

**NEW**

**150 W** high-power unit with just 3.3-inch (84 mm) width

# Desk-top size high power high voltage power supply

**EPR**  
series

- ▶ The control by SCPI commands is available by optional optical communication.
- ▶ It can be used all over the world by a small lightweight design and a universal input.
- ▶ Ideal for R&D of next-generation power devices such as SiC and GaN.



**Output voltage**  
0 to 30 kV

**Output current**  
1 mA to 150 mA

**Output power**  
0 to 150 W

Weight : 5 kg approx.

3.31 inch (84 mm)

# EPR series

**High power of 150 W**

in this compact size of

**width only 3.3-inch**

Five EPR are arranged to 19-inch racks,  
so high-density implementation is possible.



## Summary

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EPR series is the compact power supply which can output high voltage (max. 30 kV) and high power (max. 150 W) safely. With optional optical communication and our controller, remote control is available.

Control by SCPI commands is also available.

The control with optical communication realizes steady operation under noisy circumstance.

EPR supports R&D of advanced technology such as power device and IoT / M2M, and can also be used as a convenient teaching material of a school.

## Features

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- Available for accepting commercial voltage all over the world without an adaptor
- Corresponding to interfaces of USB, LAN, RS-232C / 485 and GPIB
- High voltage and high power output is possible in spite of compact and light-weight design.  
Optical communication is also available.
- The sequence function which enables the user to control EPR without a PC is available. (optional)

## Typical Applications

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- For R&D of next-generation power devices such as SiC and GaN.
- For a charge test of various high voltage capacitors
- For various high voltage test and aging of electronic components
- For Electron beam, Ion beam, ATE, X-ray unit

## Lineup

Consult with our sales office about the lineup except the following list.

\* P : Positive polar output  
N : Negative polar output

Output voltage	Output current	Output power	Model
1 kV	30 mA	30 W	EPR-1 * 30
	60 mA	60 W	EPR-1 * 60
	150 mA	150 W	EPR-1 * 150
1.5 kV	20 mA	30 W	EPR-1.5 * 20
	40 mA	60 W	EPR-1.5 * 40
	100 mA	150 W	EPR-1.5 * 100
2 kV	15 mA	30 W	EPR-2 * 15
	30 mA	60 W	EPR-2 * 30
	75 mA	150 W	EPR-2 * 75
3 kV	10 mA	30 W	EPR-3 * 10
	20 mA	60 W	EPR-3 * 20
	50 mA	150 W	EPR-3 * 50
5 kV	6 mA	30 W	EPR-5 * 6
	12 mA	60 W	EPR-5 * 12
	30 mA	150 W	EPR-5 * 30
10 kV	3 mA	30 W	EPR-10 * 3
	6 mA	60 W	EPR-10 * 6
	15 mA	150 W	EPR-10 * 15
15 kV	2 mA	30 W	EPR-15 * 2
	4 mA	60 W	EPR-15 * 4
	10 mA	150 W	EPR-15 * 10
20 kV	1.5 mA	30 W	EPR-20 * 1.5
	3 mA	60 W	EPR-20 * 3
	7.5 mA	150 W	EPR-20 * 7.5
30 kV	1 mA	30 W	EPR-30 * 1
	2 mA	60 W	EPR-30 * 2
	5 mA	150 W	EPR-30 * 5

It is available by rack mount holder "RMO series" (separately) that five EPR are stored to 19-inch rack and make 5-channel output.



