

Ultra high speed bi-polar power supply

DOS Series



DC to 200kHz

Ultra fast response Four-quadrant bi-polar power supply

Output voltage : $\pm 20V$ to $\pm 60V$ Output power : 150W to 1200W

DOS series



www.matsusada.com



Ultra fast response four-quadrant bi-polar power supply



DOS series is four-quadrant bi-polar power supply with ultra high-speed response of DC to 200kHz(CV mode). It shall output various waveforms including sinusoidal, triangular, saw-tooth, rectangular and more with combination with a function generator. As DOS series amplifies any waveform, it is suitable for all sorts of simulation tests. Sourcing and sinking of electrical power with four-quadrant operation as well as 2 operation modes of CV and CC is possible. Compact size of only 3U or 4U height for such various function and ultra high-speed response power supply. In addition, the features of large meters with high visibility and superior operability make the DOS series versatile four quadrant bi-polar power supply which can be used a wide variety of occasion from in laboratory to production line.

Features

Ultra fast response

Suitable for transient response test because of its ultra high-speed response DC to 200kHz and high power, 1200W.

Four-quadrant action

DOS Series can be used both as a high speed response DC power supply and as an electronic load.

DC bias

10-turn potentiometer to be used as the output setting volume when used as the DC power supply and as the bias setting dial at outputting AC waveform is equipped.

Constant voltage (CV) / Constant current (CC)

A single switch selects between CV and CC modes.

Compact & light weight

For maximum compactness and light weight, DOS Series has been improved for small footprint and handiness.

DC output meter equipped

3-digit digital meter displays the DC value of the output voltage and current.

(The option of rms indication is available.)

Complete protective functions

Protective functions against over voltage/current and against output short-circuit are completely provided.

Master-slave

Master / Slave control(option) for more power requirement.

Applications

- Inductive load such as coil and transformer
- Various motor tests
- Evaluation test for solar panel related devices
- Ripple test of capacitors
- Voltage regulation tests for in-vehicle electrical component
- For surface treatment

Lineup

*Models with voltage, current or frequencies not listed here are also available. Please contact the nearest sales office.

Model	Output voltage	Output current	Output power	Frequency response kHz(-3dB)		Size inch(mm)	Weight
Model	V(rms)	A(rms)	W	CV mode	CC mode	WxHxD	kg(typ.)
DOS20-7.5	±20(14)	±7.5(5.3)	150	DC to 200	DC to 100	19×5.24×18.98 (483×133×482)	11
DOS20-15	±20(14)	±15(10.5)	300	DC to 200	DC to 100	19×5.24×21.65 (483×133×550)	17
DOS20-30	±20(14)	±30(21)	600	DC to 200	DC to 100	19×6.97×24.02 (483×177×610)	23
DOS20-60	±20(14)	±60(42)	1200	DC to 200	DC to 100	19×10.47×24.02 (483×266×610)	40
DOS25-6	±25(17.6)	±6(4.2)	150	DC to 200	DC to 100	19×5.24×18.98 (483×133×482)	11
DOS25-12	±25(17.6)	±12(8.6)	300	DC to 200	DC to 100	19×5.24×21.65 (483×133×550)	17
DOS25-24	±25(17.6)	±24(17.1)	600	DC to 200	DC to 100	19×6.97×24.02 (483×177×610)	23
DOS25-48	±25(17.6)	±48(34)	1200	DC to 200	DC to 100	19×10.47×24.02 (483×266×610)	40
DOS45-3.3	±45(32)	±3.3(2.4)	150	DC to 200	DC to 100	19×5.24×18.98 (483×133×482)	12
DOS45-6.6	±45(32)	±6.6(4.7)	300	DC to 200	DC to 100	19×5.24×21.65 (483×133×550)	17
DOS45-13.3	±45(32)	±13.3(9.5)	600	DC to 200	DC to 100	19×6.97×24.02 (483×177×610)	23
DOS45-16	±45(32)	±16(11.3)	720	DC to 200	DC to 100	19×6.97×24.02 (483×177×610)	23
DOS45-26.7	±45(32)	±26.7(18.9)	1200	DC to 200	DC to 100	19×10.47×24.02 (483×266×610)	40
DOS60-2.5	±60(42)	±2.5(1.75)	150	DC to 200	DC to 100	19×5.24×18.98 (483×133×482)	12
DOS60-5	±60(42)	±5(3.5)	300	DC to 200	DC to 100	19×5.24×21.65 (483×133×550)	17
DOS60-10	±60(42)	±10(7)	600	DC to 200	DC to 100	19×6.97×24.02 (483×177×610)	23
DOS60-20	±60(42)	±20(14)	1200	DC to 200	DC to 100	19×10.47×24.02 (483×266×610)	40

