

# SERIES JQE



JQE Power Supplies

## JQE MODEL TABLE

MODEL	d-c OUTPUT RANGE		OUTPUT IMPEDANCE				MAX. INPUT AMPS at 125V a-c
	VOLTS	AMPS	VOLTAGE MODE		CURRENT MODE		
			SERIES R	SERIES L <sup>(1)</sup>	SHUNT R	SHUNT C <sup>(2)</sup>	
<b>QUARTER-RACK</b>							
JQE 6-10DM	0-6	0-10	30 $\mu\Omega$	1 $\mu$ H	50k $\Omega$	3k $\mu$ F	2.0
JQE 15-6DM	0-15	0-6	125 $\mu\Omega$	1 $\mu$ H	84k $\Omega$	1k $\mu$ F	2.1
JQE 25-4DM	0-25	0-4	300 $\mu\Omega$	1 $\mu$ H	125k $\Omega$	700 $\mu$ F	2.2
JQE 36-3DM	0-36	0-3	600 $\mu\Omega$	1 $\mu$ H	165k $\Omega$	400 $\mu$ F	2.2
JQE 55-2DM	0-55	0-2	1.4m $\Omega$	1 $\mu$ H	250k $\Omega$	220 $\mu$ F	2.3
JQE 75-1.5DM	0-75	0-1.5	2.5m $\Omega$	1 $\mu$ H	330k $\Omega$	160 $\mu$ F	2.3
JQE 100-1DM	0-100	0-1	5m $\Omega$	2 $\mu$ H	500k $\Omega$	110 $\mu$ F	2.1
<b>HALF-RACK</b>							
JQE 6-22DM	0-6	0-22	14 $\mu\Omega$	0.5 $\mu$ H	23k $\Omega$	5.8k $\mu$ F	4.2
JQE 6-45DM	0-6	0-45	7 $\mu\Omega$	0.5 $\mu$ H	11k $\Omega$	8k $\mu$ F	9.0
JQE 15-12DM	0-15	0-12	63 $\mu\Omega$	0.5 $\mu$ H	42k $\Omega$	2.7k $\mu$ F	4.0
JQE 15-25DM	0-15	0-25	30 $\mu\Omega$	0.5 $\mu$ H	20k $\Omega$	4.5k $\mu$ F	8.4
JQE 25-10DM	0-25	0-10	125 $\mu\Omega$	0.5 $\mu$ H	50k $\Omega$	2.4k $\mu$ F	5.3
JQE 25-20DM	0-25	0-20	63 $\mu\Omega$	0.5 $\mu$ H	25k $\Omega$	4.3k $\mu$ F	10.5
JQE 36-8DM	0-36	0-8	225 $\mu\Omega$	0.5 $\mu$ H	62.5k $\Omega$	1.4k $\mu$ F	6.0
JQE 36-15DM	0-36	0-15	120 $\mu\Omega$	0.5 $\mu$ H	33k $\Omega$	3.6k $\mu$ F	9.5
JQE 55-5DM	0-55	0-5	550 $\mu\Omega$	1 $\mu$ H	100k $\Omega$	850 $\mu$ F	5.0
JQE 55-10DM	0-55	0-10	275 $\mu\Omega$	1 $\mu$ H	50k $\Omega$	2.1k $\mu$ F	9.0
JQE 75-3DM	0-75	0-3	1.25m $\Omega$	1 $\mu$ H	165k $\Omega$	850 $\mu$ F	4.0
JQE 75-8DM	0-75	0-8	469 $\mu\Omega$	1 $\mu$ H	62.5k $\Omega$	1.2k $\mu$ F	10.0
JQE 100-2.5DM	0-100	0-2.5	2m $\Omega$	1 $\mu$ H	200k $\Omega$	600 $\mu$ F	4.5
JQE 100-5DM	0-100	0-5	1.25m $\Omega$	1 $\mu$ H	100k $\Omega$	600 $\mu$ F	8.4
JQE 150-1.5DM	0-150	0-1.5	5m $\Omega$	2 $\mu$ H	330k $\Omega$	440 $\mu$ F	4.6
JQE 150-3.5DM	0-150	0-3.5	2.2m $\Omega$	2 $\mu$ H	140k $\Omega$	440 $\mu$ F	8.7
<b>FULL-RACK</b>							
JQE 6-90DM	0-6	0-90	3.5 $\mu\Omega$	0.5 $\mu$ H	3.5k $\Omega$	17.6k $\mu$ F	15.7
JQE 15-50DM	0-15	0-50	15 $\mu\Omega$	0.5 $\mu$ H	10k $\Omega$	12k $\mu$ F	16.6
JQE 25-40DM	0-25	0-40	31 $\mu\Omega$	0.5 $\mu$ H	12.5k $\Omega$	14k $\mu$ F	21.0
JQE 36-30DM	0-36	0-30	60 $\mu\Omega$	0.5 $\mu$ H	16k $\Omega$	11k $\mu$ F	19.0
JQE 55-20DM	0-55	0-20	138 $\mu\Omega$	1 $\mu$ H	25k $\Omega$	7.3k $\mu$ F	18.0
JQE 75-15DM	0-75	0-15	250 $\mu\Omega$	1 $\mu$ H	33k $\Omega$	4.2k $\mu$ F	18.0
JQE 100-10DM	0-100	0-10	0.62m $\Omega$	1 $\mu$ H	50k $\Omega$	2.2k $\mu$ F	17.0
JQE 150-7DM	0-150	0-7	1.1m $\Omega$	2 $\mu$ H	72k $\Omega$	1k $\mu$ F	18.0

