



ATE Models with digital meters

Series ATE power supplies are precision analog-controlled power supplies. They feature high gain and zeroable offsets to follow voltage signals or variable resistance controls precisely. An optional fast mode provides fast programming response into the mid audio range. The voltage and current channels are equally controllable with automatic crossover between modes.

For a series of full rack sized 1000 watt, keypad controlled ATE models with built-in GPIB control, see Series ATE-DMG, page 5.

FEATURES

- Linear programmable power in five sizes to 1000 watts.
- Low noise, high speed linear precision control.
- Voltage and current stabilization.
- 10 turn panel controls offer exceptional resolution.
- User-selectable capacitorless output for fast analog programming or quick recovery current-mode operation.



CE ATE are CE marked per the Low Voltage Directive (LVD), EN61010-1.

Units with a “DM” suffix include digital LCD panel meters that allow monitoring of both channels. The DM units are form, fit and functionally equivalent to the “M” suffix units with analog meters that have become obsolete.

Local control of both channels is by panel-mounted 10-turn rheostats. Panel mounted LEDs indicate voltage or current mode operation. This information is simultaneously delivered as an optically isolated TTL-compatible flag signal accessible through the rear connector.



Model ATE 15-50DM with digital meters
0-15 Volt, 0-50 Ampere model

The tabulation of the effective series resistance and inductance in voltage mode, and the effective shunt resistance and shunt capacitance in current mode, is done to allow a calculation of the output impedance versus frequency.

