slave configuration.

FORCED AIR COOLING: Lateral circulation by blowers insures efficient heat transfer; permits stacking of units without overheating.

NO VOLTAGE OVERSHOOT: No output voltage overshoot from turn on, turn off or power failure.

ISOLATION VOLTAGE: Units can be connected in series up to 500 volts between chassis and either output terminal.

PHYSICAL SPECIFICATIONS (for all models)

METERS: Model numbers in table include voltmeter and ammeter. To specify an unmetered unit delete the suffix "M" from the model no. eg: (CK 18–3 for unit without meters).

TERMINALS AND CONTROLS: *On Front Panel:* AC on-off switch, pilot light and fuse. 10-turn voltage control, 10-turn current control. DC output and ground (5-way) terminals.

On Rear of Chassis: Barrier strip connections for DC output and ground terminals, remote error sensing, voltage and current programming by remote resistance and/or voltage, master-slave parallel operation, external current sensing. Output terminals are isolated from the chassis, either positive or negative terminal may be grounded.

DIMENSIONS: 4¼" H x 8 5/32" W x 13" D (Behind rack adapter, 13⅝" overall).

STANDARD FINISH: Panel, etched aluminum – brushed and coated. Case, gray hammertone. (Special case finishes to order.)

RACK MOUNTING: Rack mounting adapters (5¼" high x 19" wide) available for single or dual rack mounting.
Model RA 5 for mounting single unit
Model RA 4 for mounting two units side by side.

See Accessory pages 38-39 for outline dimensional drawings of Rack Adapters.

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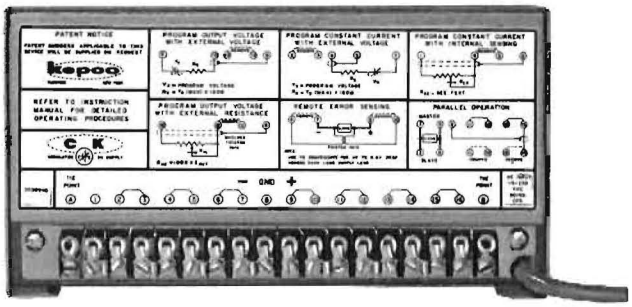
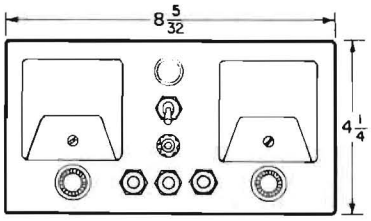
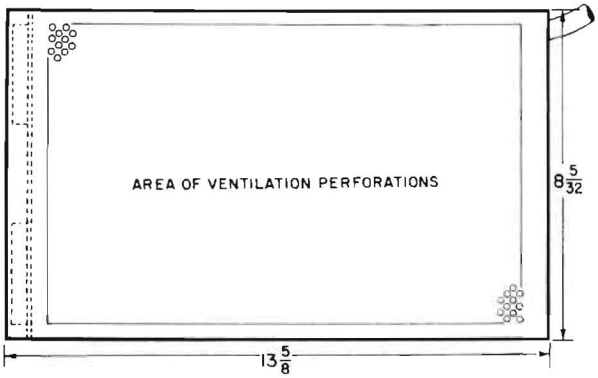
Model CK 8-5M

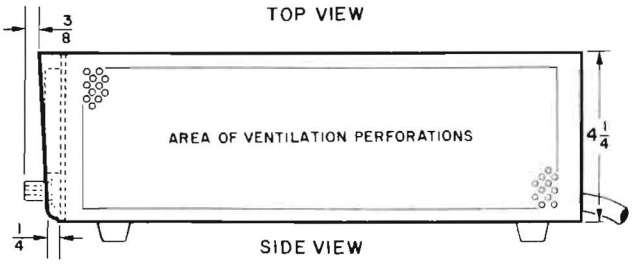

TYPICAL REAR VIEW SHOWING ACCESSIBLE TERMINAL BLOCK WITH SIMPLIFIED CONNECTION GUIDE



FRONT VIEW



TOP VIEW



SIDE VIEW

kepco HB REGULATED DC SUPPLY GROUP

TRANSISTORIZED

- *unique hybrid regulator*
- *full range regulation*
- *full range programming*
- *voltage/current regulation*

0.1% REGULATION and STABILITY

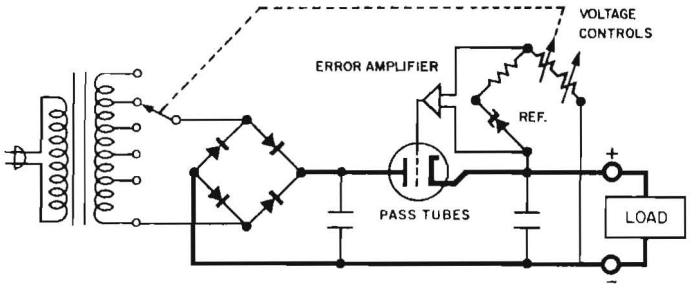
MODEL	DC OUTPUT RANGE VOLTS	DC OUTPUT RANGE MA.	OUTPUT IMPEDANCE OHMS MAX. DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	AUX. OUTPUT 6.5 VAC Unregulated	*MAX. INPUT AMPS
HB 2M	0–325	0–200	2.0	0.08	0.2+0.5	EACH SUPPLY	2.0
HB 4M	0–325	0–400	1.0	0.08	0.2+0.5	HAS TWO	3.0
HB 6M	0–325	0–600	0.6	0.08	0.2+0.5	6 AMPERE	5.0
HB 8M	0–325	0–800	0.5	0.08	0.2+1.0	OUTPUTS	5.5

*At 125V AC

0.01% REGULATION and STABILITY

MODEL	DC OUTPUT RANGE VOLTS	DC OUTPUT RANGE MA.	OUTPUT IMPEDANCE OHMS MAX. DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	AUX. OUTPUT 6.5 VAC Unregulated	*MAX. INPUT AMPS
HB 20M	0–325	0–200	0.2	0.08	0.2+0.5	EACH SUPPLY	2.0
HB 40M	0–325	0–400	0.1	0.08	0.2+0.5	HAS TWO	3.0
HB 60M	0–325	0–600	0.06	0.08	0.2+0.5	6 AMPERE	5.0
HB 80M	0–325	0–800	0.05	0.08	0.2+1.0	OUTPUTS	5.5

*At 125V AC



All models are designed for continuous operation without derating under all specified line, load and temperature conditions.

SPECIFICATIONS (for all models)

REGULATION (0.1% Models): LINE: Less than 0.1% output voltage change for 105–125V AC line variation, at any output voltage within the specified range.

LOAD: Less than 0.1% or 5 millivolts output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

REGULATION (0.01% Models): LINE: Less than 0.01% output voltage change for 105–125V AC line variation, at any output voltage within the specified range.

LOAD: Less than 0.01% or 1 millivolt output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

STABILITY (0.1% Models): Output varies less than 0.1% or 10 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

STABILITY (0.01% Models): Output varies less than 0.01% or 2 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE: Less than 1 millivolt rms.

RECOVERY TIME: 50 microseconds.

AMBIENT OPERATING TEMPERATURE: −20°C to +55°C maximum.

TEMPERATURE COEFFICIENT (0.1% Models): Output voltage changes less than 0.05% per °C.

TEMPERATURE COEFFICIENT (0.01% Models): Output voltage changes less than 0.01% per °C.

OUTPUT IMPEDANCE: Specified for each model within the load frequency range shown in the table.

Above 10 kc include the reactive impedance of the effective series inductance as indicated.

INPUT REQUIREMENTS: 105–125V AC 50–440 cps single phase.

AC OUTPUT: Two 6.5V AC outputs, unregulated at 6 amperes each. Series for 13V AC–CT at 6 amperes; parallel for 6.5V AC at 12 amperes.

PERFORMANCE FEATURES (for all models)

ADJUSTABLE WIDE RANGE OUTPUT: *Voltage Range Switch*—Provides step output settings in five discrete voltage bands: 0–70V, 70–130V, 130–195V, 195–255V, 255–325V.

Fine Control—Provides continuously variable output voltage control within each band. The range of the fine control overlaps the range switch step. Single turn control on 0.1% models, ten-turn control on 0.01% models.

Resolution—0.1% models (single turn control), 0.2% of maximum output voltage.

—0.01% models (ten turn control), 0.02% of maximum output voltage.

Data subject to change without notice

PATENT NOTICE:

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REMOTE PROGRAMMING: Special terminals provide for resistive voltage or current programming at 100 ohms per volt.

CONSTANT CURRENT OPERATION (external sensing): *Current Regulated Output range:* 10 milliamperes to rated maximum current.

Voltage Compliance: 70V (For any selected current value the output voltage is automatically varied over the voltage range of the selected band as required to regulate the output current.) The compliance voltage range is extended to 0–325 volts when the output current is derated in accordance with the load current derating graphs.

Current Regulation (0.1% Models): LINE: Less than 0.1% output current change for 105–125V AC line variation, at any output current within the current regulated range.

LOAD: Less than 0.2% output current change for maximum change in load resistance at any output current within the current regulated range.

Current Regulation (0.01% Models): LINE: Less than 0.01% output current change for 105–125V AC line variation, at any output current within the current regulated range.

LOAD: Less than 0.02% output current change for maximum change in load resistance at any output current within the current regulated range.

Current Ripple: Less than 0.01% of maximum current rms.

HYBRID CIRCUIT: Unique design achieves high efficiency and reliability by using transistorized reference and amplification circuits for optimum regulation, stability and long life, plus vacuum tube series pass elements for reliable high voltage operation.

CONVECTION COOLING: Heat removal is by natural convection, no blowers.

NO VOLTAGE OVERSHOOT: No output voltage overshoot from turn on, turn off or power failure.

ISOLATION VOLTAGE: Units can be connected in series up to 400 volts between chassis and either output terminal.

PHYSICAL SPECIFICATIONS (for all models)

METERS: Model numbers in table include voltmeter and ammeter. To specify an unmetered unit delete the suffix "M" from the model no. eg: (HB 2 for unit without meters).

TERMINALS AND CONTROLS: *On front panel:* DC output and ground (5-way terminals), 5 position range switch and fine control (slotted shafts with locking devices). AC on-off switch fuse and pilot light, DC on-off switch fuse and pilot light.

On rear of chassis: Multi-terminal barrier strip containing DC output and ground, two 6.5V AC outputs rated 6 amperes each, remote DC on-off, remote voltage control, program to zero, current regulator connections. All output terminals are isolated from the chassis, either positive or negative output may be grounded.

DIMENSIONS: Standard EIA rack dimensions. 3½"H x 19"W x 14⅜"D (behind front panel).

STANDARD FINISH: Gray hammertone (Special finishes to order).

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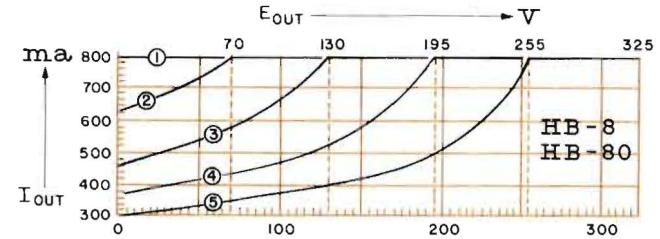
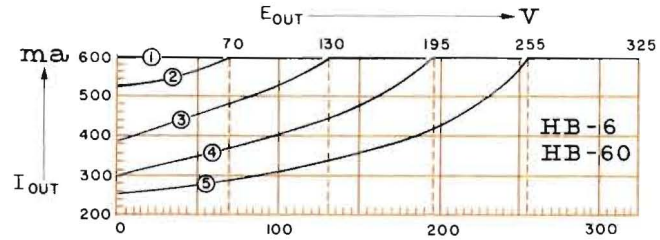
TRANSISTORIZED

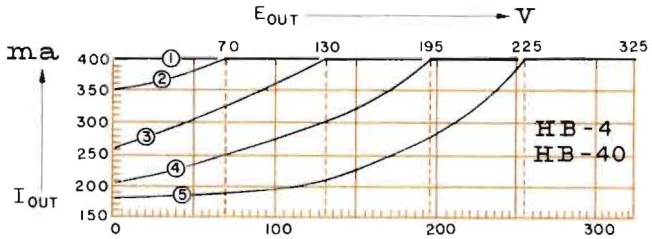
kepco HB REGULATED DC SUPPLY GROUP

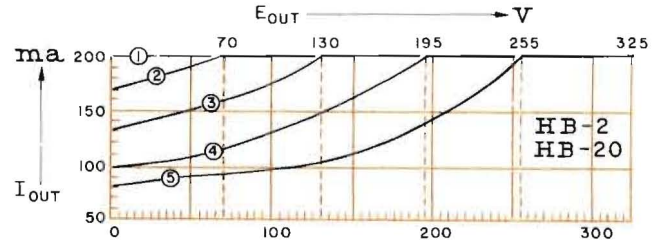
Model HB 8M

LOAD CURRENT DERATING GRAPHS









① IS 0–70 V RANGE ② IS 70–130 V RANGE ③ IS 130–195 V RANGE
④ IS 195–255 V RANGE ⑤ IS 255–325 V RANGE

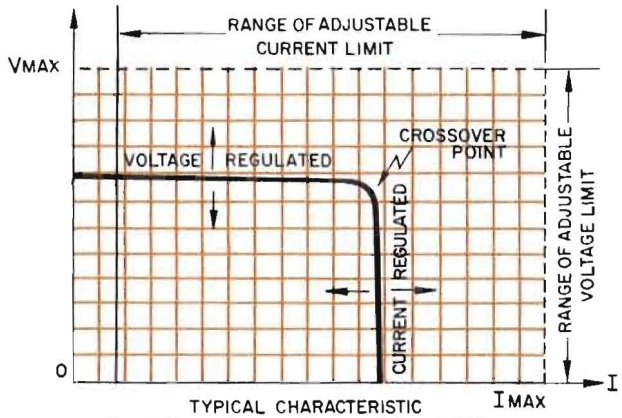
kepco KO REGULATED DC SUPPLY GROUP

TRANSISTORIZED

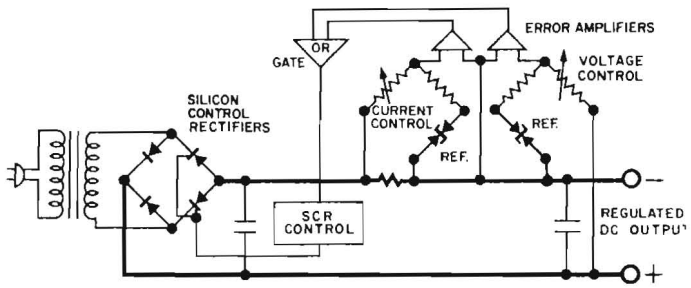
- *automatic voltage/current crossover*
- *full range programming*
- *high current*
- *laboratory or systems use*

1% REGULATION and STABILITY

MODEL	DC OUTPUT RANGE		RIPPLE RMS		OUTPUT IMPEDANCE OHMS MAX.		MAX. INPUT At 125V AC	
	VOLTS	AMPS	%	MV	1 KC to 10 KC	10 KC to 100 KC + μH	AMPS	WATTS
KO 12–100M	**0–12**	**0–100**	0.5	or 30	0.02	0.04+0.5	24	1800
KO 25–50M	**0–25**	**0–50**	0.5	or 40	0.02	0.04+0.5	24	1800
KO 45–30M	**0–45**	**0–30**	0.3	or 20	0.02	0.04+0.5	24	1800
KO 70–20M	**0–70**	**0–20**	0.3	or 30	0.02	0.04+0.5	24	1800



TYPICAL CHARACTERISTIC
AUTOMATIC VOLTAGE/CURRENT CROSSOVER



All models are designed for continuous operation without derating under all specified line, load and temperature conditions.