Specifications

Input voltage Input current

Model	Input voltage ±10% · AC50/60Hz	Input current	Recommended breaker	
150W	115V	4A	115VAC/15A	
300W	1130	7A	115VAC/15A	
600W	0001/	7A	230VAC/15A	
1.2kW	230V	13A	230VAC/20A	

External control voltage(Vcon-in)

–10V to +10V (Input impedance is 10 $k\Omega$ or more.)

Output indication (DC value indication)

Output voltage 3- digit digital meter ±999 Output current 3-digit digital meter ±999

DC bias

10-turn potentiometer enables setting

between -100% and +100%.

Ripple Less than 0.02%rms Stability 0.016 % /Hr typ. Setting ±0.5 % F.S accuracy

Distortion factor

Regulation

Temperature coefficient

Output monitor

Protective function

Operating temp. Storage temp. Humidity **Accessories**

CV: 0.05 % CC: 0.5 %

Line: 0.05% (for $\pm 10\%$ input change) Load: 0.05% (for 0 to 100\% load change)

200ppm/°C

Output voltage -10V to +10V±1%F.S Output current -10V to +10V±1%F.S

Output impedance $1k\Omega$

Protection against output short-circuit, overvoltage,

Blackout protection(can be canceled with -LN option)

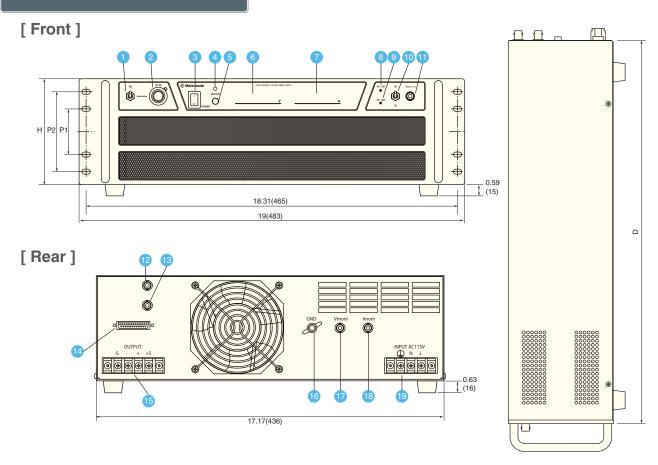
0°C to 40°C -40°C to +85°C

20% to 80%RH(no condensation)

Input cable ... 2.5 m(1) (3-pin connector for 115V model Flying lead for 230V model)

Instruction manual(1)

150W, 300W, 600W output models



- Bias ON/OFF switch
- 2 Bias setting dial
- 3 POWER ON/OFF switch
- 4 OUTPUT indication LED
- 5 OUTPUT ON/OFF switch
- Over the second of the seco
- Current meter
- Output voltage limiter(option)
- Output current limiter(option)
- 0 CV/CC select switch

- Vcon-in terminal
- 12 Door switch(option)
- 13 REMOTE switch ON/OFF (option)
- Connector for Master-slave
- 15 OUTPUT terminal
- 16 GROUND internal
- Voltage monitor terminal
- (18) Current monitor terminal
- 19 AC input terminal

	Model	Н	P1	P2	
	150W-300W	5.24 (133)	2.25 (57.15)	3.94 (100)	
	600W (up to 60V)	6.97 (177)	4 (101.6)	5.91 (150)	
ĺ	+0 DO(I II (D)				

*See P.3 for depth(D).