ATE MODEL TABLE

MODEL(4)	d-c OUTPUT RANGE		OUTPUT IMPEDANCE VOLTAGE MODE SERIES L(1)			OUTPUT IMPEDANCE CURRENT MODE SHUNT R(2) SHUNT C(3)		
	VOLTS	AMPS	SLOW	FAST	SLOW	FAST	SLOW	FAST
QUARTER-RACK (50 Watt)								
ATE 6-5DM	0-6	0-5	24μΩ	0.5μH	5μH	12kΩ	1,000μF	1μF
ATE 15-3DM	0-15	0-3	100μΩ	0.5μH	5μH	30kΩ	450μF	0.4μF
ATE 25-2DM	0-25	0-2	250μΩ	1μH	10μH	50kΩ	250μF	0.25μF
ATE 36-1.5DM	0-36	0-1.5	480μΩ	1μH	10μH	72kΩ	200μF	0.2μF
ATE 55-1DM	0-55	0-1	1.1mΩ	2μH	20μH	110kΩ	150μF	0.15μF
ATE 75-0.7DM	0-75	0-0.7	2.15mΩ	2μH	20μH	150kΩ	110μF	0.1μF
ATE 100-0.5DM	0-100	0-0.5	4mΩ	4μH	40μH	200kΩ	47μF	0.05μF
ATE 150-0.3DM	0-150	0-0.3	10mΩ	4μH	40μH	300kΩ	47μF	0.02μF
QUARTER-RACK (100 Watt)								
ATE 6-10DM	0-6	0-10	12μΩ	0.5μH	5μH	12kΩ	1,800μF	2μF
ATE 15-6DM	0-15	0-6	50μΩ	0.5μH	5μH	30kΩ	1,000μF	0.8μF
ATE 25-4DM	0-25	0-4	125μΩ	1μH	10μH	50kΩ	500μF	0.5μF
ATE 36-3DM	0-36	0-3	240μΩ	1μH	10μH	72kΩ	350μF	0.4μF
ATE 55-2DM	0-55	0-2	0.55mΩ	2μH	20μH	110kΩ	200μF	0.3μF
ATE 75-1.5DM	0-75	0-1.5	1mΩ	2μH	20μH	150kΩ	110μF	0.2μF
ATE 100-1DM	0-100	0-1	2mΩ	4μH	40μH	200kΩ	80μF	0.1μF
ATE 150-0.7DM	0-150	0-0.7	4mΩ	4μH	40μH	300kΩ	475μF	0.04μF
HALF-RACK (250 Watt)								
ATE 6-25DM	0-6	0-25	4.8μΩ	0.5μH	5μH	12kΩ	11,000μF	5μF
ATE 15-15DM	0-15	0-15	20μΩ	0.5μH	5μH	30kΩ	5,800μF	2μF
ATE 25-10DM	0-25	0-10	50μΩ	1μH	10μH	50kΩ	2,900μF	1.25μF
ATE 36-8DM	0-36	0-8	90μΩ	1μH	10μH	72kΩ	2,400μF	1μF
ATE 55-5DM	0-55	0-5	0.22mΩ	2μH	20μH	110kΩ	1,400μF	0.75μF
ATE 75-3DM	0-75	0-3	0.5mΩ	2μH	20μH	150kΩ	850μF	0.5μF
ATE 100-2.5DM	0-100	0-2.5	0.8mΩ	4μH	40μH	200kΩ	375μF	0.25μF
ATE 150-1.5DM	0-150	0-1.5	2mΩ	4μH	40μH	300kΩ	275μF	0.1μF
ATE 325-0.8DM	0-325	0-0.8	8.1mΩ	100μH	1mH	650kΩ	180μF	0.01μF
THREE-QUARTER-RACK (500 Watt)								
ATE 6-50DM	0-6	0-50	2.4μΩ	0.5μH	5μH	12kΩ	12,000μF	10μF
ATE 15-25DM	0-15	0-25	12μΩ	0.5μH	5μH	30kΩ	8,000μF	4μF
ATE 25-20DM	0-25	0-20	25μΩ	1μH	10μH	50kΩ	5,800μF	2.5μF
ATE 36-15DM	0-36	0-15	48μΩ	1μH	10μH	72kΩ	4,900μF	2μF
ATE 55-10DM	0-55	0-10	0.11mΩ	2μH	20μH	110kΩ	2,900μF	1.5μF
ATE 75-8DM	0-75	0-8	0.19mΩ	2μH	20μH	150kΩ	1,200μF	1μF
ATE 100-5DM	0-100	0-5	0.4mΩ	4μH	40μH	200kΩ	600μF	0.5μF
ATE 150-3.5DM	0-150	0-3.5	0.86mΩ	4μH	40μH	300kΩ	440μF	0.2μF
FULL-RACK (1000 Watt)								
ATE 6-100DM	0-6	0-100	1.2μΩ	0.5μH	5μH	12kΩ	22,000μF	15μF
ATE 15-50DM	0-15	0-50	6μΩ	0.5μH	5μH	30kΩ	12,000μF	6μF
ATE 25-40DM	0-25	0-40	12.5μΩ	1μH	10μH	50kΩ	11,000μF	4μF
ATE 36-30DM	0-36	0-30	24μΩ	1μH	10μH	72kΩ	9,500μF	3μF
ATE 55-20DM	0-55	0-20	55μΩ	2μH	20μH	110kΩ	5,200μF	2.25μF
ATE 75-15DM	0-75	0-15	0.1mΩ	2μH	20μH	150kΩ	3,400μF	1.5μF
ATE 100-10DM	0-100	0-10	0.2mΩ	4μH	40μH	200kΩ	1,200μF	0.75μF
ATE 150-7DM	0-150	0-7	0.42mΩ	4μH	40μH	300kΩ	1,050μF	0.3μF

(1) For determining dynamic impedance in voltage mode.

(2) Based on 0.5mA load effect in FAST mode.

(3) For determining dynamic impedance in current mode.

FEATURES

- User selectable fast or conventional modes of operation. Use fast-mode for rapid response to programmed instructions or for quick response in current mode to load changes.
- Voltage and current modes with full and equal control over the output in both modes.
- Multi-terminal user port allows the ATE to be configured by arranging the jumpers on a mating plug, PC-12.
- Full zeroing and full-scale calibration for both the voltage and current control channels.
- Programmable overvoltage crowbar. Can be manually set from the panel or programmed with a 0-10V analog signal. Optically isolated input-output to inter-connect multiple power supplies.
- Uncommitted amplifiers to manipulate arbitrary control signals into the required 0-10V needed to program ATE. Two provided. Can be used for scaling and summing.
- Digital control through SN-series IEEE-488 interfaces.
- The variation of the ATE's voltage and current offsets as a function of source, time and temperature are tabulated in the static specifications table. These may be used to calculate the output effect by the relationship:

$$\Delta E_o = \pm \Delta E_r (R_f / R_i) \pm \Delta E_{i_o} (1 + R_f / R_i) \pm \Delta I_{i_o} (R_i)$$
 where R_f is the feedback resistor, and R_i is the input resistor from the reference, E_r .
 The tabulated offsets, more particularly their change as a function of source, time and temperature, allow a user to calculate performance of the uncommitted amplifier(s) with user specified input and feedback components. The formula for this is given above.