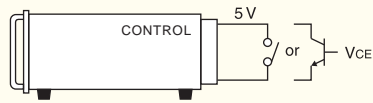
## Specifications

<b>Input voltage</b>	85 V to 264 Vac / 50/60 Hz / single phase
<b>Input current</b>	2 A@115 Vac(60 W, 150 W Models) 1 A@115 Vac(30 W Models)
<b>Output control</b>	<p>&lt;Local&gt; Voltage : rotary encoder on front panel Current : rotary encoder on front panel</p> <p>&lt;Remote&gt; Voltage : external control voltage 0V to 10 Vdc (input impedance : more than 1 MΩ) Current : external control voltage 0 V to 10 Vdc (input impedance : more than 1 MΩ)</p>
<b>Ripple</b>	0.1 %p-p
<b>Voltage regulation</b>	<p>Input : 0.02 % (for ±10 % input change at rated output)</p> <p>Load : 0.02 % (for 10 % to 100 % load change at rated output)</p>
<b>Current regulation</b>	<p>Input : 0.02 % (for ±10 % input change at rated output)</p> <p>Load : 0.1 % (for 10 % to 100 % load change at rated output)</p>
<b>Output display</b>	<p>Output voltage : 4-digit digital meter (accuracy : 1 % of full scale ±1 dgt)</p> <p>Output current : 4-digit digital meter (accuracy : 1 % of full scale ±1 dgt)</p>
<b>Stability</b>	0.01 % / Hr
<b>Temperature coef.</b>	50 ppm / °C
<b>Monitor output</b>	<p>Output voltage monitor 10 V / maximum output voltage(accuracy : 1 % of full scale)</p> <p>Output current monitor 10 V / maximum output current(accuracy : 1 % of full scale)</p>
<b>Protections</b>	<p>Over voltage protection (limiting when approx.105 % of rating)</p> <p>Over current protection (limit the output current by dropping output voltage)</p> <p>Blackout protection</p> <p>Protection against output short-circuit and arc discharge</p>
<b>Other functions</b>	<p>Remote switch ON / OFF</p> <p>interlock</p> <p>preset(voltage and current)</p>
<b>Operating temp.</b>	0 °C to +40 °C
<b>Storage temp.</b>	-40 °C to +60 °C
<b>Humidity</b>	20 % to 80 %RH (no condensation)
<b>Accessories</b>	<p>Instruction manual (1)</p> <p>Non-shielded HV output cable 1.5m (flying lead) (1)</p> <p>AC input cable 2.5 m (1)</p>

Functions

REMOTE CONTROL CONNECTOR (CONTROL) D-Sub 15-pin female (mating connector enclosed).

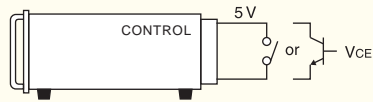
● REMOTE/LOCAL change



Mode	External relay	Open collector
REMOTE	SHORT	$V_{CE} \leq 0.4\text{ V}$
LOCAL	OPEN	$V_{CE} \geq 2\text{ V}$

Sink Current  $\geq 10\text{ mA}$

● REMOTE SWITCH ON/OFF



Mode	External relay	Open collector
ON	SHORT	$V_{CE} \leq 0.4\text{ V}$
OFF	OPEN	$V_{CE} \geq 2\text{ V}$

Sink Current  $\geq 10\text{ mA}$

- When blackout protection is ON :  
Outputting of high voltage is possible only when both of OUTPUT switch and remote switch are ON.
- When blackout protection is OFF :  
Outputting of high voltage is possible when remote switch is ON. (under remote control)

● OUTPUT CONTROL  
Remote analog programming



Output Voltage	Vcon
0 to MAX	0V to 10 V Input imp $\geq 1\text{ M}\Omega$

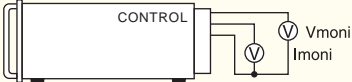
It is necessary to maintain " $I_{con} > V_{con}$ " when EPR is controlled with CV mode.



Output Current	Icon
0 to MAX	0 V to 10 V Input imp $\geq 1\text{ M}\Omega$

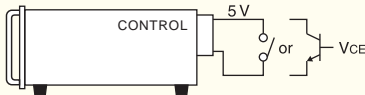
It is necessary to maintain " $V_{con} > I_{con}$ " when EPR is controlled with CC mode.

● OUTPUT MONITOR



Monitor output is 0 to 10 V for 0 to Max . Output impedance 1 k $\Omega$

● INTERLOCK



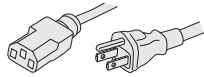
It is possible to output in external relay short or a status of  $V_{CE}$  less than 0.4 V. Output will be cut off when open or 2 V or more. To resume the output again, turn POWER switch ON after resetting by turning POWER switch OFF in a status of short or less than 0.4 V.  
Sink Current  $\geq 10\text{ mA}$

Input / Output cable

Input cable

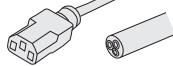
CABLE TYPE 1 (Standard)

125 V / 10 A



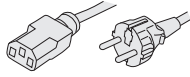
CABLE TYPE 3 (Separate)  
(for the input of 200 V)

250 V / 10 A



CABLE TYPE 4 (Separate)  
(for the input of 200 V)

250 V / 10 A



Output cable

CN-40-AHVP (Standard)