(1) For determining dynamic response in voltage mode.

(2) For determining dynamic response in current mode.

(3) JQE units now have front panel digital LCD meters (suffix "DM"). Analog meter units (suffix "M") have become obsolete and availability is limited to factory stock. The "DM" units are form, fit and function equivalent to the former "M" analog-meter versions.

Series JQE power supplies are systems-type voltage stabilizers with current limiting. They are available in a variety of ratings: 100 watts in a 1/4-rack package, 250-500 watts in a 1/2-rack package, and 1000 watts in a full-rack package.

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.

### FEATURES

- 10 turn voltage control for exceptional resolution.
- Analog output control by resistance: 1000 $\Omega$ /Volt or by a voltage delivering 0 - 1mA.
- Digital listen only control using SN-series digital interfaces.
- Current limited, front panel control (not programmable) 10%-105% I<sub>O</sub> max.
- JQE can control current with an external current-sense resistor.
- Digital Panel Meters (LCD with 3.5 digits) constantly show output voltage and current.
- Output voltage extremely stable: <0.0005% for AC input voltage variation, <0.005% for load variation, as low as 0.005%/°C for temperature variation and <0.01% for 8-hours of operation with "clean" (<0.2mVrms) ripple and noise.
- Optional Over-Voltage-Protection (OVP or VP) with coarse, fine and delay adjustments (protect load against incorrect setting, or unit malfunction)
- Optional Remote Output Current Control\* (option Y).
- Optional Analog Output Current Monitoring\* signal.
- Optional Isolated Analog Output Current Monitoring and Output Voltage Monitoring signals\*\*

\* Half rack and full rack models.

\*\* Half rack models.



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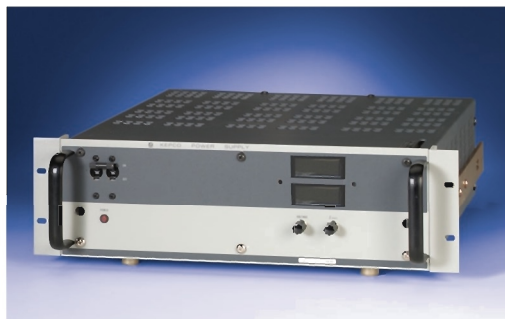
Email: [hq@kepcopower.com](mailto:hq@kepcopower.com) • [www.kepcopower.com/jqe.htm](http://www.kepcopower.com/jqe.htm)



Model JQE 25-4DM Quarter Rack



Model JQE 100-2.5DM Half Rack



Model JQE 25-40DM Full Rack

The JQE design group of quiet linear programmable DC power supplies is a classic design that has been enhanced by Kepco throughout its history and stands as a legacy of clean linear power in today's labs and installations where clean reliable DC power is required. It was these design groups that were selected for the LIGO Scientific Collaboration which led to obtaining a Nobel prize in physics in 2017.

JQE units are used in fault tolerant configurations in nuclear installations and is a staple for the DOD. At less than 3 millivolts of measured ripple, it is one of the quietest of DC power supplies available today.

JQE units are customizable for specific applications and modular versions are available for OEM rack-mounted assemblies or stand-alone applications. JQE is a rare gem in the DC environment.