ATE STATIC SPECIFICATIONS

INFLUENCE QUANTITY	OUTPUT EFFECTS VOLTAGE MODE		OUTPUT EFFECTS CURRENT MODE		OFFSETS	
	Typ.	Max.	Typ.	Max.	ΔE_{i_o}	ΔI_{i_o}
Source Voltage (min.-max.)	<0.0005% E_o max.	0.001% E_o max.	<0.002% I_o max.	0.005% I_o max.	<1μV	<1nA
Load (no load-full load)	<0.001% E_o max.	0.002% E_o max.	<0.5 mA(1)	1 mA(1)	—	—
Time (8-hour drift)	<0.005% E_o max.	0.01% E_o max.	<0.01% I_o max.	0.02% I_o max.	<20μV	<1nA
Temperature, per °C	<0.005% E_o max.	0.01% E_o max.	<0.01% I_o max.	0.02% I_o max.	<20μV	<2nA
Ripple and Noise (2)	rms: p-p:(3)	<0.1mV <1mV	0.3mV 3mV	<0.01% I_o max. <0.1% I_o max.	0.03% I_o max. 0.3% I_o max.	— —
Ripple and Noise (2)	rms: p-p:(3)	<1mV <10mV	3mV(4) 30mV(4)	<0.01% I_o max. <0.1% I_o max.	0.03% I_o max. 0.3% I_o max.	— —

(1) For $I_o > 50A$, load effect = 2mA typ., 5mA max. In slow mode, the output capacitor adds 0-6mA to current mode load effect.

(2) One terminal grounded so that common mode current does not flow through load or current-sense resistor.

(3) BW: 20Hz-10MHz.

(4) For high voltage ATE 325-0.8M the maximum output ripple and noise is 10mV rms and 50mV p-p.

TABLE 1

Source current, measured worst case, 125V a-c.

	AMPS
Size A	1.4
Size B	2.4
Size C	6.0
Size D	11.0
Size E	20.0

TABLE 2

ATE DYNAMIC SPECIFICATIONS

OUTPUT VOLTAGE RATING	PROGRAMMING BANDWIDTH (minimum)	PROGRAMMING TIME CONSTANT (maximum)
6V	16.0KHz	10µsec
15V	10.6KHz	15µsec
25V	8.0KHz	20µsec
36V	6.4KHz	25µsec
55V	4.0KHz	40µsec
75V	3.5KHz	45µsec
100V	2.5KHz	65µsec
150V	1.7KHz	95µsec
325V	937.0Hz	170µsec



