

NEW

Suitable for the testing of coils and DC motors

Four-quadrant fast response bi-polar power supply

OUTPUT

$\pm 18\text{ V}$ to $\pm 120\text{ V}$ max.

270 W to 640 W

DC to 10 kHz or 15 kHz

DOL
series

Compact and light weight

High-speed response

Both DC and AC output



DOL series



DOL series is **four-quadrant bi-polar power supply** which source and sink electric power.

They can be used in 2 modes of a constant voltage (CV) or a constant current (CC). The weight is half of the conventional units by adopting the aluminum frame.

In addition, DOL is particular about usability (for instance, “simple operation” and “quiet movement”) thoroughly and is designed.

Applications

- Inductive loads such as coil and transformer
- Testing of various DC motors
- Evaluation test for in-vehicle electrical component
- Simulation of various batteries
- Evaluation test for solar panel related devices
- Capacitive loads such as electric double-layer capacitor
- Surface treatment etc.

This product is not designed for charge and discharge of battery.
Please contact nearby sales if unit is used for charge and discharge application.

DOL series

Features

Four-quadrant action

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

High-speed response

DOL Series is suitable for transient response test with enough output power and fast frequency response.

DC output meter

3-digit digital meter displays the DC value of the output voltage and current. (The option of rms indication is available.)

Silent operation

Operating noise became quiet by having employed the silent fan, and also it became easy-to-use.

Useful protective function

Protective function against over voltage / current and protective measures against output short-circuit are completely provided.

Constant voltage (CV) / Constant current (CC)

A single switch selects between CV and CC modes.

Compact & light weight

For maximum compactness and light weight, DOL Series has been improved for small footprint and easy carry.

DC bias

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

Wide lineup

Select a model fitting for your applications from the lineup of various output voltage and current.

Lineup

Model	Output voltage V(rms)	Output current A(rms)	Output power W	Frequency response Hz(-3 dB)		Weight kg(approx.)
				at CV mode	at CC mode	
DOL18-15	±18 (12.6)	±15 (10.5)	270	DC to 15k	DC to 10k	17
DOL40-8	±40 (28)	±8 (5.6)	320	DC to 15k	DC to 10k	17
DOL40-16	±40 (28)	±16 (11.2)	640	DC to 10k	DC to 10k	23
DOL60-5	±60 (42)	±5 (3.5)	300	DC to 15k	DC to 10k	17
DOL120-3	±120 (84)	±3 (2.1)	360	DC to 15k	DC to 10k	18

Specifications

Input voltage Input current

Model	Input voltage ±10% · AC50/60 Hz	Input current	Recommended breaker
270 W to 360 W	100 to 120 V single phase	8 A	115 VAC / 15 A
640 W	200 to 240 V single phase	8 A	230 VAC / 15 A

External control voltage(Vcon-in) -10 V to +10 V
(Input impedance is 10 kΩ 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 accuracy ±0.5% F.S

Distortion factor CV : 0.05% CC : 0.5%
(when connecting to resistive load and
doing the rated output)

Regulation Line : 0.05% (for ±10% input change)
Load : 0.05% (for 10 to 100% load change)

Temperature coefficient 0.02% / °C

Output monitor Output voltage : -10 V to +10 V ±1% F.S
Output current : -10 V to +10 V ±1% F.S
Output impedance 1kΩ

Protections Protection against output short-circuit,
overvoltage, overcurrent
Blackout protection (can be canceled with -LN option)
Interlock

Other functions Remote switch (Output ON / OFF)

Output	Relay	Open collector
ON	SHORT	$V_{CE} \leq 0.4 \text{ V}$
OFF	OPEN	$V_{CE} \geq 2 \text{ V}$

Sink Current 1 mA

Operating temp. 0°C to +40°C

Storage temp. -20°C to +70°C

Humidity 20% to 80% RH (no condensation)

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

Protections

Over voltage protection (O.V.P)

DOL series is equipped with over voltage protection, which protects load by limiting voltage up to approx. 110% of the rated output voltage even at abnormal conditions.