SPECIFICATIONS (for all models)

REGULATION:

LINE: Less than 1% output voltage change for 115±10V or 230±20V AC line variation, at any output voltage within the specified range.

LOAD: Less than 1% or 20 millivolts output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

STABILITY:

Output varies less than 1% or 50 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE:

See table for maximum specification applicable to each model.

RECOVERY TIME:

500 milliseconds for 0–100% step load-on change or 100–10% step load-off change.

AMBIENT OPERATING TEMPERATURE:

–20°C to +55°C maximum. Protective circuit turns unit "off" should an over temperature condition occur. Reset with power on-off switch.

TEMPERATURE COEFFICIENT:

Output voltage changes less than 0.05% per °C.

OUTPUT IMPEDANCE:

Specified for each model within the load frequency range shown in the table. Below 1000 cps, impedance is a function of load current and is determined by reference to the load regulation specification. Impedance is the slope $\Delta E/\Delta I$.

Above 10 kc include the reactive impedance of the effective series inductance as indicated.

INPUT REQUIREMENTS:

115±10V or 230±20V AC 50–65 cps single phase.
Input taps are also provided for operation from 104±9V AC and 208±18V AC.

PERFORMANCE FEATURES (for all models)

ADJUSTABLE WIDE RANGE OUTPUT:

Continuously adjustable 10-turn voltage control permits output settings from zero to the maximum output voltage. Resolution 0.05% of maximum output voltage.

REMOTE PROGRAMMING:

Special terminals provide for resistive voltage or current programming at 100 ohms per volt. Programming terminals are also provided for programming by means of a remotely located voltage source.

CONSTANT CURRENT OPERATION (internal sensing):

Panel controls provide automatic cross-over from constant voltage to constant current from less than 10% to 100% of the maximum specified current (see diagram). Voltage com-

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PATENT NOTICE:
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pliance range is from 0 to the voltage control setting.

Current Regulation: In the current regulated portion of the crossover characteristic, the current is maintained constant to within 2% or 200 milliamperes whichever is greater, at any current in the specified range.

Current Ripple: Less than 0.5% of maximum current, rms.

AUTOMATIC CROSSOVER:

The automatic crossover circuit switches the operating mode of the power supply automatically from constant voltage to constant current or vice versa depending on the load relationship to the panel voltage and current adjustments.

REMOTE ERROR SENSING:

Separate sensing terminals enable specified regulation to be maintained directly at the load by compensating for voltage drops across the load supply leads.

PARALLEL CONNECTION:

Units operate automatically to share a load by means of their crossover feature. Connections available for parallel operation in a master-slave configuration.

FORCED AIR COOLING:

Lateral circulation by blowers insures efficient heat transfer; permits stacking of units without overheating.

ISOLATION VOLTAGE:

Units can be connected in series up to 400 volts between chassis and either output terminal.

PHYSICAL SPECIFICATIONS (for all models)

METERS:

Model numbers in table include voltmeter and ammeter. To specify an unmetered unit delete the suffix "M" from the model no. (e.g. KO 70–20 for unit without meters).

TERMINALS AND CONTROLS:

On front panel: AC on-off switch—circuit breaker, and pilot light. 10-turn voltage control, 10-turn current control, reference circuit fuse.

On rear of chassis: DC output and ground terminals. Barrier strip connections for: remote error sensing, voltage and current programming by remote resistance and/or voltage, master-slave, parallel operation. Output terminals are isolated from the chassis, either positive or negative terminal may be grounded.

DIMENSIONS:

Standard EIA rack dimensions.
8¾" H x 19" W x 20" D (behind front panel). (See diagram)
Side handles and bottom skids easily removable for rack mounting.

STANDARD FINISH:

Gray hammertone (special finishes to order).

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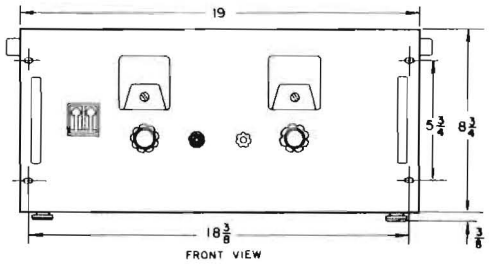
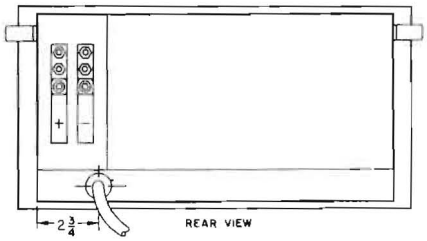
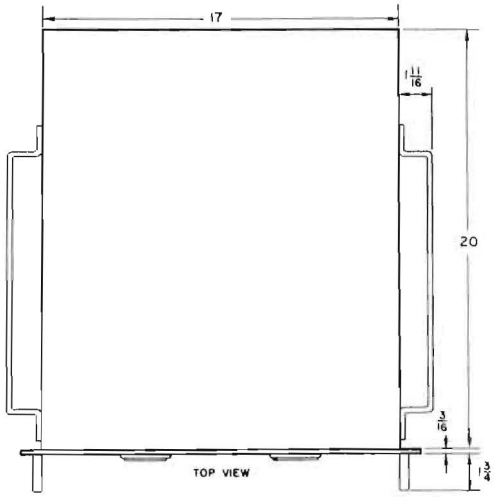
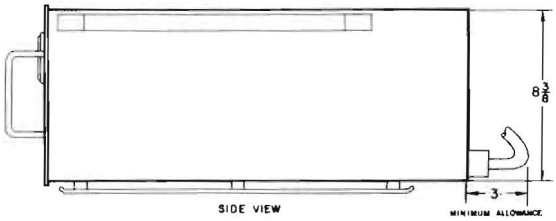
Model KO 45-30M









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VACUUM TUBE

- *narrow voltage range*
- *systems or laboratory use*
- *low cost*

0.1% REGULATION and STABILITY

SPECIFICATIONS (for all models)

REGULATION:

(*See table*) the regulation of each model is specified as a percentage or minimum absolute change for 105–125V AC line variations and NO LOAD to FULL LOAD change. Percentage values are measured at maximum rated output voltage.

STABILITY:

Output varies less than rated regulation specification over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE:

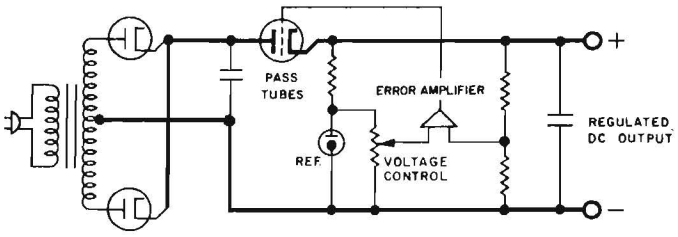
Less than 3 millivolts rms.

RECOVERY TIME:

50 microseconds.

MODEL	DC OUTPUT RANGE		REGULATION				OUTPUT IMPEDANCE OHMS MAX.			AUX. OUTPUT 6.3VAC	DIMENSIONS			*MAX. INPUT
			LOAD O-MAX		LINE		DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	Unregulated	H	W	D	AMPS
	VOLTS	MA.	%	ΔV	%	ΔV								
KR 11M	0–150	0–125	0.1	0.2V	0.25	0.4V	1.6	0.1	0.2+3	Each Supply	7″	19″	11″	2.0
KR 1M	100–200	0–125	0.1	0.2V	0.20	0.4V	1.6	0.1	0.2+3	has one	7″	19″	7½″	2.0
KR 2M	195–325	0–125	0.06	0.2V	0.1	0.4V	1.6	0.1	0.2+3	3 Ampere	7″	19″	7½″	2.0
KR 9M	295–450	0–125	0.04	0.2V	0.1	0.4V	1.6	0.1	0.2+3	Output	7″	19″	7½″	2.0
KR 12M	0–150	0–300	0.1	0.2V	0.25	0.4V	0.7	0.06	0.2+5	Each Supply	7″	19″	11″	3.5
KR 3M	100–200	0–300	0.1	0.2V	0.20	0.4V	0.7	0.06	0.2+5	has two	7″	19″	11″	3.0
KR 4M	195–325	0–300	0.06	0.2V	0.1	0.4V	0.7	0.06	0.2+5	5 Ampere	7″	19″	11″	4.0
KR 10M	295–450	0–300	0.04	0.2V	0.1	0.4V	0.7	0.06	0.2+5	Outputs	7″	19″	11″	4.0
KR 8M	0–150	0–600	0.1	0.2V	0.25	0.4V	0.35	0.06	0.2+2	Each Supply	10½″	19″	13″	5.5
KR 5M	100–200	0–600	0.1	0.2V	0.20	0.4V	0.35	0.06	0.2+2	has two	10½″	19″	13″	5.5
KR 6M	195–325	0–600	0.06	0.2V	0.1	0.4V	0.35	0.06	0.2+2	10 Ampere	10½″	19″	13″	6.5
KR 7M	295–450	0–600	0.04	0.2V	0.1	0.4V	0.35	0.06	0.2+2	Outputs	10½″	19″	13″	7.5

*At 125V AC



All models are designed for continuous operation without derating under all specified line, load and temperature conditions.

AMBIENT OPERATING TEMPERATURE:

–20°C to +55°C maximum.

TEMPERATURE COEFFICIENT:

Output voltage changes less than 0.01% per °C.

OUTPUT IMPEDANCE:

Specified for each model within the load frequency range shown in the table.

Above 10 kc include the reactive impedance of the effective series inductance as indicated.

Data subject to change without notice

PATENT NOTICE:

Applicable Patent Nos. will be supplied on request.

kepco inc.

INPUT REQUIREMENTS:
105–125V AC 50–65 cps single phase.
Models KR 1M and KR 2M operate 50–440 cps, other models available with 50–440 cps input on special order.

PERFORMANCE FEATURES (for all models)

ADJUSTABLE OUTPUT:
Continuously adjustable voltage control permits output settings anywhere within the rated output range, no switching.

OIL FILLED CAPACITORS:
Provide exceptional reliability.

REMOTE OUTPUT VOLTAGE CONTROL:
Available on special order for all models.

CONVECTION COOLING:
Heat removal is by natural convection, no blowers.

NO VOLTAGE OVERSHOOT:
No output voltage overshoot from turn on, turn off or power failure.

ISOLATION VOLTAGE:
Units can be connected in series up to 500 volts between chassis and either output terminal.

PHYSICAL SPECIFICATIONS (for all models)

METERS:
Model numbers in table include voltmeter and ammeter. To specify an unmetered unit delete the suffix "M" from the model no. (e.g. KR 1 for unit without meters).

COVER AND HANDLES:
Specially designed enclosure for bench or rack mounting provides protective cover with side handles. Add suffix "C" to the model number. (e.g. KR 1MC for meters cover and handles.)

TERMINALS AND CONTROLS:
On front panel: AC on-off switch, pilot light and fuse; DC on-off switch, pilot light and fuse.

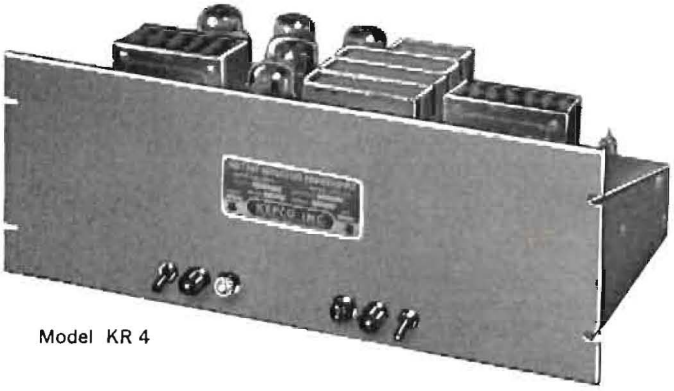
On rear of chassis: DC output and ground connections; 6.3V AC outputs; voltage control. All output terminals are isolated from the chassis, either positive or negative output may be grounded.

DIMENSIONS:
Standard EIA rack dimensions.

See table for specification of each model. Depth is measured behind front panel.

STANDARD FINISH:
Gray hammertone (Special finishes to order).