Model ATE 75-0.7M Quarter Rack



Model ATE 55-5M Half Rack



Model ATE 25-20M Three Quarter Rack



Model ATE 55-20M Full Rack

ATE GENERAL SPECIFICATIONS

SPECIFICATION	RATING/DESCRIPTION	CONDITION	
INPUT			
a-c Voltage	95-113, 105-125, 190-226, 210-250V a-c	User selectable	
Current	See Table 1	Max load, 115V a-c	
Frequency	47-65Hz	Range	
OUTPUT			
d-c Output	Series pass	Transistor (1)	
Type of Stabilizer	Automatic crossover	Voltage/current	
Voltage	0 to 100% of rating	Adjustment range for temp 0-55°C	
Current	0 to 100% of rating		
	0 to 90% of rating	For temp 65°C	
Error Sense	0.5V per load wire(2)	Voltage allowance	
Isolation Voltage	500V d-c or peak	Output to ground	
Leakage Current	<5 microamperes	rms at 115V a-c	
Output to Ground	<50 microamperes	p-p at 115V a-c	
Series Connection	500V	Max voltage off ground	
Parallel Connection	Automatic	Use current mode limiting	
	Current sharing	Use master-slave connection	
	Redundancy type	External or-ing diodes	
OVP Type Control	Crowbar		
	Local or program or track		
	50 microseconds	Trigger time: normal	
	500 microseconds	Trigger time: delayed	
CONTROL			
Type	Voltage	Variable input, fixed gain	
	Current	Differential comparison	
Voltage	Local	10-turn precision rheostat	
	Remote Analog	0 to 10 Volts d-c	
	Remote Digital	Use SN or SNR interface	12-bit, listen-only
Current	Local	10-turn precision rheostat	
	Remote Analog	0 to 1 Volt d-c	
	Remote Digital	Use SN or SNR interface	12-bit, listen-only
Dynamics	Normal (slow)	dV/dt=I/C	See tabulated value of C in the model table
	Fast mode	See Table 2	Dynamic spec table
MECHANICAL			
Input Connection	Detachable IEC type 3-wire	¼, ½, ¾ rack size	
	Hard wired	Full size rack	
Output Connections	Rear barrier strip	¼ rack size	
	Rear binding posts	All models: I _o <30A	
	Rear compression studs	All models: I _o ≥30A	
User Port	50-terminal connector	All sizes	
Meters	1½-2½ meters	Analog, 3%	
	3 digit LCD	Digital (optional)	
Indicators	Three LEDs	Voltage/Current/OVP	
Mounting (in std 19" racks)	Use RA 37 rack adapter	¼, ½, ¾ rack size	
	Mounting "ears" supplied	Full rack size	
Cooling	Forced air	Exhaust to rear	
Dimensions (HxWxD) inches to the rear for connector protrusion	inches	5 ⁷ / ₃₂ x 4 ⁵ / ₃₂ x 17 ¹ / ₈	¼ rack size
	mm	132.6 x 105.6 x 435.0	
	inches	5 ⁷ / ₃₂ x 8 ¹ / ₃₂ x 17 ⁵ / ₆₄	½ rack size
	mm	132.6 x 211.9 x 435.4	
inches	5 ⁷ / ₃₂ x 12 ¹ / ₃₂ x 17 ⁵ / ₆₄	¾ rack size	
	mm	132.6 x 318.3 x 435.4	
inches	6 ³¹ / ₃₂ x 19 x 20 ¹ / ₆₄	Full rack size	
mm	177 x 482.6 x 504.8		
Finish: Fed Std 595	Dark & light gray, color 26440	Front panel, 2 tone	
Weight (packed for shipment)	18lb (8.2Kg)	¼ rack size (50W)	
	20lb (9.1Kg)	¼ rack size (100W)	
	38lb (17.3Kg)	½ rack size	
	57lb (25.9Kg)	¾ rack size	
	96lb (43.6Kg)	Full rack size	

(1) 325V model uses FET. (2) 0-6V models: 0.25V.

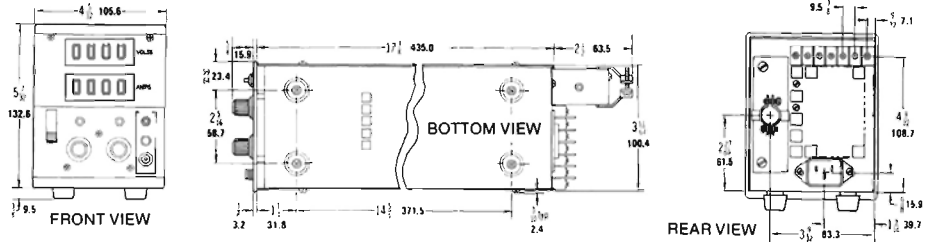
KEPCO, INC. • 131-38 Sanford Avenue • Flushing, NY 11352 USA • Tel: (718) 461-7000 • Fax: (718) 767-1102

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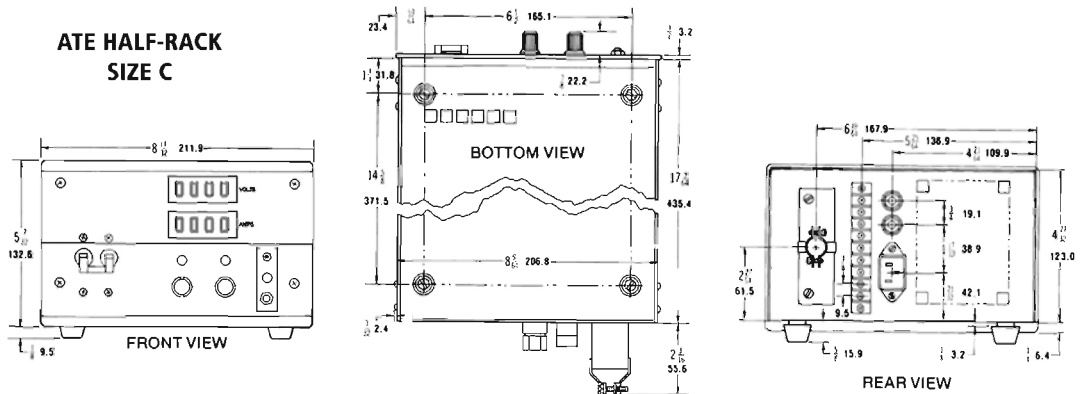
**OUTLINE
DIMENSIONAL
DRAWINGS**