Use of BIAS

When the "BIAS ON/OFF switch" is flipped to ON, bias output can be changed with the "BIAS setting dial." Bias voltage can be set when CV control mode, and Bias current can be set when CC control mode.

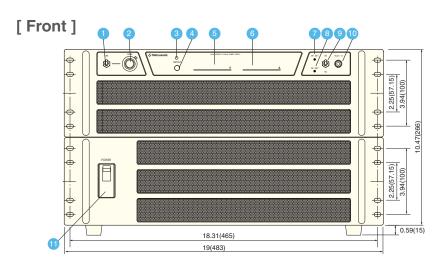
	In CV mode	In CC mode
Scale	Output voltage	Output current
000(ccw)	Max(-)	Max(-)
500	0V	0A
1000(cw)	Max(+)	Max(+)

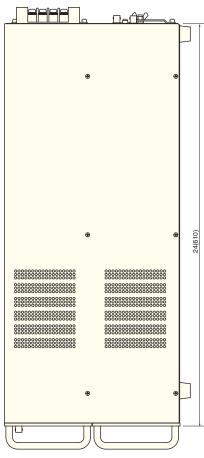
CV/CC setting selection

Inputting voltage via Vcon-in enables the control of output voltage V when CV control mode and output current A when CC control mode.

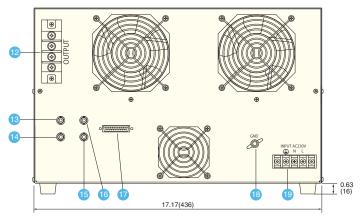
	In CV mode	In CC mode
Vcon	Output voltage	Output current
-10V	Max(-)	Max(-)
0V	0V	0A
+10V	Max(+)	Max(+)

1200W output models





[Rear]



- 1 Bias ON/OFF switch
- 2 Bias setting dial
- 3 OUTPUT indication LED
- 4 OUTPUT ON/OFF switch
- 5 Voltage meter
- 6 Current meter
- Output voltage limiter(option)
- Output current limiter(option)
- 9 CV/CC select switch
- 10 Vcon-in terminal
- 11 POWER ON/OFF switch
- 12 OUTPUT terminal
- 13 Voltage monitor terminal
- 14 Current monitor terminal
- 15 REMOTE switch ON/OFF (option)
- 16 Door switch(option)
- Tonnector for Master-slave
- 18 GROUND internal
- 19 AC input terminal

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	In CV mode	In CC mode
Vcon	Output voltage	Output current
-10V	Max(-)	Max(-)
0V	0V	0A
+10V	Max(+)	Max(+)

Protective functions

Over voltage protection (O.V.P)

DOS series is equipped with over voltage protection, which protects load by limiting voltage up to 120 % of the rated output voltage even at abnormal conditions.

Over current protection (O.C.P)

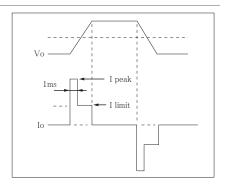
DOS series is also equipped with over current protection, which protects power supplies and load by limiting current up to 120 % of the rated output current.

High speed over current protection

DOS series is provided with 2 types of over current protections, high speed over current protection to limit the pulse current, and standard over current protection to limit the static current.

The standard over current protection limits the static current, responding at around 1m sec.

Additional high speed over current protection can limit pulse current of square waveforms or from capacitor at approximately 2 times more current of rating.



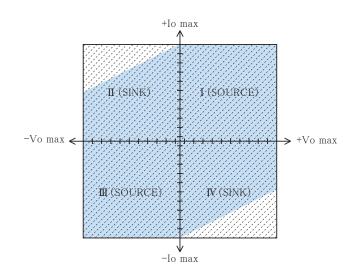
Output range

DOS series is a bi-polar power supply which can perform four-quadrant operation. They can supply (source) and absorb (sink) current in the field of the drawing on the right.