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



## JQE GENERAL SPECIFICATIONS

SPECIFICATION	RATING/DESCRIPTION	CONDITION	
<b>INPUT</b>			
a-c Voltage	105-125, 210-250V a-c	User selectable	
Current	See model table	Max load, 115V a-c	
Frequency	47-65Hz	Range	
<b>OUTPUT</b>			
d-c Output	Series pass	Transistor	
Type of Stabilizer	Voltage stabilizer	Current limited	
Voltage	0 to 100% of rating	Adjustment range for temp 0-71°C	
Current	0 to 100% of rating		
Error Sense	0.5V per load wire	Static 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 steering diodes	
OVP	VP Option	Available on all models	
<b>CONTROL</b>			
Type	Voltage	Fixed input, variable gain	
	Current	Differential comparison	
Voltage	Local	10-turn precision rheostat	
	Remote Analog	1000 ohms per volt or 0 to 1mA control current	
	Remote Digital	Use SN/SNR interface	
		12 bit Listen-only	
Current	Local	Multiturn pot	
	Remote Analog	Not provided	
		See Series ATE models	
Dynamics	Normal (slow)	dV/dt = I/C	
	Fast mode	Not provided	
		See tabulated value of C in the model table	
		See Series ATE models	
<b>MECHANICAL</b>			
Input Connection	Detachable IEC type 3-wire	¼ and ½ rack size	
	Permanently wired	Full rack size	
Output Connections	Front panel binding posts	Models under 15A	
	Rear barrier strip	¼ and ½ size	
	Rear compression studs	Full rack size	
Meters	Two 1½" vertical 3%, analog	Front panel	
Indicators	Neon	Pilot	
Mounting (in std 19" racks)	Use RA 24 rack adapter	¼ and ½ size	
	Mounting "ears" provided	Full rack	
Cooling	Forced air	Exhaust to rear	
Dimensions (HxWxD)	inches	5 <sup>7</sup> / <sub>32</sub> x 4 <sup>9</sup> / <sub>32</sub> x 17 <sup>3</sup> / <sub>16</sub>	¼ rack size
	mm	132.6 x 105.6 x 436.6	
	inches	5 <sup>7</sup> / <sub>32</sub> x 8 <sup>1</sup> / <sub>32</sub> x 17 <sup>9</sup> / <sub>16</sub>	½ rack size
	mm	132.6 x 211.9 x 441.3	
	inches	5 <sup>7</sup> / <sub>32</sub> x 19 x 17 <sup>1</sup> / <sub>4</sub>	Full rack size
	mm	177 x 482.6 x 504.8	
Finish: Fed Std 595	Light gray, color 26440	Front panel, 2 tone	
Weight (packed for shipment)	18lb (8.2Kg)	¼ rack size	
	37lb (16.8Kg)	½ rack size (250W)	
	49lb (22.3Kg)	½ rack size (500W)	
	97lb (44.1Kg)	Full rack size	

## JQE STATIC SPECIFICATIONS

INFLUENCE QUANTITY	OUTPUT EFFECTS		AMPLIFIER OFFSETS <sup>(6)</sup>		REFERENCE 6.2V±5%
	VOLTAGE MODE	CURRENT MODE <sup>(1)</sup>	VOLTAGE $\Delta E_{IO}$	CURRENT $\Delta I_{IO}$	
Source 105-125/210V a-c	<0.0005%	<0.005%	<10 $\mu$ V	<2nA	0.0001%
Load No load-full load	<0.005% or 0.2mV <sup>(2)</sup>	<0.01%	<200 $\mu$ V	<5nA	—
Time 8-hours (drift)	<0.01% or 1mV <sup>(2)</sup>	>0.02%	<20 $\mu$ V	<2nA	0.005%
Temp. Per °C	<0.01% <sup>(3)</sup>	<0.02% <sup>(3)</sup>	<20 $\mu$ V	<5nA	0.005%
Ripple and Noise <sup>(4)</sup>	rms p-p <sup>(5)</sup>	<0.2mV <0.1% of $I_O$ max.	—	—	—

- (1) External current sensing, using the voltage amplifier. Effects are measured for a 1-Volt current sensing voltage drop.
- (2) Whichever is greater.
- (3) Typical temperature effect coefficients are: 0.005% per °C voltage mode; 0.01% per °C externally sensed current mode.
- (4) One terminal grounded or connected so that the common-mode current does not flow through the load or (in current-mode) through a sensing resistor.
- (5) 20Hz to 10MHz.
- (6) The output effect can be calculated by the relationship:  

$$\Delta E_O = \pm E_r(R_f/R_i) \pm \Delta E_{IO}(1+R_f/R_i) \pm I_{IO}(R_f)$$
 where  $R_f$  is the feedback resistor, and  $R_i$  is the input resistor from the reference,  $E_r$ .

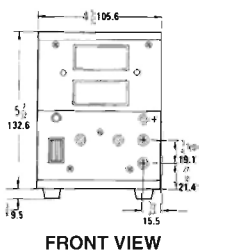
The tabulated offsets, more particularly their change as a function of source, time and temperature, allow a user to calculate performance of the uncommitted amplifier(s) with user specified input and feedback components. The formula for this is given in the static specifications table footnote.