Fractional dimensions
in light face type
are in inches,
dimensions in
bold face type
are in millimeters.
Tolerance: ± 1/64" (0.4)
between mounting holes
± 1/32" (0.8)
other dimensions

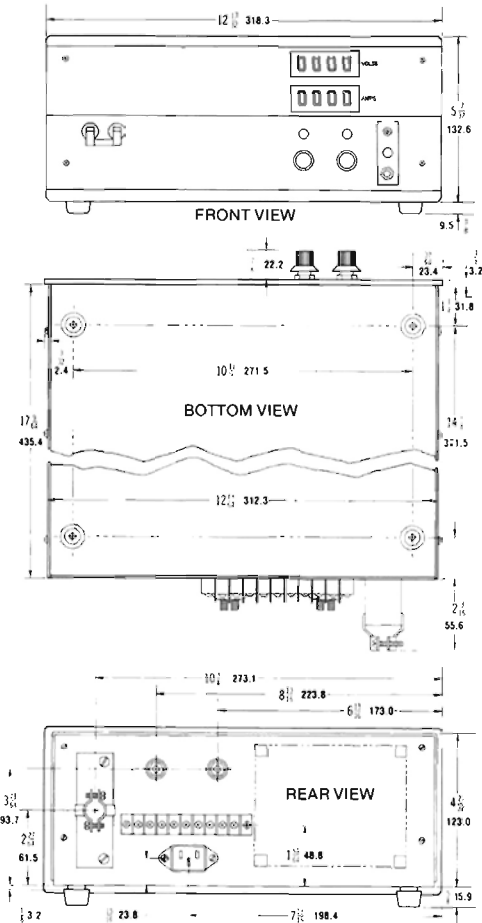
ATE QUARTER RACK / SIZE A & B



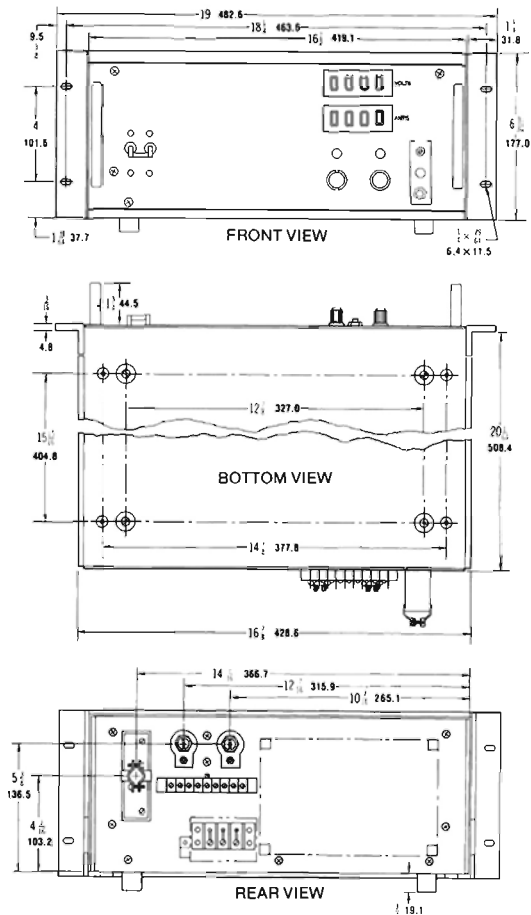
**ATE HALF-RACK
SIZE C**



ATE THREE-QUARTER-RACK / SIZE D



ATE FULL RACK / SIZE E



ATE 1/4 width, 1/2 width and 3/4 width power supplies can be rack mounted using RA 37.