Model KR 1C


Model KR 4

Model KR 8M

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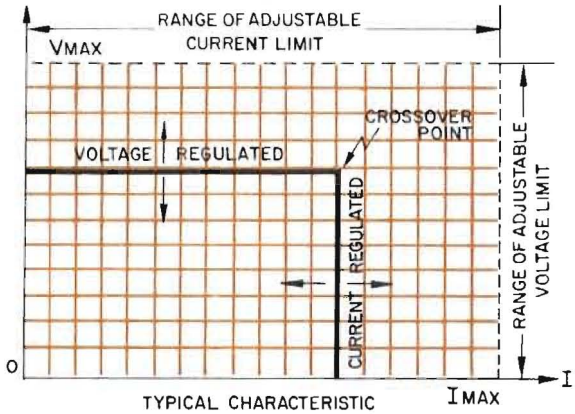
kepco KS REGULATED DC SUPPLY GROUP

TRANSISTORIZED

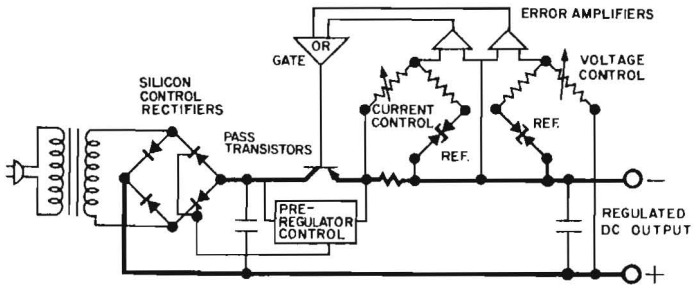
- *automatic voltage/current crossover*
- *full range programming*
- *dual precision regulation*

0.01% REGULATION and STABILITY

MODEL	DC OUTPUT RANGE		OUTPUT IMPEDANCE OHMS MAX.			DIMENSIONS			MAX. INPUT At 125V AC	
	VOLTS	AMPS	DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	H	W	D	AMPS	WATTS
KS 8–15M	0–8	0–15	0.05×10^{-3}	0.01	0.04+0.4	3½″	19″	14″	5	480
KS 8–25M	0–8	0–25	0.03×10^{-3}	0.01	0.04+0.4	5¼″	19″	16″	7	680
KS 8–50M	0–8	0–50	0.016×10^{-3}	0.005	0.02+0.4	7″	19″	16″	11	1000
KS 8–100M	0–8	0–100	0.008×10^{-3}	0.005	0.02+0.4	8¾″	19″	20″	24	1800
KS 18–10M	0–18	0–10	0.18×10^{-3}	0.01	0.04+0.5	3½″	19″	14″	6	510
KS 18–15M	0–18	0–15	0.12×10^{-3}	0.01	0.04+0.5	5¼″	19″	16″	7	640
KS 18–25M	0–18	0–25	0.07×10^{-3}	0.005	0.04+0.5	7″	19″	16″	10	900
KS 18–50M	0–18	0–50	0.035×10^{-3}	0.005	0.02+0.2	8¾″	19″	20″	24	1650
KS 36–5M	0–36	0–5	0.7×10^{-3}	0.02	0.1 +1.0	3½″	19″	14″	4	380
KS 36–10M	0–36	0–10	0.4×10^{-3}	0.01	0.1 +1.0	5¼″	19″	16″	7	680
KS 36–15M	0–36	0–15	0.25×10^{-3}	0.01	0.1 +0.6	7″	19″	16″	11	1000
KS 36–30M	0–36	0–30	0.1×10^{-3}	0.005	0.04+0.4	8¾″	19″	20″	24	1550
KS 60–2M	0–60	0–2	3×10^{-3}	0.02	0.1 +1.0	3½″	19″	14″	3	250
KS 60–5M	0–60	0–5	1×10^{-3}	0.02	0.1 +1.0	5¼″	19″	16″	5	460
KS 60–10M	0–60	0–10	0.6×10^{-3}	0.01	0.1 +1.0	7″	19″	16″	10	860
KS 60–20M	0–60	0–20	0.3×10^{-3}	0.01	0.1 +0.8	8¾″	19″	20″	24	1750



TYPICAL CHARACTERISTIC
AUTOMATIC VOLTAGE/CURRENT CROSSOVER



All models are designed for continuous operation without derating under all specified line, load and temperature conditions.

SPECIFICATIONS (for all models)

REGULATION: LINE: Less than 0.01% output voltage change for 115±10V or 230±20V AC line variation, at any output voltage within the specified range.

LOAD: Less than 0.01% or 0.5 millivolt output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

STABILITY: Output varies less than 0.01% or 3 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE: Less than 1 millivolt rms.

RECOVERY TIME: 50 microseconds.

AMBIENT OPERATING TEMPERATURE: −20°C to +50°C maximum. Protective circuit turns unit "off" should an over temperature condition occur. Reset with power on-off switch.

TEMPERATURE COEFFICIENT: Output voltage changes less than 0.01% per °C.

OUTPUT IMPEDANCE: Specified for each model within the load frequency range shown in the table.

Above 10 kc include the reactive impedance of the effective series inductance as indicated.

INPUT REQUIREMENTS: 115±10V or 230±20V AC 50–65 cps single phase. 8¾″ high models have 104/115/208/230 V AC inputs. 104V±9V AC and 208V ±18V AC.

PERFORMANCE FEATURES (for all models)

ADJUSTABLE WIDE RANGE OUTPUT: Continuously adjustable 10-turn voltage and current controls permit output settings from zero to the maximum output. Resolution 0.05% of maximum output.

REMOTE PROGRAMMING: Special terminals provide for resistive voltage or current programming at 100 ohms per volt. Programming terminals are also provided for programming by means of a remotely located voltage source.

CONSTANT CURRENT OPERATION (external sensing):

Current Regulated Output range: 10 milliamperes to 100% of maximum rated current.

Voltage Compliance: 100% of maximum output voltage. (For any selected current value the output voltage is automatically varied from 0 to 100% of maximum output voltage, as required to regulate the output current.)

Current Regulation: LINE: Less than 0.01% output current change for 115V±10V or 230V±20V AC line variation, at any output current within the current regulated range.

LOAD: Less than 0.02% output current change, for maximum change in load resistance at any output current within the current regulated range.

Current Ripple: Less than 0.1% of maximum current rms.

Data subject to change without notice
PATENT NOTICE:
Applicable Patent Nos. will be supplied on request.

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CONSTANT CURRENT OPERATION (internal sensing): Panel control provides automatic cross-over from constant voltage to constant current from less than 0.5% to 100% of the maximum specified current (see diagram). Voltage compliance range is from 0 to the voltage control setting.

Current Regulation; In the current regulated portion of the crossover characteristic, the current is maintained constant to within 0.02% or 1 milliampere, whichever is greater, at any current in the specified range; except models rated for 5 amperes or less output current, where the 1 milliampere specification governs throughout the entire range.

Current Ripple: Less than 0.1% of maximum current, rms.

AUTOMATIC CROSSOVER: The automatic crossover circuit switches the operating mode of the power supply automatically from constant voltage to constant current or vice versa depending on the load relationship to the panel voltage and current adjustments.

REMOTE ERROR SENSING: Separate sensing terminals enable specified regulation to be maintained directly at the load by compensating for voltage drops across the load supply leads.

PARALLEL CONNECTION: Units operate automatically to share a load by means of their crossover feature. Connections available for parallel operation in a master-slave configuration.

FORCED AIR COOLING: Lateral circulation by blowers insures efficient heat transfer; permits stacking of units without overheating.

NO VOLTAGE OVERSHOOT: No output voltage overshoot from turn on, turn off or power failure.

ISOLATION VOLTAGE: Units can be connected in series up to 500 volts between chassis and either output terminal.

PHYSICAL SPECIFICATIONS (for all models)

METERS: Model numbers in table include voltmeter and ammeter. To specify an unmetered unit delete the suffix "M" from the model no. eg: (KS 8–100 for unit without meters).

TERMINALS AND CONTROLS: *On front panel:* AC on-off switch, circuit breaker/fuse and pilot light. 10-turn voltage control, 10-turn current control, reference circuit fuse. DC output and ground (5-way) terminals (except 8¾" high models have output terminals on the rear only).

On rear of chassis: Barrier strip connections for remote error sensing, voltage and current programming by remote resistance and/or voltage, master-slave, parallel operation, external current sensing. DC output and ground terminals. Output terminals are isolated from the chassis, either positive or negative terminal may be grounded.

DIMENSIONS: Standard EIA rack dimensions. Side handles and bottom skids easily removable for rack mounting.

See table for specification of each model. Depth is measured behind front panel.

STANDARD FINISH: Gray hammertone (Special finishes to order).

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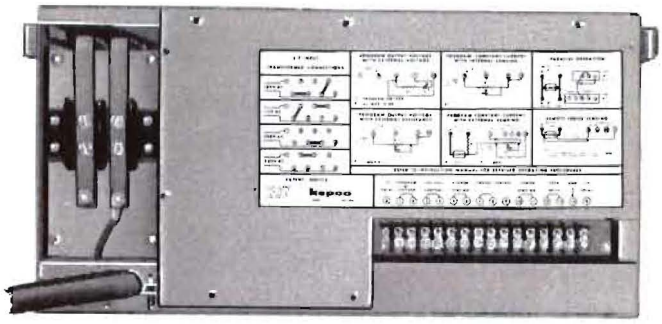
Model KS 36-30M

Model KS 18-10M

Model KS 60-5M



TYPICAL REAR VIEW SHOWING ACCESSIBLE TERMINAL BLOCK WITH SIMPLIFIED CONNECTION GUIDE

kepco PR REGULATED DC SUPPLY GROUP

SOLID STATE

- *constant voltage transformer regulator*
- *wide voltage range*
- *high current*

1 — PHASE MODELS

±1% LINE REGULATION

MODEL	DC OUTPUT RANGE VOLTS	DC OUTPUT RANGE AMPS	RIPPLE RMS %	OUTPUT IMPEDANCE OHMS MAX. 1 KC to 10 KC	OUTPUT IMPEDANCE OHMS MAX. 10 KC to 100 KC + μH	DIMENSIONS H	DIMENSIONS W	DIMENSIONS D	*MAX. INPUT AMPS
PR 15–10M	0-7.5-15	0-10	2	0.02	0.04+0.1	3½"	19"	13⅞"	3.5
PR 15–30M	0-15	0-30	2	0.02	0.04+0.1	7"	19"	13⅞"	7.0
PR 38–5M	0-19-38	0-5	1	0.03	0.04+0.1	3½"	19"	13⅞"	4.0
PR 38–15M	0-38	0-15	1	0.03	0.04+0.2	7"	19"	13⅞"	9.0
PR 80–2.5M	0-40-80	0-2.5	0.7	0.04	0.04+0.1	3½"	19"	13⅞"	4.0
PR 80–8M	0-80	0-8	0.7	0.05	0.07+0.5	7"	19"	13⅞"	9.5
PR 155–1M	0-78-155	0-1	0.6	0.1	0.1 +0.1	3½"	19"	13⅞"	3.0
PR 155–4M	0-155	0-4	0.6	0.1	0.1 +0.5	7"	19"	13⅞"	9.0
PR 310–0.6M	0-165-310	0-0.6	0.5	0.3	0.1 +0.1	3½"	19"	13⅞"	3.0
PR 310–2M	0-310	0-2	0.5	0.3	0.1 +0.5	7"	19"	13⅞"	9.0

FIGURE 1

*At 125V AC

3 — PHASE MODELS

±2% LINE REGULATION

MODEL	DC OUTPUT RANGE VOLTS	DC OUTPUT RANGE AMPS	RIPPLE RMS %	OUTPUT IMPEDANCE OHMS MAX. 1 KC to 10 KC	OUTPUT IMPEDANCE OHMS MAX. 10 KC to 100 KC + μH	DIMENSIONS H	DIMENSIONS W	DIMENSIONS D	*MAX. INPUT AMPS
PR 20–100M	0-20	0-100	3	0.05	0.06+0.1	8¾"	19"	20"	9.0/∅
PR 40–50M	0-40	0-50	2	0.05	0.06+0.1	8¾"	19"	20"	8.5/∅
PR 50–40M	0-50	0-40	1.5	0.05	0.06+0.1	8¾"	19"	20"	8.5/∅

FIGURE 1

*At 230V AC

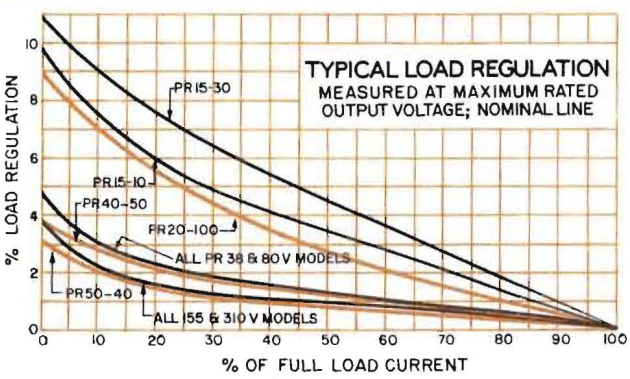
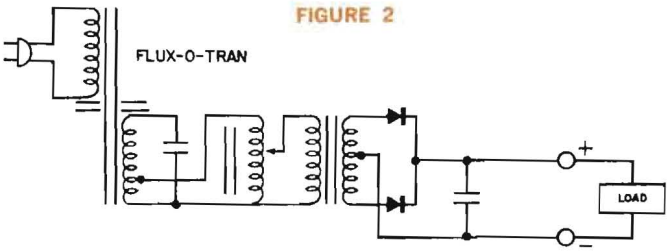


FIGURE 2



All models are designed for continuous operation without derating under all specified line, load and temperature conditions.

SPECIFICATIONS (for all models)

REGULATION:

LINE Less than ±1% output voltage change for 115V±10V AC line variation at any output voltage within the load range specified in Figure 4. For models with 3-phase input, line regulation is ±2% for line variations of ±10%.

LOAD—*At maximum output voltage:* Less than 2% output voltage change for HALF LOAD to FULL LOAD change (except 5% regulation for 15 and 20 volt models).
Less than 4% output voltage change for QUARTER LOAD to FULL LOAD change (except 8% regulation for 15 and 20 volt models). (See Figures 2 and 4.)

STABILITY:

Output varies less than 1% or 0.1V whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE:

For maximum % ripple at maximum rated output voltage and current, see Figure 1. For typical ripple values at reduced output currents see Figure 3. At lower output voltages the absolute value of the ripple is less than at maximum output voltage.

AMBIENT OPERATING TEMPERATURE:

−20°C to +55°C maximum.

TEMPERATURE COEFFICIENT:

Output voltage changes less than 0.05% per °C.

OUTPUT IMPEDANCE:

Specified for each model within the load frequency range shown in the table. Below 1000 cps, impedance is a function of load current and is determined by reference to the load regulation curve. Impedance is the slope of the curve $\Delta E/\Delta I$. Above 10 kc include the reactive impedance of the effective series inductance as indicated.

INPUT REQUIREMENTS:

(For all 3½" and 7" high models): 115±10V AC 60 cps ±5% single phase.
(For all 8¾" high models): 208 or 230V AC±10%, 60 cps ±5% three phase.

Note: % changes in line frequency produce approximately equal % changes in output voltage linearly within stated input frequency tolerances.

PERFORMANCE FEATURES (for all models)

ADJUSTABLE WIDE RANGE OUTPUT:

Continuously variable voltage control permits output settings from 0.1% of maximum voltage to the maximum output voltage. Resolution ≅1% of maximum output voltage. On 3½" high models, the output is variable over two continuous ranges.

PARALLEL CONNECTION:

Units can be paralleled by adjusting the individual voltage controls to share the load.

CONSTANT VOLTAGE TRANSFORMER:

Flux-O-Tran power transformer delivers regulated square wave voltage to rectifiers, improving rectifiers utilization and reducing output ripple.

Data subject to change without notice
PATENT NOTICE:
Applicable Patent Nos. will be supplied on request.

kepco inc.

OVERLOAD PROTECTION:
Special Flux-O-Tran power transformer and DC overload circuit breaker allows output to be shorted without adverse effect.

SILICON RECTIFIERS:
Reliable, efficient, full wave rectification.

CAPACITIVE FILTER:
No series choke, capacitive filtering provides excellent ripple reduction and minimizes transient response characteristics.