Vo max: rated output voltage lo max: rated output current

Range of AC operation (with 50 Hz or more frequency and 50 % of duty and without any DC bias)

Range of DC operation



Options

...Door switch

-LS

...Remote switch

-LN

...No protection against blackout

...Floating ground (Resistant to pressure 200 Vdc)

-LMs()

... Master-slave control*

-LPr

...rms display

...Output voltage limit

Variable from 0 to approx. 110% with front panel dial

-1.11

.Output current limit

Variable from 0 to approx. 110% with front panel dial

When ordering, suffix the following option mark to the model number. <e.g> DOS25-48-LDFIIMsmNPrSVI (Alphabetical order)

*() shall be "m" for Master unit, or "s" for Slave unit.

-LMsm for Master, LMss for Slave.

Order required quantity for each unit. Master unit or slave unit are to be set at the factory, and if master to slave change is required after shipment, adjustment at the factory will be needed. Slave unit will not operate by itself. Maximum 3 units including master unit can be connected.

Characteristic of amplifier

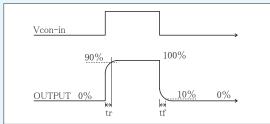
Rise time

(Stepping time): The response time is sometimes described by the rise time (as shown in the drawing on the right).

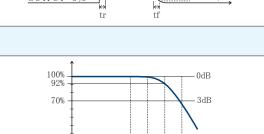
The rise time of an amplifier at a response speed of (= frequency Fall time tf is the same as tr.

Frequency bandwidth

: at 200 kHz or lower, tr = tf = around 1.8 µs : at 100 kHz or lower, tr = tf = around 3.5 μ s



Response speed When accurate output waveforms are required, select a amplifier with a frequency bandwidth higher enough than the operating frequency. In case of using sine waves, 3 to 5 times more frequency bandwidth is required, and around 10-times more in case of square waves in general. Inadequate bandwidth causes not only decrease in the output amplitude but much difference between the input and output phases. Therefore operating the product while monitoring the actual output waveforms is recommended.



0.01fc 0.1fc 0.5fc fc

0

Capacitative load

Capacitative load may cause oscillation.

In such cases, placed a power resistance in series with the output.

Be careful that the frequency bandwidth is limited depending on the resistance and capacitance placed in series when capacitative load.

Inductive load

Some inductance of inductive load may cause resonance in CC mode.

In such cases, connect a C-R series circuit between output terminals to prevent resonance.



USA/canada: +1-888-652-8651other countries: +81-6-6150-5089

Customer Inquiry Sheet (DOS series)

Please copy this page and above fax number after filling out form below.

I would like			
A quotation	☐ An explanation of product	☐ A demonststration	☐ To purchase
Other ()	
■ Give us your requi	rement / comment		
			J
■ Please fill in below			
Address:			
Company:			
Dept.:		Title:	
Name:			
Tel:		Fax:	
E-mail:			

We warrant that products contained in this catalog (hereinafter, the "Products") are free from defects in material and workmanship under normal use for a period of one (1) year from the date of shipment thereof. However, the warranty period for X-ray detectors and X-ray source shall be either one (1) year from the date of shipment or 1,000 hours, whichever shorter. The above warranty shall not apply to any Product which, at our sole judgment, has been:i)Repaired or altered by persons unauthorized by us; or ii)Connected, installed, adjusted or used otherwise than in accordance with the instructions furnished by us (including being used in an inappropriate installation environment, such as in corrosive gas, high temperature and humidity). We are not liable for any loss, damage or failure of the Products after the shipment thereof caused by external factors such as disasters. If any Product is showed to be defective as satisfactory to us, we, at our sole discretion, repair or replace such defective Products at no cost to the purchaser. We assume no liability to the purchaser or any third party for special, incidental, consequential, or other damages resulting from a breach of the foregoing warranty. This warranty excludes any and all other warranties not set forth herein, express or implied, including without limitation the implied warranties of merchantability or fitness for a particular purpose. The Products are not designed and produced for such applications as requiring extremely high reliability and safety, or involving human lives (such as nuclear power, aerospace, social infrastructure facility, medical equipment, etc.). The use under such environment is not covered by this warranty and may require additional design and manufac-



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