SERIES ATE-DMG



ATE-DMG MODEL TABLE

MODEL	d-c OUTPUT RANGE		MAXIMUM OVERVOLTAGE SETTING	MAXIMUM OVERCURRENT SETTING	OUTPUT IMPEDANCE VOLTAGE MODE			OUTPUT IMPEDANCE CURRENT MODE		
	VOLTS	AMPS			SERIES R	SERIES L (1)	FAST	SHUNT R (2)	SLOW	SHUNT C (3)
SIZE "E" FULL-RACK (1000 Watt)										
ATE 6-100 DMG	0-6	0-100	6.59V	110A	1.2 $\mu\Omega$	0.5 μ H	5 μ H	12k Ω	22,000 μ F	15 μ F
ATE 15-50 DMG	0-15	0-50	16.5V	55A	6 $\mu\Omega$	0.5 μ H	5 μ H	30k Ω	12,000 μ F	6 μ F
ATE 25-40 DMG	0-25	0-40	27.5V	44A	12.5 $\mu\Omega$	1 μ H	10 μ H	50k Ω	11,000 μ F	4 μ F
ATE 36-30 DMG	0-36	0-30	38.3V	33A	24 $\mu\Omega$	1 μ H	10 μ H	72k Ω	9,500 μ F	3 μ F
ATE 55-20 DMG	0-55	0-20	66V	22A	55 $\mu\Omega$	2 μ H	20 μ H	110k Ω	5,200 μ F	2.25 μ F
ATE 75-15 DMG	0-75	0-15	82V	16.5A	0.1m Ω	2 μ H	20 μ H	150k Ω	3,400 μ F	1.5 μ F
ATE 100-10 DMG	0-100	0-10	110V	11A	0.2m Ω	4 μ H	40 μ H	200k Ω	1,200 μ F	0.75 μ F
ATE 150-7 DMG	0-150	0-7	185V	7.7A	0.42m Ω	4 μ H	40 μ H	300k Ω	1,050 μ F	0.3 μ F

- (1) For the calculation of dynamic impedance in voltage mode.
 (2) Based on 0.5mA load effect in FAST mode.
 (3) For the calculation of dynamic impedance in current mode.

Kepco's 1000 watt instrument-grade digital power supplies, series ATE-DMG, are linear low-noise power supplies designed to respond very quickly and precisely to voltage and current setting instructions delivered interactively by the GPIB (IEEE 488.2) or from a front panel keypad. When programmed from the bus, the ATE-DMG power supplies respond to the SCPI (Standard Commands for Programmable Instruments) common language for instruments used in an automatic test system.



ATE-DMG digital power supplies are locally controlled exclusively through a 24-key panel keypad. This offers full control over the voltage and current settings, as well as overvoltage, overcurrent and a time setting. The keypad allows the user to store as many as 40 combinations of these parameters and to loop back onto itself to produce repetitive programs. The setting values as well as the actual output delivered to the load are displayed in the two-line, 16 character back-lit LCD.

Remote control is via the built-in IEEE-488.2 interface that offers full talk-listen functionality on the bus. The settings and the actual voltage-current values are read back on the bus upon command. The output can be modulated by analog signals in the same fashion as Kepco's non-digital ATE-series power supplies. The ATE-DMG retains the ATE-series' signature high-speed control mode which enables rapid output programming and fast voltage recovery to load changes in current-control mode.

CE ATE-DMG are CE marked per the Low Voltage Directive (LVD), EN61010-1.



Rear View of Model ATE 6-100 DMG

The dynamic characteristics are tabulated in the Dynamic Specifications Table. Analog control of voltage and current is via a pair of remote signals (0-10V for voltage, 0-1V for current). Two uncommitted op-amps are provided internally to allow available control signals to be scaled and, if necessary, inverted to suit the circumstances.

ATE-DMG DYNAMIC SPECIFICATIONS

OUTPUT VOLTAGE RATING	PROGRAMMING BANDWIDTH (KHz)		PROGRAMMING TIME CONSTANT (μ sec)	
	Typical	minimum	Typical	maximum
6V	23.0	16.0	7.0	10.0
15V	20.0	10.6	8.0	15.0
25V	11.5	8.0	14.0	20.0
36V	8.0	6.4	20.0	25.0
55V	4.8	4.0	33.0	40.0
75V	4.3	3.5	37.0	45.0
100V	2.7	2.5	60.0	65.0
150V	1.8	1.7	88.0	95.0