FORCED AIR COOLING:
Lateral circulation by blowers insures efficient heat transfer; permits stacking of units without overheating.

NO VOLTAGE OVERSHOOT:
No output voltage overshoot from turn on, turn off or power failure.

ISOLATION VOLTAGE:
Units can be connected in series up to 600 volts between chassis and either output terminal.

INTERLOCK:
3-phase models are equipped with an interlock (relay logic) circuit so that protective circuits can be interconnected in a multiple power supply installation. Protective circuits include phase protection and DC overload protection. Interlock operates to turn off all supplies in a multiple installation in the event any one supply is overloaded or otherwise shut down. Zero set micro switch prevents turn on unless voltage control is set to zero. Interlock disable terminals provided at the rear.

PHYSICAL SPECIFICATIONS (for all models)

METERS:
Model numbers in table include voltmeter and ammeter. To specify an unmetered unit delete the suffix "M" from the model no. eg: (PR 155–4 for unit without meters).

TERMINALS AND CONTROLS:
On Front Panel: 3½" and 7" (single phase) units: DC output and ground (5-way) output terminals, voltage control, AC fuse, DC circuit breaker, pilot light. 7" units have conventional power on-off toggle switch: 3½" units have a combination on-off switch and 2 position range selector. 8¾" (3-phase) units: Combination on-off switch—circuit breaker, interlock "start" button, pilot light and "ready" light, voltage control.

On Rear of Chassis: DC output and ground terminals. All output terminals are isolated from the chassis, either positive or negative output may be grounded. On 8¾" (3-phase) models, disable and interconnection terminals are provided for the interlock circuits.

DIMENSIONS:
Standard EIA rack dimensions.
See table for specification of each model. Depth is measured behind front panel. Side handles and bottom skids easily removable for rack mounting.

STANDARD FINISH:
Gray hammertone (Special finishes to order).

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Model PR 310-0.6M

Model PR 50-40M

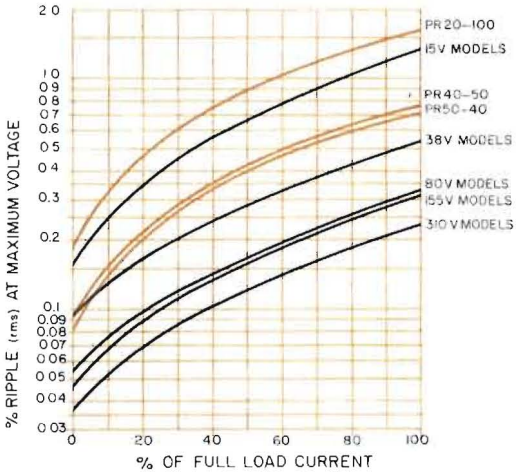

FIGURE 3
TYPICAL RIPPLE CHARACTERISTICS
AS A FUNCTON OF LOAD CURRENT

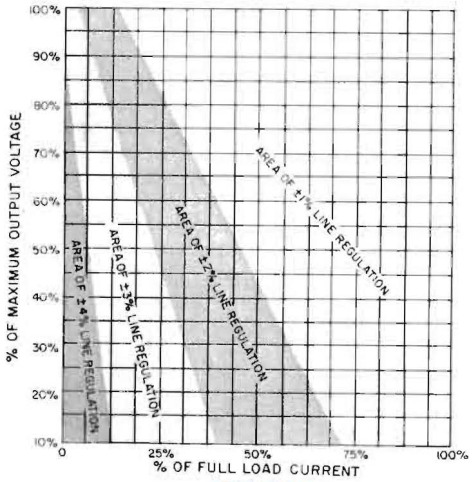

FIGURE 4
LINE REGULATION, 1-PHASE MODELS
AS A FUNCTION OF OUTPUT VOLTAGE AND LINE CURRENT

kepco PSC REGULATED DC SUPPLY GROUP

TRANSISTORIZED

- *modular package*
- *precision regulator*
- *voltage/current regulation*

0.02% REGULATION and STABILITY

MODEL	DC OUTPUT RANGE		OUTPUT IMPEDANCE OHMS MAX.			*MAX. INPUT
	VOLTS	AMPS	DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	AMPS
PSC 5–2	0– 7.5	0–2	0.75×10^{-3}	0.05	0.08+1	1.0
PSC 10–2	7.5–12.5	0–2	1.2×10^{-3}	0.05	0.08+1	1.0
PSC 15–2	12.5–17.5	0–2	1.7×10^{-3}	0.05	0.08+1	1.5
PSC 20–2	17.5–22.5	0–2	2.2×10^{-3}	0.05	0.08+1	1.5
PSC 28–1	22.5–32.5	0–1	6.5×10^{-3}	0.05	0.1 +1	1.5
PSC 38–1	32.5–42.5	0–1	8.5×10^{-3}	0.05	0.1 +1	1.5

*At 125V AC

SPECIFICATIONS (for all models)

REGULATION: LINE: Less than 0.02% output voltage change for 105–125V AC line variation, at any output voltage within the specified range.
LOAD: Less than 0.02% or 2 millivolts output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

STABILITY: Output varies less than 0.02% or 4 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE: Less than 1 millivolt rms.

RECOVERY TIME: 50 microseconds.

AMBIENT OPERATING TEMPERATURE: –20°C to +50°C maximum. Protective circuit turns unit "off" should an over temperature condition occur. Reset by interrupting AC power.

TEMPERATURE COEFFICIENT: Output voltage changes less than 0.01% per °C.

OUTPUT IMPEDANCE: Specified for each model within the load frequency range shown in the table.
Above 10 kc include the reactive impedance of the effective series inductance as indicated.

INPUT REQUIREMENTS: 105–125V AC 50–65 cps single phase. Units available for 400 cps input, on special order.

PERFORMANCE FEATURES (for all models)

ADJUSTABLE WIDE RANGE OUTPUT: Continuously adjustable 25-turn voltage control permits output settings anywhere within the rated voltage range. Resolution 0.001% of maximum output voltage.

CURRENT LIMIT CONTROL: A single turn control provides adjustable current limiting from 10% to 135% of rated full-load current.

SHORT CIRCUIT PROTECTION: Unique current limiting circuitry permits continuous operation into a short circuit without the aid of fuses, circuit breakers or relays. Output returns instantly to the operating voltage when the overload is removed.

REMOTE PROGRAMMING: Special terminals provide for resistive voltage or current programming at 1000 ohms per volt.

CONSTANT CURRENT OPERATION (external sensing):
Current Regulated Output range: 1 milliampere to 100% of maximum rated current.

Voltage Compliance: 100% of maximum output voltage range (for any selected current value the output voltage is automatically varied throughout its rated voltage range as required to regulate the output current.)

Current Regulation: LINE: Less than 0.02% output current change for 105–125V AC line variation, at any output current within the current regulated range.

LOAD: Less than 0.04% output current change for maximum change in load resistance at any output current within the current regulated range.

Current Ripple: Less than 0.1% of maximum current rms.

REMOTE ERROR SENSING: Separate sensing terminals enable specified regulation to be maintained directly at the load by compensating for voltage drops across the load supply leads.

FORCED AIR COOLING: Lateral circulation by blowers insures efficient heat transfer.

NO VOLTAGE OVERSHOOT: No output voltage overshoot from turn on, turn off or power failure.

ISOLATION VOLTAGE: Units can be connected in series up to 400 volts between chassis and either output terminal.

PHYSICAL SPECIFICATIONS (for all models)

TERMINALS AND CONTROLS: *Base Plate:* Barrier strip terminals for AC input, DC output and ground, remote voltage control, remote error sensing, current regulator connections. 25-turn voltage control (accessible through port in base plate). Output terminals are isolated from the chassis, either positive or negative terminal may be grounded.

DIMENSIONS: See diagram.

STANDARD FINISH: Gray hammertone (Special finishes to order).

Data subject to change without notice
PATENT NOTICE:
Applicable Patent Nos. will be supplied on request.

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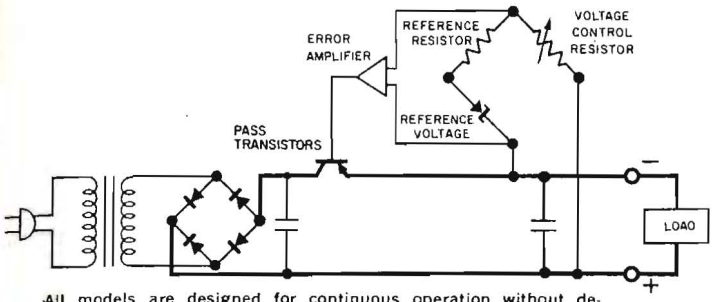
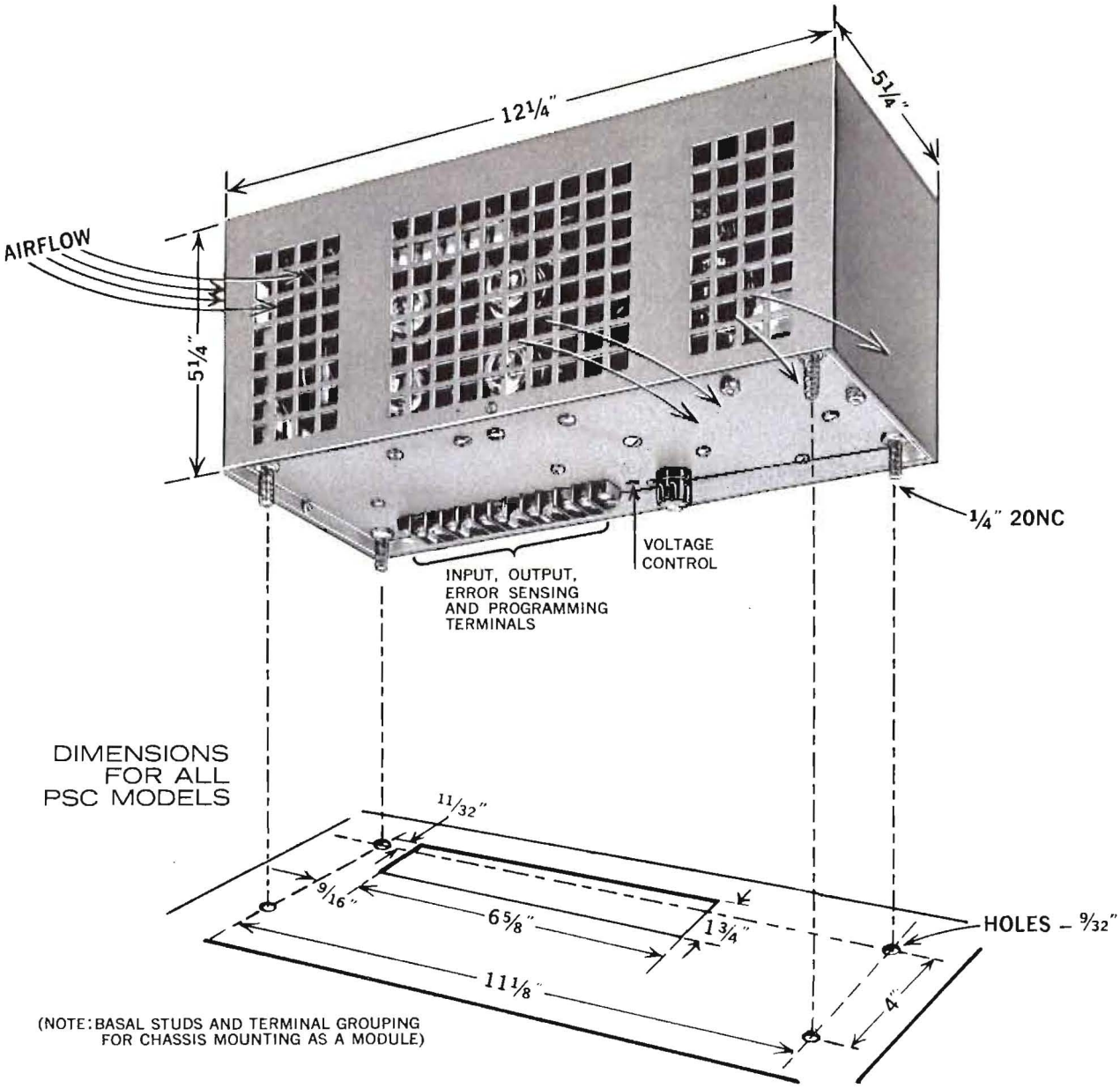


All models are designed for continuous operation without derating under all specified line, load and temperature conditions.



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TWX# 212-539-6623 • Cable Address: KEPCOPOWER, NEWYORK

kepco SC REGULATED DC SUPPLY GROUP

TRANSISTORIZED

- *precision regulator*
- *full range regulation*
- *voltage/current regulation*

0.1% REGULATION and STABILITY

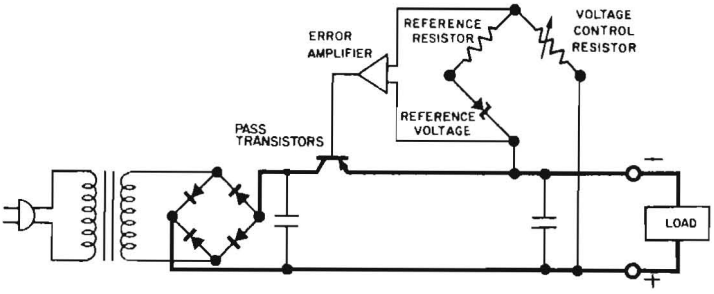
MODEL	DC OUTPUT RANGE		OUTPUT IMPEDANCE OHMS MAX.			DIMENSIONS			*MAX. INPUT
	VOLTS	AMPS	DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	H	W	D	AMPS
SC 18–1M	0–18	0–1	0.02	0.02	0.1 +1	4¼"	8 5/32"	13⅝"	1.0
SC 18–2M	0–18	0–2	0.01	0.06	0.1 +0.7	4¼"	8 5/32"	13⅝"	1.5
SC 18–4M	0–18	0–4	0.005	0.01	0.08+1	3½"	19"	13"	3.0
SC 33–5M	0–33	0–5	0.01	0.02	0.08+1	5¼"	19"	13"	5.0
SC 36–1M	0–36	0–1	0.04	0.04	0.2 +1	4¼"	8 5/32"	13⅝"	1.5
SC 36–2M	0–36	0–2	0.02	0.01	0.1 +0.5	3½"	19"	13"	2.5
SC 3672-0.5M	36–72	0–0.5	0.15	0.04	0.1 +1	4¼"	8 5/32"	13⅝"	1.5
SC 3672-1M	0-36-72	0–1	0.08	0.06	0.2 +0.5	3½"	19"	13"	4.0

*At 125V AC

0.01% REGULATION and STABILITY

MODEL	DC OUTPUT RANGE		OUTPUT IMPEDANCE OHMS MAX.			DIMENSIONS			*MAX. INPUT
	VOLTS	AMPS	DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	H	W	D	AMPS
2SC 32–1.5	0–32	0–1.5	0.003	0.01	0.06+0.8	7"	19"	13"	3.0
Dual Output	0–32	0–1.5	0.003	0.01	0.06+0.8				
SC 32–2.5	0–32	0–2.5	0.002	0.01	0.08+0.6	3½"	19"	13"	3.0
SC 32–5	0–32	0–5	0.001	0.005	0.05+0.8	5¼"	19"	13"	5.0
2SC 100–0.2	0–100	0–0.2	0.05	0.03	0.08+0.5	5¼"	19"	13"	1.5
Dual Output	0–100	0–0.2	0.05	0.03	0.08+0.5				

*At 125V AC



All models are designed for continuous operation without derating under all specified line, load and temperature conditions.