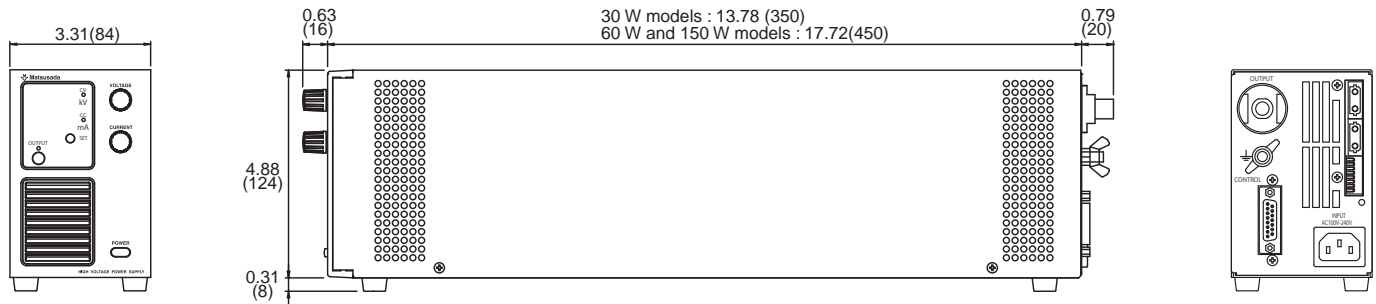
40 kV / 0.1 A



CN-40-AHVP (5)  
(-L(5 m) option)

40 kV / 0.1 A





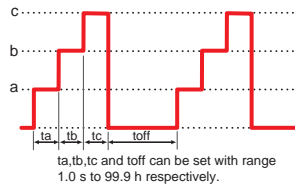
## Options

### -LDe : Pulse / Ramp sequence, Master follow function

EPR can set and output as follows without a laptop.  
(Coming soon. When this option is chosen, external appearance of the front panel will change. Please contact our sales office for details.)

#### A. Pulse Sequence

Using the stored voltage and current setting in each memory of a, b and c and multi set function, sequence operation is possible. The setting of repetition to say nothing of a continuous driving can be set. Various different operations, such as repetition of memory a and b or c, are possible by setting the set time of memory a, b, c, and / or off to be 0.0. Thus, it makes this model suitable for evaluation test or other applications.



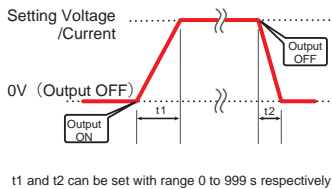
#### B. Ramp

This function controls the ramping up and down the voltage and current to the set value (or from set voltage and current value to 0 V / 0 A). It is convenient to increase(decrease) the voltage and current value slowly.

\*The Ramp sequence can be selected from [both set voltage and current], [only set voltage], and [only set current].

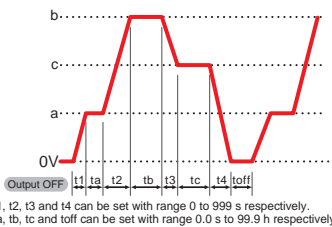
\* Master follow function cannot be used with -LGob, -LUs1, and -LEt option.

\*The Ramp sequence can be selected from [both set voltage and current], [only set voltage], and [only set current].



#### C. Combination of Pulse and Ramp Sequence

Features of pulse sequence operation and ramp sequence operation can be combined for more convenient operation. In addition, by adding multi set function, sequence operation can be operated using stored voltage and current settings in each memory. The setting of repetition to say nothing of a continuous driving can be set. For example it is possible to slowly ramp up and down the voltage and current to the three different settings, and so, it is useful on various scenes.

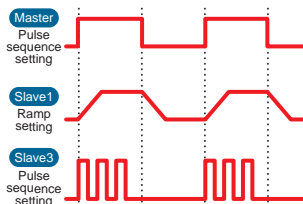


#### D. Master follow

When the pulse sequence operation and the ramp work master-slave, the output signal to the slave unit is transmitted. The slave unit can be output in an output status different from the master unit.

\* Master follow function cannot be used with -LGob, -LUs1, and -LEt option.

\* The Ramp sequence can be selected from [both set voltage and current], [only set voltage], and [only set current].



Note The operation accuracy of the timer when sequencing is 0.5 %.  
Be careful when you use it by the long-term running operation.  
Response speed may be changed according to loads.  
When a capacitive load is used, or no load, fall characteristic is reduced especially.

### -LGob : Optical Interface Board

-LGob : Optical interface board + optical cable 2 m

-LGob(Fc5) : Optical interface board + optical cable 5 m

-LGob(Fc10) : Optical interface board + optical cable 10 m

-LGob(Fc20) : Optical interface board + optical cable 20 m

-LGob(Fc40) : Optical interface board + optical cable 40 m

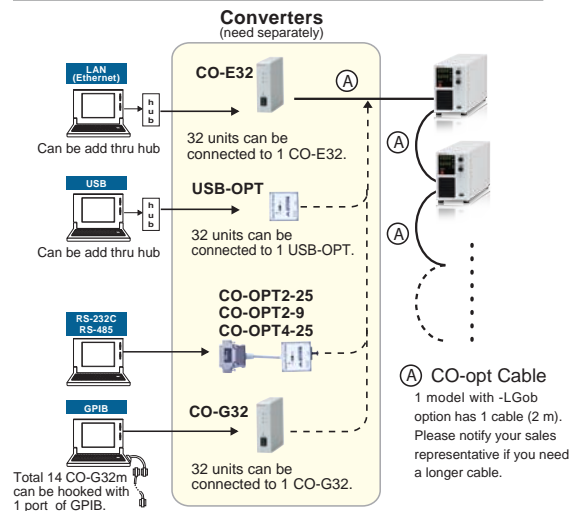
Optical communication offers insulation control.