ATE-DMG STATIC SPECIFICATIONS

INFLUENCE QUANTITY	OUTPUT EFFECTS VOLTAGE MODE		OUTPUT EFFECTS CURRENT MODE		OFFSETS	
	Typ.	Max.	Typ.	Max.	ΔE_{jo}	ΔI_{jo}
Source Voltage (min.-max.)	<0.0005% E_O max.	0.001% E_O max.	<0.002% I_O max.	0.005% I_O max.	<1 μ V	<1nA
Load (no load-full load)	<0.001% E_O max.	0.002% E_O max.	<0.5 mA(1)	1 mA(1)	—	—
Time (8-hour drift)	<0.005% E_O max.	0.01% E_O max.	<0.01% I_O max.	0.02% I_O max.	<20 μ V	<1nA
Temperature, per $^{\circ}$ C	<0.005% E_O max.	0.01% E_O max.	<0.01% I_O max.	0.02% I_O max.	<20 μ V	<2nA
Ripple and Noise (2)	rms: <0.1mV	0.3mV	<0.01% I_O max.	0.03% I_O max.	—	—
(Slow Mode)	p-p:(3) <1mV	3mV	<0.1% I_O max.	0.3% I_O max.	—	—
Ripple and Noise (2)	rms: <1mV	3mV	<0.01% I_O max.	0.03% I_O max.	—	—
(Fast Mode)	p-p:(3) <10mV	30mV	<0.1% I_O max.	0.3% I_O max.	—	—

(1) For $I_O > 50A$, load effect = 2mA typ., 5mA max. In slow mode, the output capacitor adds 0-6mA to current mode load effect.

(2) One terminal grounded so that common mode current does not flow through load or current-sense resistor.

(3) BW: 20Hz-10MHz.

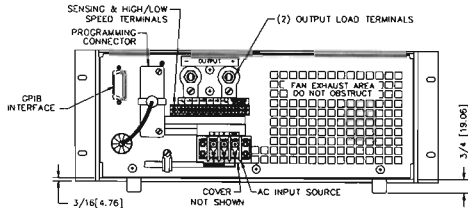
FEATURES

- Linear control for low noise: 100 microvolts typical in voltage mode; and high precision: 0.0005% source effect {regulation} in voltage mode.
- Voltage and current control with equivalent performance. A high speed mode allows fast-recovery current-controlled stabilization into a varying load.
- Overvoltage and overcurrent settings individually programmed by the front panel keypad or remotely by the bus with a programmable delay to allow for reactive-load transients.
- A manually set overvoltage crowbar monitors the output to protect sensitive loads. This setting is done only from the front panel and cannot be modified by the keypad or GPIB.
- Non-volatile storage of programmed sequences or active settings. The ATE-DMG contains 40 memory locations that store voltage, current, overvoltage, overcurrent, time (how long the parameters are in effect) and the next address in the sequence.
- Full talk-listen control from a GPIB (IEEE 488-2) using SCPI language.
- Master-slave series and parallel operation to provide increased capability.
- Local control: Front panel keypad entries are used for setting and adjusting the output. The keypad can be used to execute commands directly or to introduce a program to be run later or cycled. Calibration of the ATE-DMG is done from the keypad using a password-protected, menu-driven procedure.

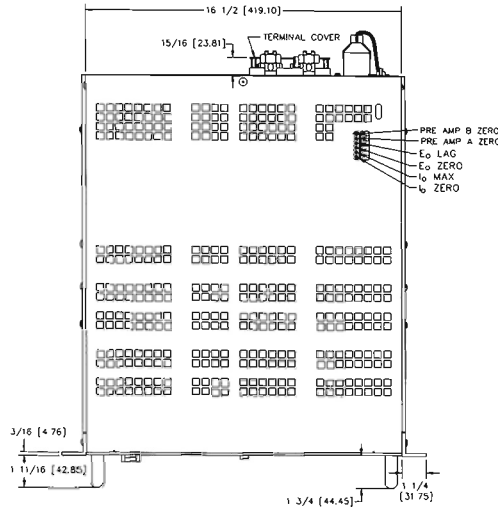


OUTLINE DIMENSIONAL DRAWINGS

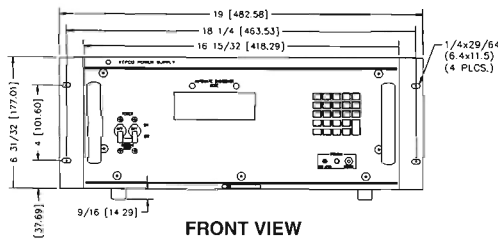
Fractional dimensions in light face type are in inches, dimensions in parentheses are in millimeters.
Tolerance: $\pm 1/64"$ (0.4) between mounting holes
 $\pm 1/32"$ (0.8) other dimensions