SPECIFICATIONS (for all models)

REGULATION (0.1% Models): LINE: Less than 0.1% output voltage change for 105–125V AC line variation, at any output voltage within the specified range.

LOAD: Less than 0.1% or 3 millivolts output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

REGULATION (0.01% Models): LINE: Less than 0.01% output voltage change for 105–125V AC line variation, at any output voltage within the specified range.

LOAD: Less than 0.01% or 2 millivolts output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

STABILITY (0.1% Models): Output varies less than 0.1% or 6 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

STABILITY (0.01% Models): Output varies less than 0.01% or 2 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE: Less than 1 millivolt rms.

RECOVERY TIME: 50 microseconds.

AMBIENT OPERATING TEMPERATURE: –20°C to +50°C maximum. Protective circuit turns unit "off" should an over temperature condition occur. Reset with power on-off switch.

TEMPERATURE COEFFICIENT (0.1% Models): Output voltage changes less than 0.05% per °C.

TEMPERATURE COEFFICIENT (0.01% Models): Output voltage changes less than 0.01% per °C.

OUTPUT IMPEDANCE: Specified for each model within the load frequency range shown in the table.
Above 10 kc include the reactive impedance of the effective series inductance as indicated.

INPUT REQUIREMENTS: 105–125V AC 50–65 cps single phase. Units available for 400 cps input, on special order.

PERFORMANCE FEATURES (for all models)

ADJUSTABLE WIDE RANGE OUTPUT (0.1% Models): Continuously adjustable single turn voltage control permits output settings from zero to the maximum output voltage. Resolution <0.5% of maximum output voltage.

ADJUSTABLE WIDE RANGE OUTPUT (0.01% Models): Continuously adjustable 10-turn voltage control permits output settings from zero to the maximum output voltage. Resolution 0.05% of maximum output voltage.

CURRENT LIMIT CONTROL: A single turn control provides adjustable current limiting from 10% to 135% of rated full-load current.
A separate *maximum current adjustment* is factory set to limit the upper setting of the current limit control to 135% of the rated full load current. Models SC 3672–0.5M and SC 3672–1M include the factory set *maximum current adjustment* only.

SHORT CIRCUIT PROTECTION: Unique current limiting circuitry permits continuous operation into a short circuit without the aid of fuses, circuit breakers or relays. Output returns instantly to the operating voltage when the overload is removed.

REMOTE PROGRAMMING (0.1% Models): Special terminals provide for resistive voltage or current programming at 1000 ohms per volt.

Data subject to change without notice
PATENT NOTICE:
Applicable Patent Nos. will be supplied on request.

kepco inc.

REMOTE PROGRAMMING (0.01% Models): Special terminals provide for resistive voltage or current programming at 300 ohms per volt.

CONSTANT CURRENT OPERATION (external sensing):
Current Regulated Output range (0.1% Models): 1 milliampere to 100% of maximum rated current.
Current Regulated Output range (0.01% Models): 3 milliamperes to 100% of maximum rated current.
Voltage Compliance: 100% of maximum output voltage. (For any selected current value the output voltage is automatically varied from 0 to the maximum output voltage, as required to regulate the output current.)
Current Regulation (0.1% Models): LINE: Less than 0.1% output current change for 105–125V AC line variation, at any output current within the current regulated range.
LOAD: Less than 0.2% output current change, for maximum change in load resistance at any output current within the current regulated range.
Current Regulation (0.01% Models): LINE: Less than 0.01% output current change for 105–125V AC line variation, at any output current within the current regulated range.
LOAD: Less than 0.02% output current change, for maximum change in load resistance at any output current within the current regulated range.
Current Ripple: Less than 0.1% of maximum current rms.

REMOTE ERROR SENSING: Separate sensing terminals enable specified regulation to be maintained directly at the load by compensating for voltage drops across the load supply leads.

FORCED AIR COOLING: Lateral circulation by blowers insures efficient heat transfer; permits stacking of units without overheating.

NO VOLTAGE OVERSHOOT: No output voltage overshoot from turn on, turn off or power failure.

ISOLATION VOLTAGE: Units can be connected in series up to 400 volts between chassis and either output terminal.

PHYSICAL SPECIFICATIONS (for all models)

METERS: 0.01% models include voltmeter and ammeter. 0.1% models are available metered or unmetered. The model numbers in the table include a voltmeter and ammeter. To specify an unmetered (0.1%) model, delete suffix "M" from the model number. (e.g. SC 18–1 for unit without meters.)

TERMINALS AND CONTROLS: *On front panel:* DC output and ground (5-way) terminals, 10-turn voltage control on 0.01% models, single turn control on 0.1% models (10-turn control available on special order). Power on-off switch, pilot light and fuse. Voltage range switch on Model SC 3672-1M.
On rear of chassis: Barrier strip terminations for DC output and ground, remote voltage control, remote error sensing, current regulator connections. Current limit control. Output terminals are isolated from the chassis, either positive or negative terminal may be grounded.

DIMENSIONS: Standard EIA rack dimensions.
See table for specification of each model.
Depth is measured behind front panel. For half-rack sized units, the depth behind the rack adapter is 13".

STANDARD FINISH: Gray hammertone (Special finishes to order).

RACK MOUNTING: Rack mounting adapters (5¼" high x 19" wide) available for single or dual rack mounting.
Model RA 3 for mounting single unit
Model RA 2 for mounting two units side by side. See Accessory Page 38-39 for outline dimensional drawings of Rack Adapters.

Model
SC 3672-0.5M

Model SC 18-4M

Model SC 32-5

Model 2SC 100-0.2

Rack Adapater for single
unit: Model RA3

Rack Adapter for two
units: Model RA2

131-38 SANFORD AVENUE • FLUSHING 52, N.Y., U.S.A. • 212 IN 1-7000
TWX# 212 - 539-6623 • Cable Address: KEPCOPOWER, NEWYORK

kepco SM REGULATED DC SUPPLY GROUP

TRANSISTORIZED

- *wide voltage range*
- *high current*
- *dual regulator*
- *minimum regulator dissipation*

0.1% REGULATION and STABILITY

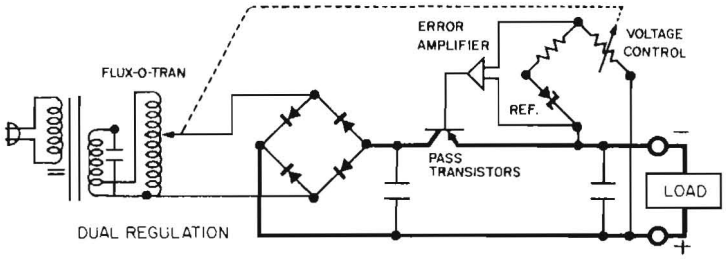
MODEL	DC OUTPUT RANGE		OUTPUT IMPEDANCE OHMS MAX.			DIMENSIONS			*MAX. INPUT
	VOLTS	AMPS	DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	H"	W"	D"	AMPS
SM 14–7M	0–14	0–7	0.002	0.005	0.1 +0.4	3½	19	13⅞	3.5
SM 14–15M	0–14	0–15	0.001	0.005	0.02+0.4	5¼	19	13⅞	5.5
SM 14–30M	0–14	0–30	0.0005	0.005	0.02+0.1	8¾	19	13⅞	10.5
SM 36–5M	0–36	0–5	0.01	0.005	0.03+0.4	3½	19	13⅞	4.0
SM 36–10M	0–36	0–10	0.005	0.005	0.03+0.4	5¼	19	13⅞	6.5
SM 36–15M	0–36	0–15	0.003	0.005	0.03+0.4	8¾	19	13⅞	10.5
SM 75–2M	0–75	0–2	0.04	0.005	0.04+0.4	3½	19	13⅞	4.0
SM 75–5M	0–75	0–5	0.02	0.005	0.02+0.4	5¼	19	13⅞	6.5
SM 75–8M	0–75	0–8	0.01	0.005	0.06+0.5	8¾	19	13⅞	10.0
SM 160–1M	0–160	0–1	0.2	0.005	0.04+0.5	3½	19	13⅞	3.5
SM 160–2M	0–160	0–2	0.1	0.005	0.04+0.4	5¼	19	13⅞	5.5
SM 160–4M	0–160	0–4	0.04	0.005	0.06+1.0	8¾	19	13⅞	10.5
SM 325–0.5M	0-165-325	0–0.5	0.7	0.005	0.1 +1.0	3½	19	13⅞	3.5
SM 325–1M	0–325	0–1	0.4	0.005	0.1 +1.0	5¼	19	13⅞	5.0
SM 325–2M	0–325	0–2	0.2	0.005	0.1 +1.0	8¾	19	13⅞	11.0

*At 125V AC

0.01% REGULATION and STABILITY

MODEL	DC OUTPUT RANGE		OUTPUT IMPEDANCE OHMS MAX.			DIMENSIONS			*MAX. INPUT
	VOLTS	AMPS	DC to 100 CPS	100 CPS to 1 KC	1 KC to 100 KC + μH	H"	W"	D"	AMPS
SM 14–7MX	0–14	0–7	0.0002	0.005	0.1 +0.4	3½	19	13⅞	3.5
SM 14–15MX	0–14	0–15	0.0001	0.005	0.02+0.4	5¼	19	13⅞	5.5
SM 14–30MX	0–14	0–30	0.00005	0.005	0.02+0.1	8¾	19	13⅞	10.5
SM 36–5MX	0–36	0–5	0.001	0.005	0.03+0.4	3½	19	13⅞	4.0
SM 36–10MX	0–36	0–10	0.0005	0.005	0.03+0.4	5¼	19	13⅞	6.5
SM 36–15MX	0–36	0–15	0.0003	0.005	0.03+0.4	8¾	19	13⅞	10.5
SM 75–2MX	0–75	0–2	0.004	0.005	0.04+0.4	3½	19	13⅞	4.0
SM 75–5MX	0–75	0–5	0.002	0.005	0.02+0.4	5¼	19	13⅞	6.5
SM 75–8MX	0–75	0–8	0.001	0.005	0.06+0.5	8¾	19	13⅞	10.0
SM 160-1MX	0–160	0–1	0.02	0.005	0.04+0.5	3½	19	13⅞	3.5
SM 160-2MX	0–160	0–2	0.01	0.005	0.04+0.4	5¼	19	13⅞	5.5
SM 160-4MX	0–160	0–4	0.004	0.005	0.06+1.0	8¾	19	13⅞	10.5
SM 325-0.5MX	0-165-325	0–0.5	0.07	0.005	0.1 +1.0	3½	19	13⅞	3.5
SM 325-1MX	0–325	0–1	0.04	0.005	0.1 +1.0	5¼	19	13⅞	5.0
SM 325-2MX	0–325	0–2	0.02	0.005	0.1 +1.0	8¾	19	13⅞	11.0

*At 125V AC



All models are designed for continuous operation without derating under all specified line, load and temperature conditions.

SPECIFICATIONS (for all models)

REGULATION (0.1% Models):

LINE: Less than 0.1% output voltage change for 105–125V AC line variation, at any output voltage within the specified range.

LOAD: Less than 0.1% or 3 millivolts output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

REGULATION (0.01% Models):

LINE: Less than 0.01% output voltage change for 105–125V AC line variation, at any output voltage within the specified range.

LOAD: Less than 0.01% or 1 millivolt output voltage change, whichever is greater for NO LOAD to FULL LOAD change at any output voltage within the specified range.

STABILITY (0.1% Models):

Output varies less than 0.1% or 6 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

STABILITY (0.01% Models):

Output varies less than 0.01% or 2 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE:

Less than 1 millivolt rms.

RECOVERY TIME:

50 microseconds.

AMBIENT OPERATING TEMPERATURE:

–20°C to +50°C maximum. Protective circuit turns unit "off" should an over temperature condition occur. Reset with power on-off switch.

TEMPERATURE COEFFICIENT (0.1% Models):

Output voltage changes less than 0.05% per °C.

TEMPERATURE COEFFICIENT (0.01% Models):

Output voltage changes less than 0.01% per °C.

OUTPUT IMPEDANCE:

Specified for each model within the load frequency range shown in the table. Above 10 kc include the reactive impedance of the effective series inductance as indicated.

Data subject to change without notice

PATENT NOTICE:

Applicable Patent Nos. will be supplied on request.

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INPUT REQUIREMENTS:

105–125V AC 60±1 cps single phase.

Units operate within regulation specification for short term line frequency changes within the range 57–63 cps (except 325V models).

PERFORMANCE FEATURES (for all models)

ADJUSTABLE WIDE RANGE OUTPUT:

Continuously adjustable 5-turn voltage control permits output settings from zero to the maximum output voltage. Resolution: 0.1% of maximum output voltage.

REMOTE ERROR SENSING:

Separate sensing terminals enable specified regulation to be maintained directly at the load by compensating for voltage drops across the load supply leads.

OVERLOAD PROTECTION:

Special Flux-O-Tran power transformer and DC overload circuit breaker allows output to be shorted without adverse effect. The dissipation requirements of the series regulator are actually reduced under overload.

FORCED AIR COOLING:

Lateral circulation by blowers insures efficient heat transfer; permits stacking of units without overheating.

NO VOLTAGE OVERSHOOT:

No output voltage overshoot from turn on, turn off or power failure.

ISOLATION VOLTAGE:

Units can be connected in series up to 400 volts between chassis and either output terminal.

PHYSICAL SPECIFICATIONS (for all models)

METERS:

Model numbers in table include voltmeter and ammeter. To specify an unmetered unit delete the suffix "M" from the model no. eg: (SM 160–1X for 0.01% unit without meters); or (SM 160–1 for 0.1% unit without meters).

TERMINALS AND CONTROLS:

On front panel: DC output and ground (5-way) terminals. 5-turn continuously variable voltage control, power on-off switch (dual voltage range switch on SM 325-0.5 M).

On rear of chassis: DC output and ground (5-way) terminals. Remote error sensing terminals. All output terminals are isolated from the chassis, either positive or negative terminal may be grounded.