*-LVc option(output voltage limiter) enable to control the output in 0 to approx. 110% range.

Over current protection (O.C.P)

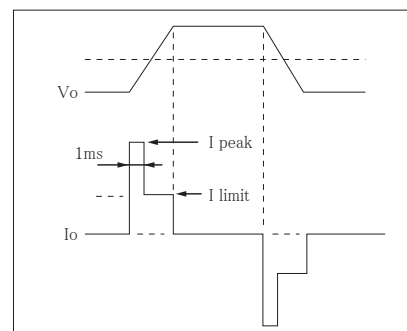
DOL series is also equipped with over current protection, which protects power supplies and load by limiting current up to approx. 110% of the rated output current.

*-LCc option(output current limiter) enable to control the output in 0 to approx. 110% range.

High speed over current protection

DOL 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 1ms. Additional high speed over current protection can limit pulse current of square waveforms or from capacitor at approx. 2 times more current of rating.



Output range

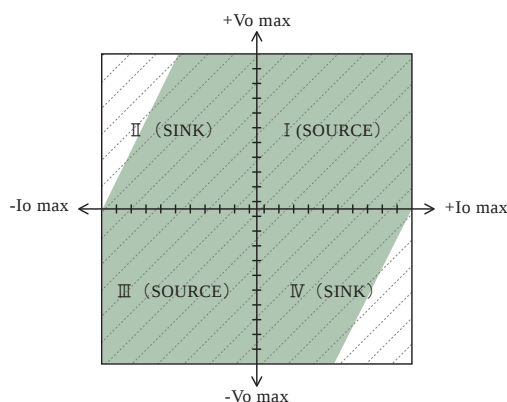
DOL series is a bi-polar power supply which can perform four-quadrant operation. They can supply (source) and absorb (sink) current in the field of the drawing on the right.

Vo max : rated output voltage

Io max : rated output current

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

 DC operation range



Options

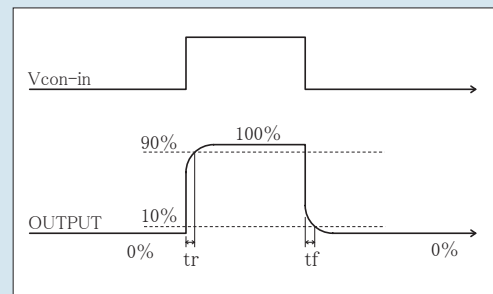
- LN** ... No protection against blackout
- LPr** ... rms display
- LVc** ... Output voltage limit
Variable from 0 to approx. 110% with front panel dial
- LCc** ... Output current limit
Variable from 0 to approx. 110% with front panel dial
- L (220 V)** ... 200 VAC to 240 VAC $\pm 10\%$ single phase,
50 / 60 Hz input (270 to 360 W models only)

When ordering, suffix the following option mark to the model number.
 <e.g> DOL18-15-LCcNPrVc (220 V) (Alphabetical and input voltage order)

Characteristic of amplifier

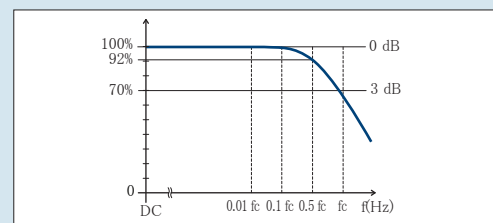
Rise time

(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 bandwidth) F_c (Hz) is generally acquired by " $t_r \approx 0.35 / f_c$."
 Fall time t_f is the same as t_r .
 Frequency bandwidth
 : at 15 kHz or lower, $t_r = t_f =$ around 23 μs
 : at 10 kHz or lower, $t_r = t_f =$ around 35 μs



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 10times 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.



Capacitive load

Capacitive 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 capacitive load.

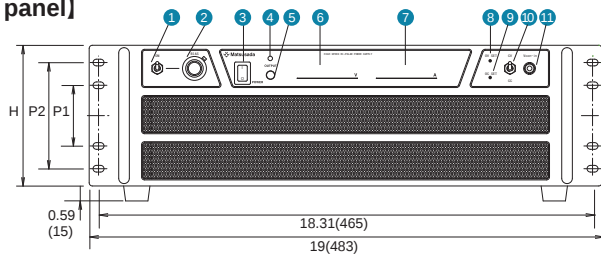
Inductive load

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.