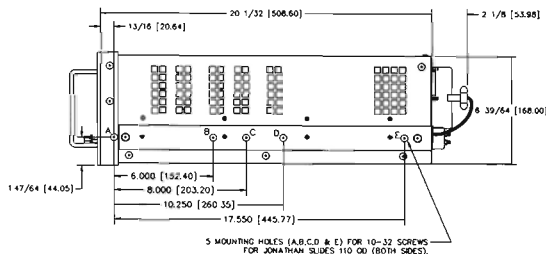
REAR VIEW



TOP VIEW



FRONT VIEW



SIDE VIEW

(1) 0-6V models: 0.25V.

ATE-DMG GENERAL SPECIFICATIONS

SPECIFICATION	RATING/DESCRIPTION	CONDITION	
INPUT			
a-c Voltage	95-113, 105-125, 190-226, 210-250V a-c	User selectable	
Current	20A a-c	Max load, 125V a-c	
Frequency	47-65Hz	Range	
OUTPUT			
d-c Output	Series pass	Transistor	
Voltage	0-100% of rated voltage	Usable range limited to approx. 1% to 100%. Max. current is factory set to 105% of rated output current.	
Current	0-100% of rated current		
Type of Stabilizer	Automatic crossover	Voltage/current	
Voltage	0 to 100% of rating	Adjustment range for temp 0-55°C	
Current	0 to 100% of rating	For temp 65°C	
Storage Temp. Range	(-)-40°C to 85°C		
Error Sense	0.5V per load wire(1)	Voltage allowance	
Isolation Voltage	500V d-c or peak	Output to ground	
Leakage Current	<5 microamperes	rms at 115V a-c	
Output to Ground	<50 microamperes	p-p at 115V a-c	
Series Connection	500V	Max voltage off ground	
Parallel Connection	Automatic	Use current mode limiting	
	Current sharing	Use master-slave connection	
	Redundancy type	External or-ing diodes	
OVP	Type	Crowbar	
	Control	Local or program or track	
	Trigger time	50 microseconds	Normal
	Trigger time	500 microseconds	Delayed
	Threshold	Min. 0.5 volts, or 2% E ₀ max.	Whichever is greater
Temp. coefficient	<0.02% of E ₀ max. per °C		
CONTROL			
Program. Accuracy	Voltage	<0.025% E ₀ max	
	Current	<0.25% I ₀ max	
Readback/display Accuracy	Voltage	<0.05% E ₀ max	
	Current	<0.275% I ₀ max	
Voltage Remote	12-bit digital		
Current Limit	10-turn precision rheostat		
Remote	12-bit digital		
Programming Time	1.2ms max	0-100%	
Data Entry	Local	24 keypads	Front panel
	Remote	GPIB	SCPI commands
Dynamics	Normal (slow)	dV/dt = I/C	See tabulated value of C in the model table
		See Table	Dynamic spec table
	Fast mode		
MECHANICAL			
Weight	96lb (43.6Kg)	Packed for shipment	
Dimensions	inches	6 ³¹ / ₃₂ x 19 x 20 ¹ / ₆₄	Full rack size
	mm	177 x 482.6 x 504.8	
a-c Source Connections	Terminal block		
d-c Output Connections	Rear binding post	I _o <30A	
	Rear compression studs	I _o ≥30A	
User Port	50-terminal connector		
Indicators	Three LEDs	Voltage/Current/OVP	
Remote Control Programming	One standard GPIB connector	Rear, SCPI & IEEE 488.2 commands	
Digital Display Front Panel	Voltage, current, mode status, menu, program, etc.	2 x 16 character alphanumeric LCD with LED backlight	
Mounting (in std 19" racks)	Mounting "ears" supplied		
Cooling	Forced air	High efficiency, single bearing fans, permanently lubricated with special low-noise metallic blades. Exhaust to rear.	
Finish: Fed Std 595	Dark & light gray, color 26440	Front panel, 2 tone	

KEPCO, INC.
131-38 Sanford Avenue, Flushing, NY 11352 USA
Tel: (718) 461-7000 • Fax: (718) 767-1102
Email: hq@kepcopower.com
www.kepcopower.com/atedg.htm