DIMENSIONS:

Standard EIA rack dimensions.

See table for specification of each model. Depth is measured behind front panel.

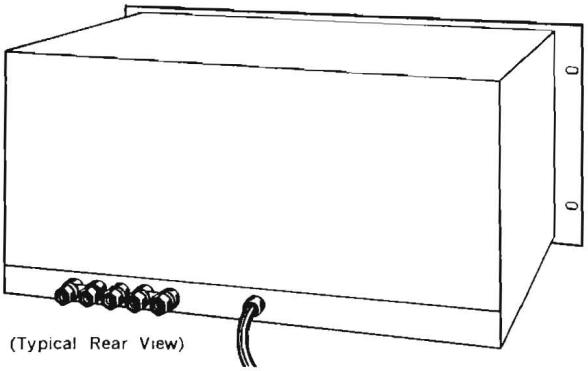
STANDARD FINISH:

Gray hammertone (Special finishes to order)

Model SM 36-5M

Model SM 160-2M

Model SM 325-2M



(Typical Rear View)

131-38 SANFORD AVENUE • FLUSHING 52, N.Y., U.S.A. • (212) IN 1-7000
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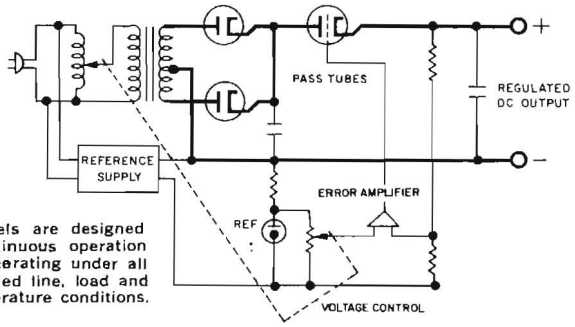
VACUUM TUBE

0.1% REGULATION and STABILITY

MODEL	DC OUTPUT RANGE VOLTS	DC OUTPUT RANGE MA.	REGULATION LOAD O-MAX %	REGULATION LOAD O-MAX ΔV	REGULATION LINE %	REGULATION LINE ΔV	RIPPLE RMS MV	OUTPUT IMPEDANCE OHMS MAX. DC to 100 CPS	OUTPUT IMPEDANCE OHMS MAX. 100 CPS to 1 KC	OUTPUT IMPEDANCE OHMS MAX. 1 KC to 100 KC + μH	AUX. OUTPUT 6.3VAC Unregulated	DIMENSIONS H	DIMENSIONS W	DIMENSIONS D	*MAX. INPUT AMPS
2400 B #1	Bias 0–150	0–5	*	*	*	*	1	*	*	*		10½"	19"	17"	5.0
#2	0–400	0–150	0.025	0.1	0.1	0.4	3	0.7	0.05	0.2+2	10 AMP				
#3	0–400	0–150	0.025	0.1	0.1	0.4	3	0.7	0.05	0.2+2	10 AMP				
Parallel #2 & #3	0–400	0–300	0.025	0.1	0.1	0.4	3	0.35	0.05	0.2+2					
Series #2 & #3	0–800	0–150	0.025	0.2	0.1	0.8	6	1.4	0.1	0.4+4					
400 B	0–400	0–150	0.025	0.1	0.1	0.4	3	0.7	0.05	0.2+2	10 AMP	7"	19"	11"	3.0
	Bias 0–150	0–5	*	*	*	*	1	*	*	*					
430 D #1	0–450	0–300	0.025	0.1	0.1	0.4	3	0.38	0.05	0.2+2	10 AMP	12¼"	19"	17"	8.0
#2	0–450	0–300	0.025	0.1	0.1	0.4	3	0.38	0.05	0.2+2	10 AMP				
Parallel #1 & #2	0–450	0–600	0.025	0.1	0.1	0.4	3	0.19	0.05	0.2+2					
Series #1 & #2	0–900	0–300	0.025	0.2	0.1	0.8	6	0.76	0.1	0.4+4					
800 B #1	0–600	0–200	0.02	0.1	0.1	0.4	3	0.6	0.05	0.2+2	10 AMP	12¼"	19"	17"	7.5
#2	0–600	0–200	0.02	0.1	0.1	0.4	3	0.6	0.05	0.2+2	10 AMP				
Parallel #1 & #2	0–600	0–400	0.02	0.1	0.1	0.4	3	0.3	0.05	0.2+2					
Series #1 & #2	0–1200	0–200	0.02	0.2	0.1	0.8	6	1.2	0.1	0.4+4					
605	0–600	0–500	0.02	0.1	0.1	0.4	3	0.24	0.05	0.2+2	20 AMP	10½"	19"	17"	8.0
	Bias 0–150	0–5	*	*	*	*	1	*	*	*					
615B	0–600	0–300	0.02	0.1	0.1	0.4	3	0.4	0.05	0.2+2	10 AMP	10½"	19"	13"	6.0
	Bias 0–150	0–5	*	*	*	*	1	*	*	*					
103 #1	0–300	0–75	Common B-				30	—	—	—	5 AMP	8"	16"	8"	1.5
#2	0–300	0–75	Common B-				30	—	—	—					
#3	-50 to +50	0–5	#3 Isolated from #1 and #2				10	—	—	—		Rack Adapter RA-1 Available, See Accessory Page			
Parallel #1 & #2	0–300	0–150	Unregulated				30	—	—	—					
1250 B ✧	0–1000	0–500	0.01	0.1	0.05	0.4	3	0.2	0.1	1.0+2		28"	22"	15½"	12.5
1220 C	0–1200	0–50	0.01	0.1	0.05	0.4	3	2.4	0.2	1.0+2	10 AMP	10½"	19"	13"	3.0
1520 B ✧	0–1500	0–200	0.01	0.1	0.05	0.4	3	0.75	0.3	1.0+5		23"	22"	15½"	7.0
HB 2050 ✧	0–2000	0–500	0.005	0.1	0.02	0.4	3	0.2	0.5	2.0+5		33½"	22"	18"	24.0
HB 2500	0–2500	0–50	0.005	0.1	0.02	0.4	5	2.5	0.5	2.0+5		8¾"	19"	14"	5.0

*At 125V AC



All models are designed for continuous operation without derating under all specified line, load and temperature conditions.

SPECIFICATIONS (for all models)

REGULATION:
(See table) the regulation of each model is specified as a percentage or minimum absolute change for 105–125V AC line variations and NO LOAD to FULL LOAD change. Percentage values measured at maximum rated output voltage.

STABILITY:
Output varies less than percent regulation specification or 100 millivolts whichever is greater over a period of 8 hours after warmup. Measured at constant line voltage, load and ambient temperature.

RIPPLE:
See table for maximum specification applicable to each model.

RECOVERY TIME:
50 microseconds.

AMBIENT OPERATING TEMPERATURE:
–20°C to +55°C maximum.

TEMPERATURE COEFFICIENT:
Output voltage changes less than 0.01% per °C.

OUTPUT IMPEDANCE:
Specified for each model within the load frequency range shown in the table.

Above 10 kc include the reactive impedance of the effective series inductance as indicated.

INPUT REQUIREMENTS:
105–125V AC 50–65 cps single phase.

Units are available with 50–440 cps input tolerance on special order.

*** REGULATION FOR BIAS OUTPUTS:**
In the range 0–150V DC the output voltage variation is less than 0.01% for line fluctuations from 105 to 125 volts. At 150 volts the output varies less than 2% for load changes from 0–5 milliamperes. At settings below 150 volts, the internal resistance of the bias supply increases to a maximum of 25,000 ohms. The bias output is derived from a VR tube energized by a regulated supply. The nominal maximum output voltage can be in the range 140–165V DC.

Data subject to change without notice
PATENT NOTICE:
Applicable Patent Nos. will be supplied on request.

kepco inc.

PERFORMANCE FEATURES (for all models)

ADJUSTABLE WIDE RANGE OUTPUT:
Continuously adjustable single-turn voltage control permits output settings from zero to the maximum output voltage. Models 2400B, 430D, 800B and HB 2500 incorporate coarse and fine adjustments. The fine controls cover a range of approximately 1% of rated maximum output voltage. (Fine controls available for all other models on special order.)

Resolution 0.5% of maximum output voltage.

Units with fine controls have a resolution of 0.005% of maximum output voltage.

CONVECTION COOLING:
Heat removal is by natural convection, no blowers.

NO VOLTAGE OVERSHOOT:
No output voltage overshoot from turn on, turn off or power failure.

ISOLATION VOLTAGE:
Units can be connected in series up to 400 volts between chassis and either output terminal except Model HB 2050. This model is manufactured in two versions, HB 2050-P for a positive grounded unit and HB 2050-N for a negative grounded unit. Specify when ordering.

PHYSICAL SPECIFICATIONS (for all models)

METERS:
Model numbers in table include voltmeter and ammeter, (except Model 103, supplied unmetered only).

TERMINALS AND CONTROLS:
On front panel: DC output and ground (5-way) terminations, 6.3V AC output terminals (where applicable), AC on-off switch, pilot light and fuse. DC on-off switch, pilot light and fuse. Voltage controls. For Model 2400B, output terminals are provided at the rear only.

On rear of chassis: DC output and ground terminations, 6.3V AC output terminals (where applicable). For Model 103, output terminals are provided on the front panel only.

All output terminals are isolated from the chassis, either positive or negative output may be grounded (except Model HB 2050).

DIMENSIONS:
Standard EIA rack dimensions. See table for specification of each model. Depth is measured behind front panel.
Models marked with a ✧ are supplied in cabinets. The chassis, when removed from their cabinets will mount directly into a standard 19" wide equipment rack.

The equipment dimensions are:

	H	W	D
1250B	26¼"	19"	13"
1520B	21"	19"	13"
HB 2050	31½"	19"	17"
103	(Use Rack Adapter RA-1)		

STANDARD FINISH:
Gray hammertone (special finishes to order).

Model 1520B ✧

Model 430D

Model 605

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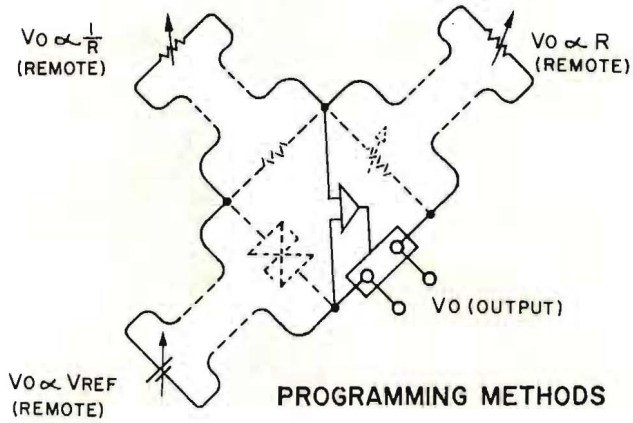
VOLTAGE PROGRAMMING
CONSTANT CURRENT OPERATION

OUTPUT VOLTAGE PROGRAMMING

The unique Kepo comparison bridge circuit enables all Kepco *programmable* Power Supplies to be externally controlled over their entire output voltage range. All of the models listed on the adjoining page have provision for purely resistive programming. In addition, *all* ABC, CK, KS and KO models have provision for remote programming by means of external resistances, or voltage sources or inverse resistance programming. The SC, PSC and HB models are easily modified for programming with remote voltage sources and for inverse programming.

For a detailed treatment of the programming feature, write for the "Notes on Systems Applications of Regulated Power Supplies," Kepco publication #146-0056. See Page 43.

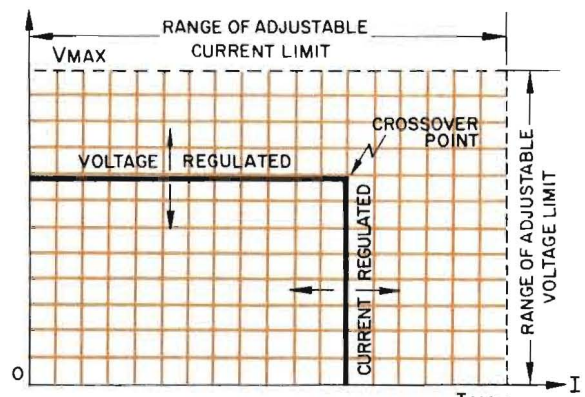


PROGRAMMING METHODS

CONSTANT CURRENT OPERATION

Current control is achieved by sensing a small sample voltage developed across a resistor placed in series with the load. The Power Supply is controlled so as to maintain this sample voltage constant, thus providing current regulation. In current regulated operation, the voltage across the load changes in direct proportion to the load resistance, and is known as the voltage compliance. The maximum voltage compliance is equal to the output voltage range of the Power Supply.

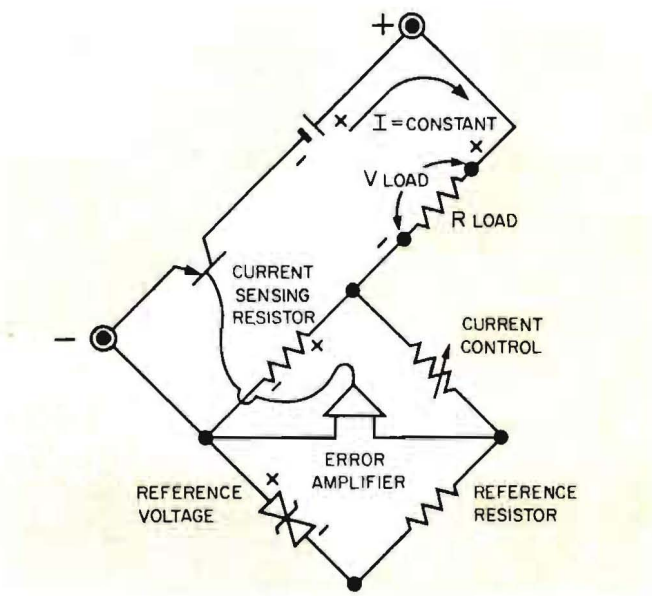
Kepco CK, KS and KO models incorporate a unique gate circuit which automatically switches the mode of operation from constant voltage to constant current depending on the relative settings of the voltage and current controls and on the load resistance.



TYPICAL CHARACTERISTIC
AUTOMATIC VOLTAGE/CURRENT CROSSOVER

Power Supplies with the automatic crossover feature can be remotely controlled in either or both modes by means of remote resistances or voltage sources, or they can be inversely resistance programmed (see output voltage programming). These models can also be operated in the constant current mode using an external sensing resistor. When employing "external sensing", current control is achieved with an external programming resistance or voltage source, or they may be inversely resistance programmed. The Kepco ABC, SC, PSC and HB models can be operated in the constant current mode using external sensing and programming only.