It is to prevent malfunction such as transient phenomenon by surge, lightning induction, and exogenous noise.

And, the control via SCPI command is also available.

Select the -LGob option when using power supply following environmental condition

- Factories which has a lot of noise  
(ex.) in case of using power supplies and loads near motors and coils.
- In case using power supply with high voltage floating (more than 250 V)
- The length between power supply and controller unit (PC or PLC) is more than 2-meter



### -LZ : Handle

The handle for carrying will be equipped. (Height will rise by 8 mm.)

### -L(5m) : Change of length of output cable

Change length of HV output non-shielded cable to 5-meter long.

When ordering, suffix -L mark to the model number.

<e.g.> EPR-1P60-LGob(Fc5)Z(5 m)

## Introduction of Related Products

Please ask them our sales office.

### Compact Low noise HV power supply

#### ES series

A lineup of high-performance models with ripple only 5 mV is available.

It is a high performance HV power supply compatible with small size and high performance.



##### 〈FEATURES〉

- Compact and bench-top size
- Ultra low ripple / High stability
- Wide range of lineup

##### 〈OUTPUT〉

- 1 to 5 kV / 3 to 15 W

### Palmtop size Variable DC power supply

#### R4K-36 series

DC power supply to ride in the palm appears.

It's amazing compact body but 36 W output possible.



##### 〈FEATURES〉

- Realize the world's first palmtop size
- Fine setting and reading possible with 4-digit meter
- Digital interface is also available

##### 〈OUTPUT〉

- 2 to 36 V / 0.2 to 36 W

### High power HV power supply

#### AU series

It realized high power of 60 kV / 300 W and slim size.

It also combines high-performance and multi-function that can be used widely for various applications.



##### 〈FEATURES〉

- Wide range of lineup
- Full of remote functions
- Ultra low profile / Space saving

##### 〈OUTPUT〉

- 1 to 120 kV / 30 to 2200 W

### Wide range output DC power supply

#### TB series

A wide voltage / current output is realized within a range of 360 W / 720 W / 1080 W on a desktop size.



##### 〈FEATURES〉

- Wide voltage / current output possible within the rated output power range
- Universal input
- Various functions such as sequence output are also standard equipment

##### 〈OUTPUT〉

- 35 to 1000 V / 360 W, 720 W, 1080 W

### High power HV power supply

#### AK series

It is a high performance high voltage power supply capable of stably outputting 6.4 kW high power.

Abundant remote functions are available for use in a wide range of applications.



##### 〈FEATURES〉

- Space saving / High power
- Remote and front panel monitoring of DC output voltage and current
- Complete protection circuit

##### 〈OUTPUT〉

- 2 to 80 kV / 2.0 to 6.4 kW

### Compact Rack mount DC power supply

#### REK series

The ultra-compact model with panel height only 44 mm

(model of 2.5 kW or less) realizes versatile and high power.



##### 〈FEATURES〉

- High power of maximum 15 kW
- Low noise switching method
- Possible to Sequence operation (option)

##### 〈OUTPUT〉

- 10 to 1500 V / 770 W to 15 kW

### Ultra high voltage power supply

#### AUH series

It realized ultra high voltage of maximum 200 kV and 2 kW in the 19-inch rack size.

High safety and compact size by original sealed structure.



##### 〈FEATURES〉

- Compatible with remote control
- The high voltage output part has its original sealed structure suppressing quantity of outbreak of corona.

##### 〈OUTPUT〉

- 150 to 200 kV / 1.2 kW, 2 kW

### Ultra low noise Linear DC power supply

#### R4G series

It realized ultra low noise with series regulator system and suitable for variable R&D.



##### 〈FEATURES〉

- Possible to control output in more detailed unit as [0.1 mA] and [1 mV] than ever
- Series regulator system

##### 〈OUTPUT〉

- 6 to 650 V / 12 to 180 W





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

## Customer Inquiry Sheet (EPR 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 un available 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.

Make sure you read the specification in the latest catalog before you order. Contact nearby sales office for the latest catalog.

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<https://www.matsusada.com/site/warranty.html>

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