Functions / Dimensions inch(mm)

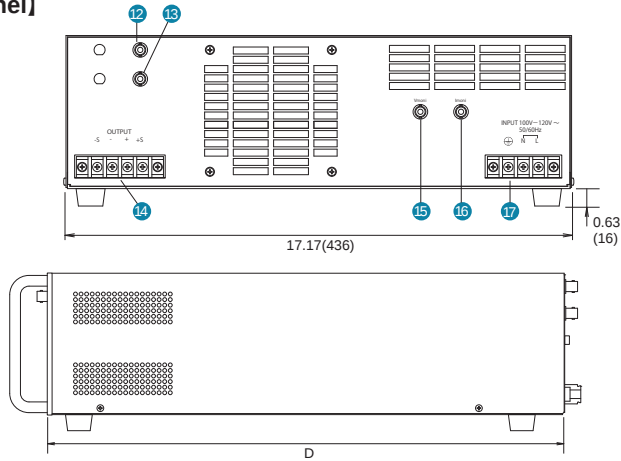
[270 W ~ 360 W]

[Front panel]



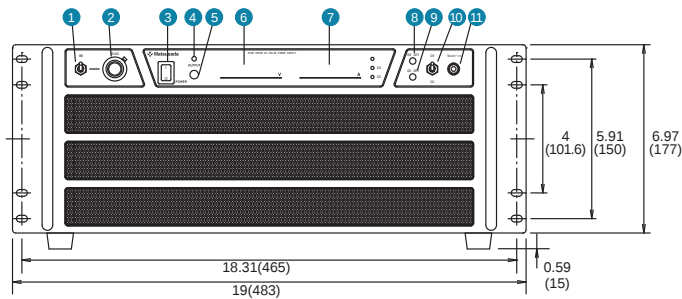
Model	H	P1	P2	D
270 W to 360 W	5.24 (133)	2.25 (57.15)	3.94 (100)	21.65 (550)
640 W	6.97 (177)	4 (101.6)	5.91 (150)	24.02 (610)

[Rear panel]

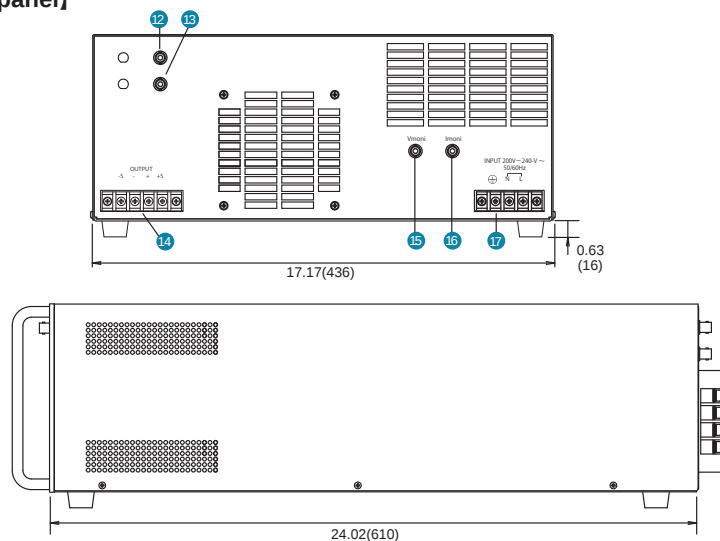


[640 W]

[Front panel]



[Rear panel]



- 1 Bias ON / OFF switch
- 2 Bias setting dial
- 3 POWER ON / OFF switch
- 4 OUTPUT indication LED
- 5 OUTPUT ON / OFF switch
- 6 Voltage meter
- 7 Current meter
- 8 Output voltage limiter (option)
- 9 Output current limiter (option)
- 10 CV / CC select switch
- 11 Vcon-in terminal
- 12 Interlock
- 13 REMOTE switch ON / OFF
- 14 OUTPUT terminal
- 15 Output Voltage monitor terminal
- 16 Output Current monitor terminal
- 17 AC input terminal

CV/CC setting selection

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

Vcon	In CV mode	In CC mode
	Output voltage	Output current
-10 V	-Rating	-Rating
0 V	0 V	0 A
+10 V	+Rating	+Rating

Use of BIAS

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

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

Introduction of other Power Supplies

We accept the consultation about the delivery date.