The external current sensing resistor carries the full load current and in all-transistor models is selected to drop 1 volt at the operating current. For HB models, and the hybrid units in the ABC design group, the sensing resistor is selected to drop 10 volts at the operating current. This resistor should have a low temperature coefficient and should be conservatively rated for power dissipation. At least a ten times derating factor is recommended.



COMPARISON BRIDGE FOR CURRENT REGULATION

Data subject to change without notice

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

PROGRAMMABLE VOLTAGE/CURRENT MODELS

AUTOMATIC VOLTAGE/CURRENT CROSSOVER (INTERNAL SENSING)					EXTERNALLY SENSED CONSTANT CURRENT	
MODEL	VOLTAGE RANGE VOLTS	CURRENT RANGE AMPS	% LOAD* REGULATION VOLTAGE MODE	% LOAD* REGULATION CURRENT MODE✧	CURRENT RANGE AMPS	% LOAD* REGULATION CONSTANT CURRENT
CK 2–8M	0–2	0.016 –8	0.01	0.02 or 0.2ma	0.001–8	0.02
CK 8–5M	0–8	0.010 –5	0.01	0.02 or 0.2ma	0.001–5	0.02
CK 18–3M	0–18	0.006 –3	0.01	0.02 or 0.2ma	0.001–3	0.02
CK 36–1.5M	0–36	0.003 –1.5	0.01	0.02 or 0.2ma	0.001–1.5	0.02
CK 40–0.8M	0–40	0.0016–0.8	0.01	0.02 or 0.2ma	0.001–0.8	0.02
CK 60–0.5M	0–60	0.001 –0.5	0.01	0.02 or 0.2ma	0.001–0.5	0.02
KS 8–15M	0–8	0.075–15	0.01	0.02 or 1ma	0.01–15	0.02
KS 8–25M	0–8	0.125–25	0.01	0.02 or 1ma	0.01–25	0.02
KS 8–50M	0–8	0.25 –50	0.01	0.02 or 1ma	0.01–50	0.02
KS 8–100M	0–8	0.50 –100	0.01	0.02 or 1ma	0.01–100	0.02
KS 18–10M	0–18	0.05 –10	0.01	0.02 or 1ma	0.01–10	0.02
KS 18–15M	0–18	0.075–15	0.01	0.02 or 1ma	0.01–15	0.02
KS 18–25M	0–18	0.125–25	0.01	0.02 or 1ma	0.01–25	0.02
KS 18–50M	0–18	0.25 –50	0.01	0.02 or 1ma	0.01–50	0.02
KS 36–5M	0–36	0.025–5	0.01	0.02 or 1ma	0.01–5	0.02
KS 36–10M	0–36	0.05 –10	0.01	0.02 or 1ma	0.01–10	0.02
KS 36–15M	0–36	0.075–15	0.01	0.02 or 1ma	0.01–15	0.02
KS 36–30M	0–36	0.15 –30	0.01	0.02 or 1ma	0.01–30	0.02
KS 60–2M	0–60	0.01 –2	0.01	0.02 or 1ma	0.01–2	0.02
KS 60–5M	0–60	0.025–5	0.01	0.02 or 1ma	0.01–5	0.02
KS 60–10M	0–60	0.05 –10	0.01	0.02 or 1ma	0.01–10	0.02
KS 60–20M	0–60	0.1 –20	0.01	0.02 or 1ma	0.01–20	0.02
KO 12–100M	0–12	10–100	1	2 or 200ma	–	–
KO 25–50M	0–25	5–50	1	2 or 200ma	–	–
KO 45–30M	0–45	3–30	1	2 or 200ma	–	–
KO 70–20M	0–70	2–20	1	2 or 200ma	–	–

✧Whichever is greater.

*For detailed regulation specifications refer to the individual model specification page.

EXTERNALLY SENSED CONSTANT CURRENT			
MODEL	VOLTAGE RANGE VOLTS	CURRENT RANGE AMPS	% LOAD* REGULATION CONSTANT CURRENT
ABC 2–1M	0–2	0.001–1	0.5
ABC 7.5–2M	0–7.5	0.001–2	0.5
ABC 10–0.75M	0–10	0.001–0.75	0.5
ABC 15–1M	0–15	0.001–1	0.5
ABC 18–0.5M	0–18	0.001–0.5	0.5
ABC 30–0.3M	0–30	0.001–0.3	0.5
ABC 40–0.5M	0–40	0.001–0.5	0.5
ABC 200M	0–200	0.001–0.1	0.1
ABC 425M	0–425	0.001–0.05	0.1
ABC 1000M	0–1000	0.001–0.02	0:1
ABC 1500M	0–1500	0.001–0.005	0.1
ABC 2500M	0–2500	0.001–0.002	0.1
SC–18–1M	0–18	0.001–1	0.2
SC–18–2M	0–18	0.001–2	0.2
SC–18–4M	0–18	0.001–4	0.2
SC–33–5M	0–33	0.001–5	0.2
SC–36–1M	0–36	0.001–1	0.2
SC–36–2M	0–36	0.001–2	0.2
SC–3672–0.5M	36–72	0.001–0.5	0.2
SC–3672–1M	0–36–72	0.001–1	0.2

EXTERNALLY SENSED CONSTANT CURRENT			
MODEL	VOLTAGE RANGE VOLTS	CURRENT RANGE AMPS	% LOAD* REGULATION CONSTANT CURRENT
2SC–32–1.5 (Dual)	0–32 0–32	0.003–1.5 0.003–1.5	0.02 0.02
SC–32–2.5	0–32	0.003–2.5	0.02
SC–32–5	0–32	0.003–5	0.02
2SC–100–0.2 (Dual)	0–100 0–100	0.003–0.2 0.003–0.2	0.02 0.02
PSC–5–2	0–7.5	0.001–2	0.04
PSC–10–2	7.5–12.5	0.001–2	0.04
PSC–15–2	12.5–12.5	0.001–2	0.04
PSC–20–2	17.5–22.5	0.001–2	0.04
PSC–28–1	22.5–32.5	0.001–1	0.04
PSC–38–1	32.5–42.5	0.001–1	0.04
HB–2M	0–325▪	0.01–0.2	0.2
HB–4M	0–325▪	0.01–0.4	0.2
HB–6M	0–325▪	0.01–0.6	0.2
HB–8M	0–325▪	0.01–0.8	0.2
HB–20M	0–325▪	0.01–0.2	0.02
HB–40M	0–325▪	0.01–0.4	0.02
HB–60M	0–325▪	0.01–0.6	0.02
HB–80M	0–325▪	0.01–0.8	0.02

▪For voltage compliance versus output current consult derating graphs on Page 19.

*For detailed regulation specifications refer to the individual model specification page.

ACCESSORY EQUIPMENT

Model KP - 10

PROGRAMMING PANELS

To take advantage of the PROGRAMMING FEATURE found in many Kepco Power Supplies, two digital programming panels are available to convert such Power Supplies into highly stable, digitally programmed Voltage or Current sources.

MODEL KP-10 is made for units with a 100 ohm per volt control ratio. This model is packaged in a 3½" high standard 19" wide rack panel. Four 10-position, indexed, control switches cover the output range in 10 millivolts per step, 100 millivolts per step, 1 volt per step and 10 volts per step. A 10-turn vernier control interpolates over the 10 millivolts of the last step allowing exceedingly precise adjustments in output. A 6th switch provides ranges of 100 volts, 200 volts and 300 volts, thus bringing the total range to 0—400.000 volts. The actual range covered corresponds, of course, to the rated output voltage range of the Power Supply being programmed. Extra positions on the 6th switch convert the Model KP-10 digital programmer from a voltage to a current control device. By placing an appropriately chosen current sensing resistor across terminals provided at the rear of the Model KP-10, the Programmer will, at the flick of a switch, operate the Power Supply to which it is connected, in the current regulated mode. The 10 mv/step and 100 mv/step controls, plus the 10-turn vernier operate in this mode to digitally program the output current throughout the range of the associated Power Supply.

MODEL KP-1 is identical to the above except that it is made for models with a 1000 ohm/volt control ratio and contains an extra 400 volt position extending its range to 0—500.000 volts. This unit is packaged in the half-rack size suitable for mounting in RA-2, 3, 4, or 5. When mounted in a dual rack adapter with the desired half-rack Power Supply, Model KP-1 forms an ideal package combination for high resolution precision voltage or current control.

Model VIP - 1

OVER-VOLTAGE OVER-CURRENT PROTECTORS

MODEL VIP-1 OVER-VOLTAGE/OVER-CURRENT

MODEL VIP-2 UNDER-VOLTAGE/UNDER-CURRENT

MODEL VIP-3 OVER and UNDER-VOLTAGE/OVER and UNDER-CURRENT

DESCRIPTION:

The VIP consists of a sensing circuit capable of detecting a voltage 1% or 0.1 volts different than any preset voltage limit in the range 5—200 volts. Should such an over or under-voltage occur, a fast-acting silicon controlled rectifier (SCR) "crowbar" short circuits the power supply's output within 50 microseconds. Simultaneously a power interlock relay is tripped which removes the primary AC power within approximately 50 milliseconds. The SCR discharges the power supply's output filter capacitor and the voltage is reduced to zero.

Operation in the internal reference mode allows the operator to pre-set any voltage as a limit above or below which crowbar/turn-off action is precipitated. In its tracking mode, the VIP is interconnected with the voltage control circuit of the power supply with which it is used and will sense a voltage differential between the output of the supply and the programmed voltage.

Terminals are provided for the addition of a sensing resistor to convert VIP into an over-current or under-current protector depending on model. The current sensing resistor is chosen to drop 1 volt at the operating current. The sensitivity control then adjusts the firing threshold from 0 to the operating current; maximum 30 amperes.

SPECIFICATIONS:

VOLTAGE
SENSITIVITY: Minimum threshold 1% of operating voltage or 0.1 volts whichever is greater (adjustable).
RANGE: 0—50V*, 50—100V, 100—150V, 150—200V.
*Minimum voltage required for proper operation is 5V.

CURRENT
SENSITIVITY: 5% of operating current producing a 1 volt drop across external sensing resistor.
RANGE: 0—30 amperes.

POWER INTERLOCK RELAY
CONTACT RATING: 10 amperes at 115V AC.

DIMENSIONS:
3½" high x 19" wide x 8" deep.
Standard EIA rack dimensions.

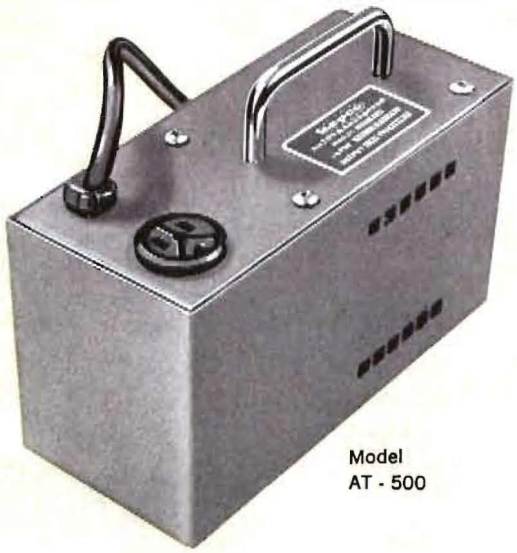
STANDARD FINISH:
Grey Hammertone (special finishes to order).

Note: Because PNP transistors are used as the series pass elements in Kepco All-Transistor Power Supplies; their reference polarity is reversed relative to Hybrid Models which employ a vacuum tube for this function. When a VIP is to be used in its "Tracking Mode" be sure to specify (when ordering) whether it is to be used with an All-Transistor or a Hybrid Power Supply.

DATA SUBJECT TO CHANGE WITHOUT NOTICE
PATENT NOTICE: Applicable Patent Nos. will be supplied on request

AUTOTRANSFORMERS

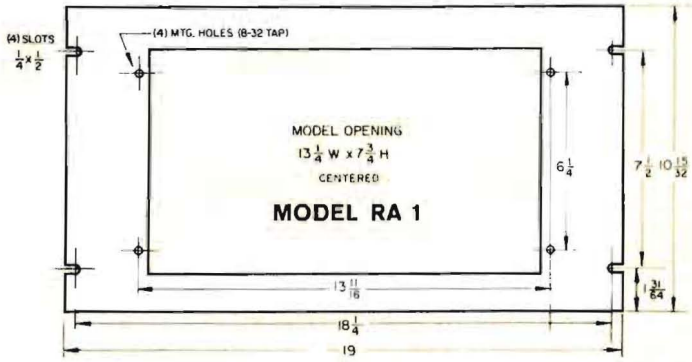
Compact step-down Transformers provide 115V AC output from 220/230/240V AC (tap selected) 48—440 cps.

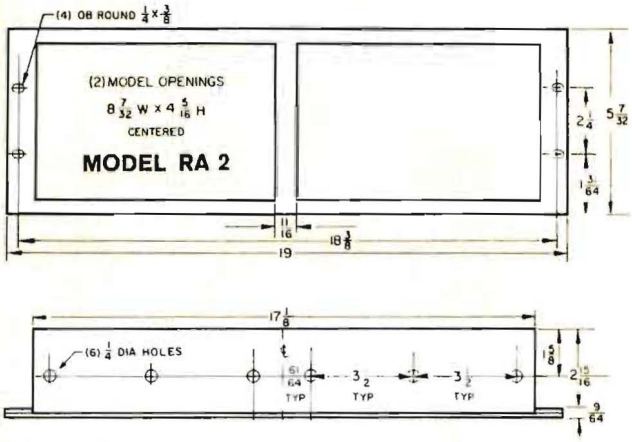


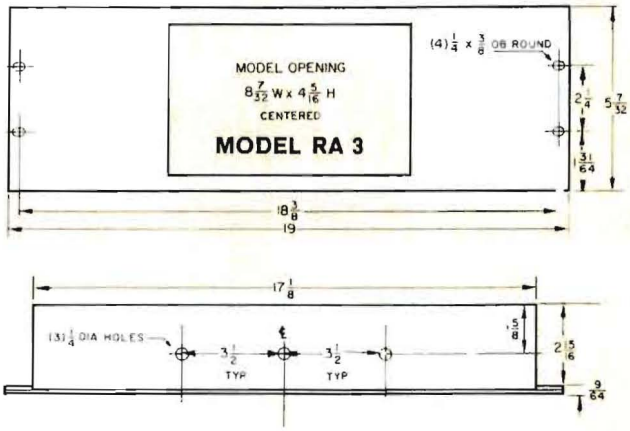
Model
AT - 500

MODEL	POWER	SIZE* L	W	D
AT—100	**100 VA**	5½"	2⅞"	2¾"
AT—250	**250 VA**	6"	3½"	3½"
AT—500	**500 VA**	7½"	3½"	4½"
AT—1000	**1000 VA**	8"	5¼"	5¼"
AT—1500	**1500 VA**	9¼"	5¼"	6½"

*Overall case dimensions (not including handle and feet)



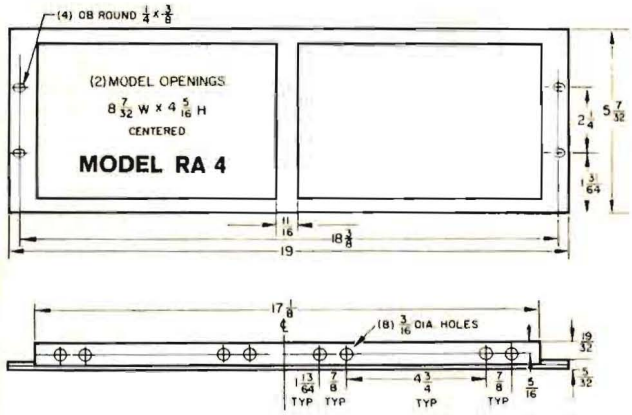


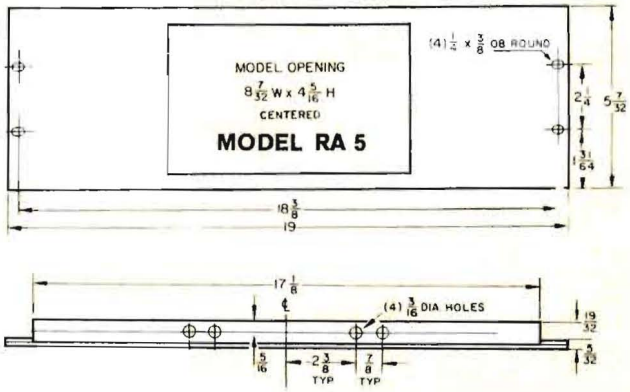


RACK ADAPTERS

Five Rack Adapters are manufactured by Kepco to adapt bench style and half-rack Power Supplies to the standard 19" wide equipment rack or cabinet. Dual Rack Adapters (even numbers) are particularly useful since they allow the equivalent of a dual output Power Supply to be assembled from any two half-rack units.