## OUTLINE DIMENSIONAL DRAWINGS

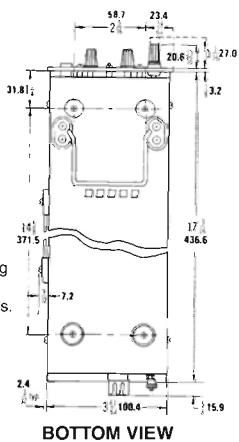
Fractional dimensions in light face type are in inches, dimensions in bold face type are in millimeters.  
 Tolerance: ± 1/64" (0.4) between mounting holes  
 ± 1/32" (0.8) other dimensions  
 Panels: Per Mil. Std. 189

The 1/4 rack and 1/2 rack size JQE power supplies can be rack mounted using RA 24.

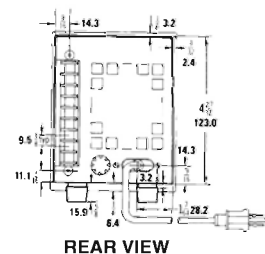
### JQE QUARTER-RACK MODELS



FRONT VIEW



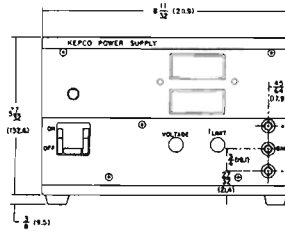
BOTTOM VIEW



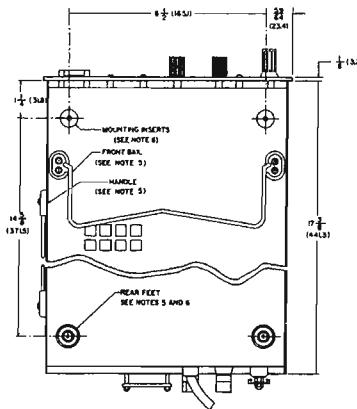
REAR VIEW

To rack mount, remove handle, feet and bail. Use (4) 8-18 x 5/8" thread cutting screws into plastic inserts.

### JQE HALF-RACK MODELS

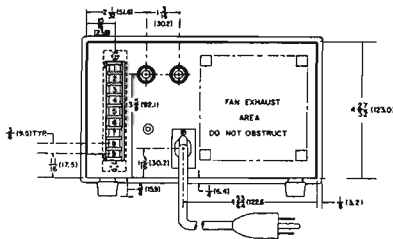


FRONT VIEW



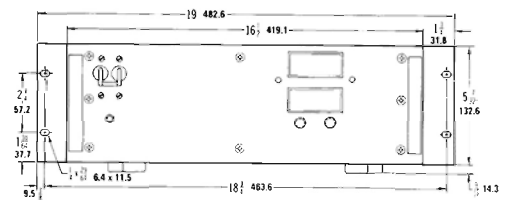
BOTTOM VIEW

To rack mount, remove handle, feet and bail. Use (4) 8-18 x 5/8" thread cutting screws into plastic inserts.

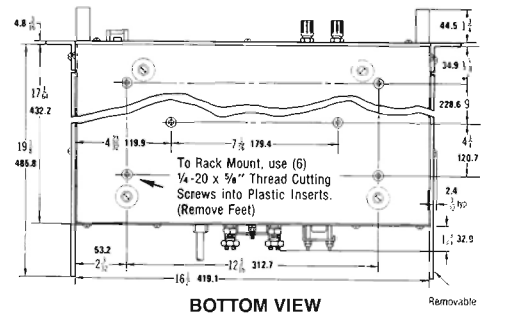


REAR VIEW

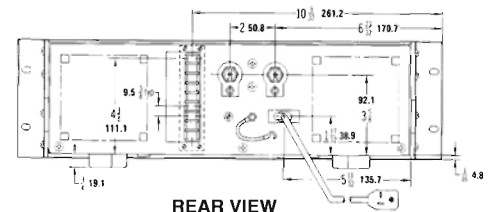
### JQE FULL-RACK MODELS



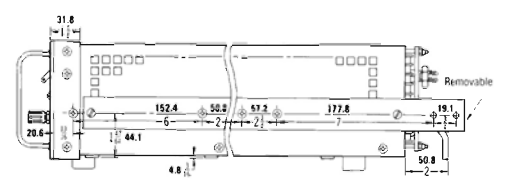
FRONT VIEW



BOTTOM VIEW



REAR VIEW



SIDE VIEW