Ultra slim palm-sized DC power supply



R4K-36 series

Output voltage	0 to 40 V
Output current	0 to 4 A
Output power	0.2 W to 36 W

- The models which set and output the current with the 0.1 mA increment are available.
- High resolution D/A, A/D converter integrated.
- USB interface is also available.

High-capacity DC power supply



REM series

Output voltage	0 to 1000 V
Output current	0 to 6000 A
Output power	20 kW to 120 kW

- Extendable up to 360 kW, the device is suitable for cases requiring larger output.
- The device that is also dividable for use is efficient for various different applications.

Desk-top size high power DC power supply



RK series

Output voltage	0 to 800 V
Output current	0 to 180 A
Output power	400 W, 800 W, 1.2 kW

- Low noise, multiple functions, and digital communication.
- PFC circuit and universal input would not select the place of operation.
- The sequence function enables the user to control the supply without a laptop option.

Ultra low profile / Rack-mount HV power supply



AU series

Output voltage	1 kV to 120 kV
Output current	0.25 mA to 2.2 A
Output power	30 W to 2.2 kW

- With wide lineup and various options, the best suitable model for your application can be selected.
- Various remote control and monitor functions contributes to the extensibility for your system.
- Double and triple protections are added for even safer operation in this ultra-low profile design.

Low profile high power DC power supply



LXI **CE**
(available by option) (except some models)

REK series

Output voltage	0 to 850 V
Output current	0 to 1200 A
Output power	770 W to 15 kW

- 2U / 3U compact unit with high power output 5.5 kW / 15 kW.
- Various operations by connecting multiple power supplies, such as master/slave, is possible.
- Operability and safety are improved with new features.

High power High Voltage Power Supply



AKP series

Output voltage	1 kV to 120 kV
Output current	0.1 A to 13 A
Output power	12 kW, 13 kW

- The single unit can output power as high as 13 kW and Master / slave function further enables extension at maximum 52 kW.
- Compatible with digital control by means of various interfaces including LAN, USB, RS-232C etc.
- The full protective circuits, such as output short-circuit and protection from arc discharge, are included as the standard functions.



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

Customer Inquiry Sheet (DOL series)

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

■ I would like

- ☐ A quotation ☐ An explanation of product ☐ A demonstration ☐ To purchase
- ☐ Other ()

■ Give us your requirement / comment

■ Please fill in below.

Address:	
Company:	
Dept.:	Title:
Name:	
Tel:	Fax:
E-mail:	

Manufacturer warranty

We warrant the specification, unless otherwise specified, at max. rated output after warm up, and scope of application is between 10% and 100% of max. rated output. 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. We will not inspect, adjust or repair any of our power supply products in the field or at any customer site. If you suspect that there has been a power supply failure in the field, please inspect your whole unit by yourself in an effort to determine that the problem is, in fact, arising out of our power supply products. If it is found that the problem is arising out of such power supply product after inspection, please contact your local sales office for additional troubleshooting. A "Return Merchandise Authorization" is required in case the power supply must be sent back to the factory in Japan for inspection and repair. 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 manufacturing processes. No modification or supplement of this warranty shall be binding unless in writing and signed by a duly authorized officer of Matsusada. Matsusada reserves the right to make any changes in the contents of catalogs or specifications at any time without advance notice. Due to compelling reason such as unavailability of components used, products might be unavailable or unable to repair. The products specified in catalogs or specifications are designed for use by the person who has enough expertise or under the control of such person, and not for general consumers. Schematics of products shall not be submitted to users. Test result or test data for the products shall be available upon request with charge.

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