MODEL	HEIGHT	MOUNTING ARRANGEMENT	FOR USE WITH
RA 1	**10½"**	**Single**	**Model 103**
RA 2	**5¼"**	**Dual**	**SC Models**
RA 3	**5¼"**	**Single**	**SC Models**
RA 4	**5¼"**	**Dual**	**ABC and CK Models**
RA 5	**5¼"**	**Single**	**ABC and CK Models**





DISCONTINUED MODELS

As the state of the art in Power Supply Technology progresses, new models and designs supplant the once-popular models of earlier years. The adjoining page lists those models recently discontinued in favor of their more modern, smaller and lower priced counterparts. These units are not recommended for new designs; their voltage, current and regulation characteristics are tabulated here so that equivalent models can be chosen from among the currently manufactured and stocked Power Supplies listed in the body of this catalog.

Recognizing that many of these discontinued models have been designed into major electronic systems where the substitution of the newer equivalents may be difficult, the units listed on this page continue to be available on special order — although not stocked.

Consult the factory for price and availability.

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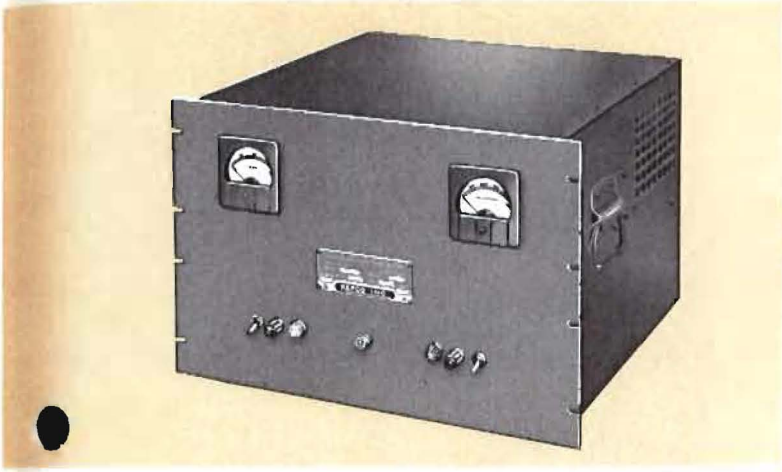
MODEL	DC OUTPUT RANGE VOLTS	DC OUTPUT RANGE AMPS	% REGULATION
SC 18–0.5M	**0–18**	**0–0.5**	0.1
SC 36–0.5M	**0–36**	**0–0.5**	0.1
SC 32–0.5	**0–32**	**0–0.5**	0.01
SC 32–1	**0–32**	**0–1**	0.01
SC 32–1.5	**0–32**	**0–1.5**	0.01
SC 32–10A	**0–32**	**0–10**	0.01
SC 32–15A	**0–32**	**0–15**	0.01
SC 60–2	**0–60**	**0–2**	0.01
SC 60–5	**0–60**	**0–5**	0.01
SC 150–1	**0–150**	**0–1**	0.01
SC 300–1	**0–300**	**0–1**	0.01

SC REGULATED DC SUPPLY

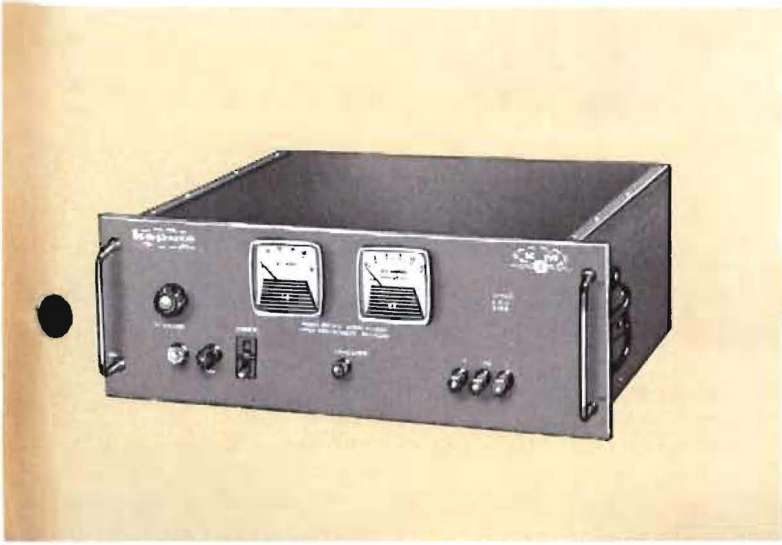


KR REGULATED DC SUPPLY

MODEL	DC OUTPUT RANGE VOLTS	DC OUTPUT RANGE AMPS	% REGULATION
KR 16M	**0–150**	**0–1.5**	0.1
KR 17M	**100–200**	**0–1.5**	0.1
KR 18M	**195–325**	**0–1.5**	0.1
KR 19M	**295–450**	**0–1.5**	0.1

MODEL	DC OUTPUT RANGE VOLTS	DC OUTPUT RANGE AMPS	% REGULATION
KM 236-15A	**0.1–36**	**0–15**	0.5
KM 236-30	**0.1–36**	**0–30**	0.5
KM 236-50	**0.1–36**	**0–50**	0.5

KM REGULATED DC SUPPLY



KM REGULATED DC SUPPLY

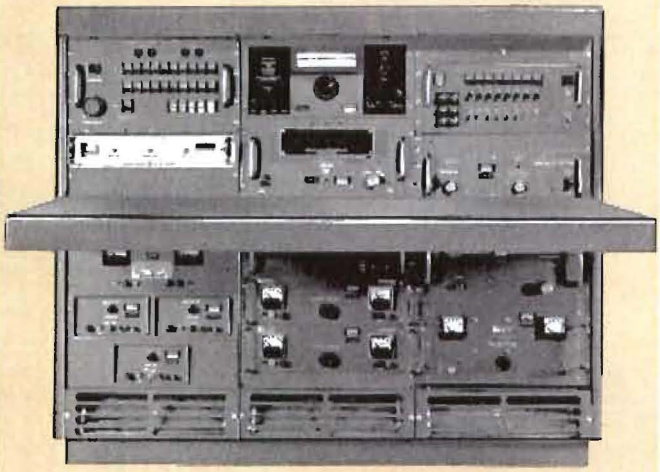
MODEL	DC OUTPUT RANGE VOLTS	DC OUTPUT RANGE AMPS	% REGULATION
KM 251	**2–14**	**0–30 max.** or 240w max.	1
KM 252	**5–35**	**0–12 max.** or 240w max.	1
KM 253	**20–60**	**0–6 max.** or 240w max.	1
KM 254	**30–90**	**0–4 max.** or 240w max.	1
KM 255	**60–180**	**0–2 max.** or 240w max.	1

Diverse Applications of KEPCO Power Supplies

The inherent versatility and wide range characteristic of all Kepco equipment, assures optimized application for systems use. Low unit cost, achieved through modern manufacturing methods, makes possible economic multiple-unit Power Supply Systems. Such units have the advantage of being field tested equipment in contrast to the expensive, custom-engineered, unproven special Power Supply Systems.

Illustrated on this page are examples of Kepco Power Supply Systems that are assemblies of "off-the-shelf" Power Supplies — examples of low cost and reliable custom applications.

3



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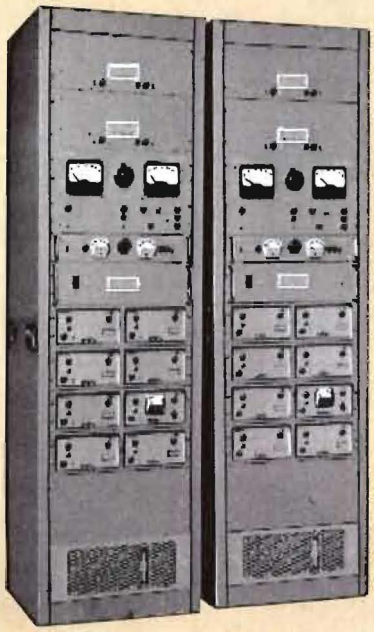

2

1. AUTOMATIC TRANSISTOR TESTER
2. TESTER POWER PACK IN MISSILE DETECTION PROGRAM
3. CHECK-OUT POWER SUPPLY FOR RADAR SIMULATOR
4. HIGH VOLTAGE, CONSTANT CURRENT SYSTEM USING COMPLIANCE EXTENSION FOR PLASMA RESEARCH
5. PROGRAMMING SUPPLY FOR MISSILE CHECK-OUT SYSTEM

4

5

KEPCO LITERATURE

This Catalog is one of a number of Kepco publications designed to assist you in the selection and application of Regulated Power Supplies. Kepco publications include: a 40 page reference handbook "Notes on Systems Applications of Regulated Power Supplies", reprints of current technical papers, and a bi-monthly newspaper, the **Kepco Power Supply News.**

1. NOTES ON SYSTEMS APPLICATIONS OF REGULATED POWER SUPPLIES

This handbook presents the basic theory of Regulated Power Supply design, including a detailed treatment of the Kepco comparison bridge regulator, systems interconnections, programming techniques, and applications data.

2. TECHNICAL PAPERS

Kepco's engineers are continuously engaged in a research effort to extend the dimensions of the Power Supply art. Their work is regularly published and reprints are available to interested Power Supply users.

3. KEPCO POWER SUPPLY NEWS

A technical journal published bi-monthly with articles and news stories reporting developments in the Power Supply field.

For a complimentary copy of the "Notes on Systems Applications of Regulated Power Supplies", reprints of technical papers, or a subscription to the Kepco Power Supply News, write:

Publications Manager, KEPCO, INC.,
131-38 Sanford Ave., Flushing 52, N.Y.

Copies of these Kepco publications are also available through Kepco's field representatives.

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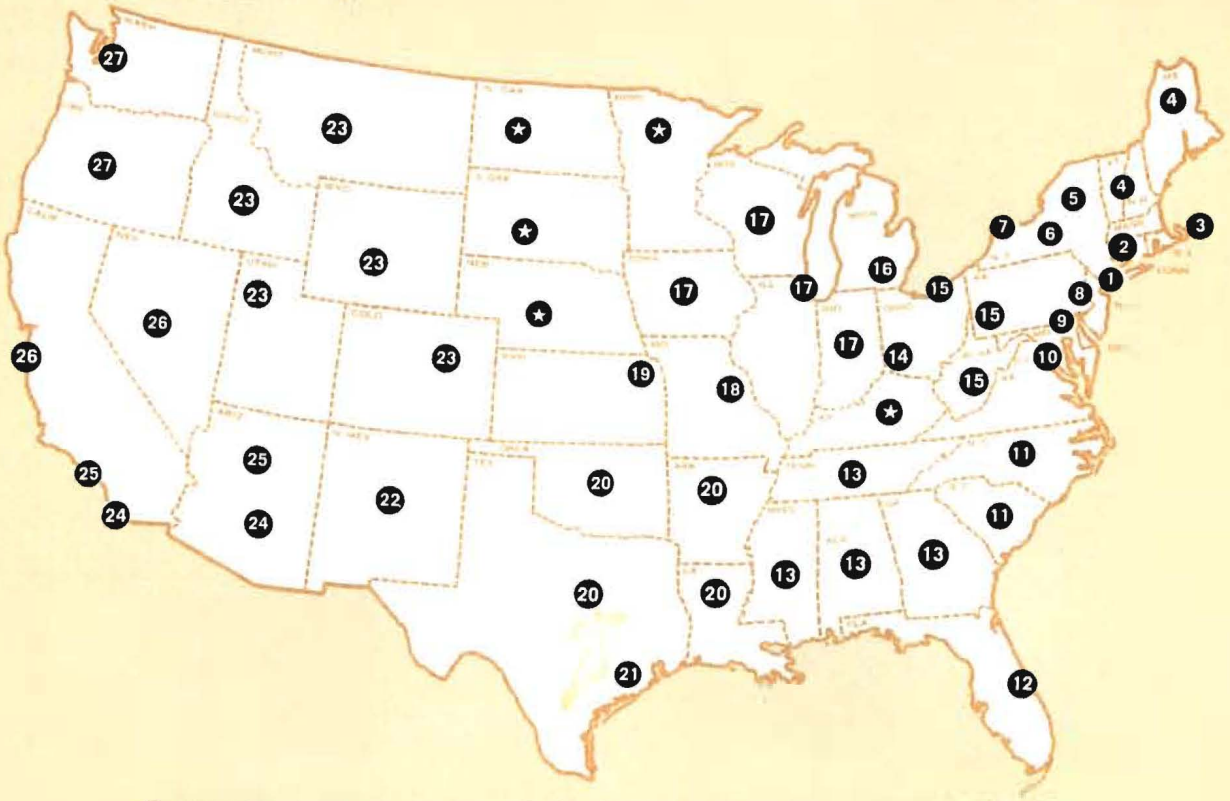

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