Matsusada Precision

Low noise Compact
High Voltage Power Supply
ES Series

NEW

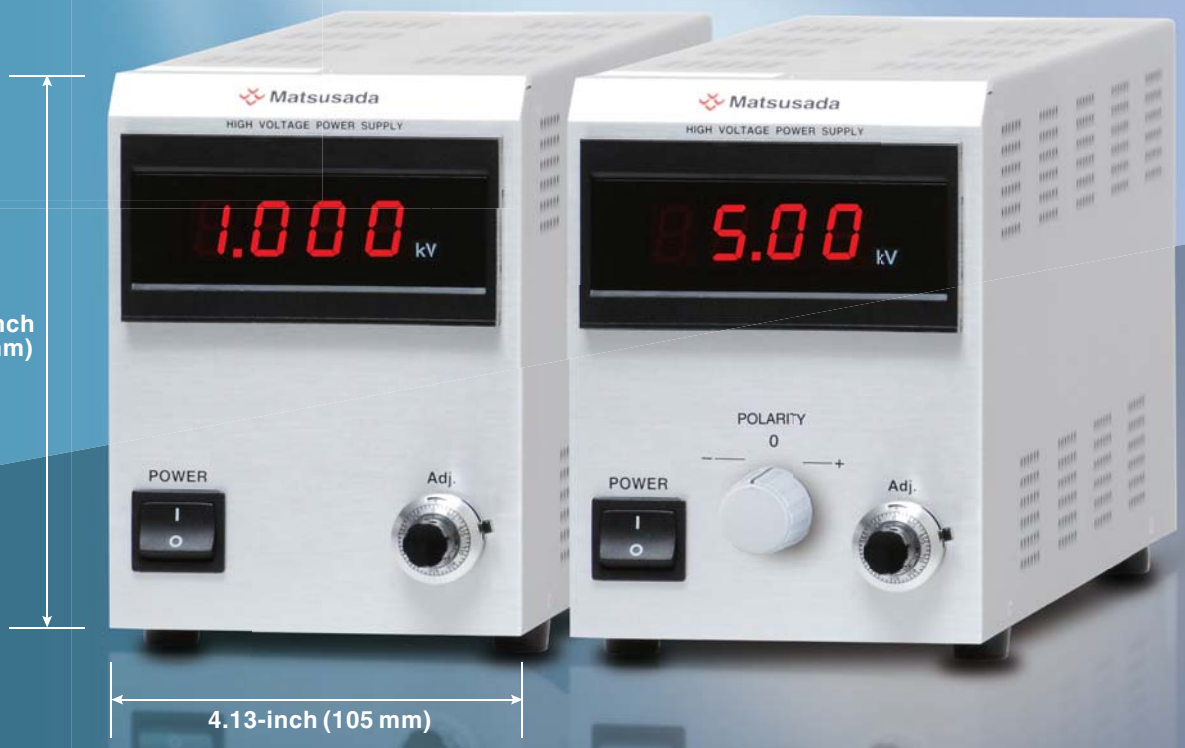
Suitable for applications requiring “low noise” and “high stability”

Low noise Compact High Voltage Power Supply

ES series

Max.output voltage : 1 kV to 5 kV / Max.output current : 0.6 mA to 15 mA / Max.output power : 3 W, 6 W, 15 W

- Low noise and high stability
- Simple operation that thoroughly pursues ease of use
- Wide lineup that can select the optimum one



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ES series

High Performance High Voltage Supply thoroughly pursued “Compact” and “Low noise”

ES series is a handy high voltage power supply with compact size and high performance.

With its space saving compactness and light-weight it is suitable for the operation in the lab with limited space. Due to the low ripple and high stability, PMT is one of the suitable applications among many others. User-friendly operation and full protections offer the best match power supply for bench top experiment and as learning materials. With remote control functions, various interface options and many options it is well suitable for building systems too.

Features

ULTRA-LOW RIPPLE・HIGH STABILITY

OUTSTANDING OPERABILITY

WIDE RANGE OF LINEUP

Lineup

Output Voltage	Output Current	Output Power	MODEL	Ripple (mVp-p)
0 to 1 kV	3 mA	3 W	ES-1*3	5
	6 mA	6 W	ES-1*6	
	15 mA	15 W	ES-1*15	10
0 to 1.5 kV	2 mA	3 W	ES-1.5*2	5
	4 mA	6 W	ES-1.5*4	
	10 mA	15 W	ES-1.5*10	10
0 to 2 kV	1.5 mA	3 W	ES-2*1.5	5
	3 mA	6 W	ES-2*3	
	7.5 mA	15 W	ES-2*7.5	10
0 to 3 kV	1 mA	3 W	ES-3*1	10
	2 mA	6 W	ES-3*2	
	5 mA	15 W	ES-3*5	
0 to 5 kV	0.6 mA	3 W	ES-5*0.6	20
	1.2 mA	6 W	ES-5*1.2	

*P…Positive Polar output　N…Negative polar output　R…Reversible polar output

Applications

- PMT(Photomultiplier)
- MCP(Micro channel plate)
- Geiger counter
- Nuclear device
- For Biasing
- Electrostatic testing
- Breakdown voltage test
- General HV Testing

Specifications

Input voltage / current 115 Vac ±10%, 50/60 Hz, 1Ø 0.5 A typ.

Output voltage control 10-turn potentiometer on front panel

Voltage Regulation Line : ±0.005 % of maximum voltage for ±10 % input line change
Load : 0.005 % of maximum voltage for full load change

Stability 0.005 % / Hr, 0.01 % / 8 Hr

Temperature coef. 50 ppm / °C

Protections Over voltage protection
(limit at approx.105 % of rated voltage)
Over current protection
(cut off high voltage output, manual recovery)
Automatic protection against overload, short and arc by cutting off the output

Other Functions External-interlock
Enable to cut off HV output with external switch
Remote 0 to 10 V programmable
(Input impedance is greater than 10 kW)
Remote ON / OFF : GND = ON, OPEN = OFF
Current monitor 10 V max, BNC connector
Voltage monitor 10 V max, BNC connector

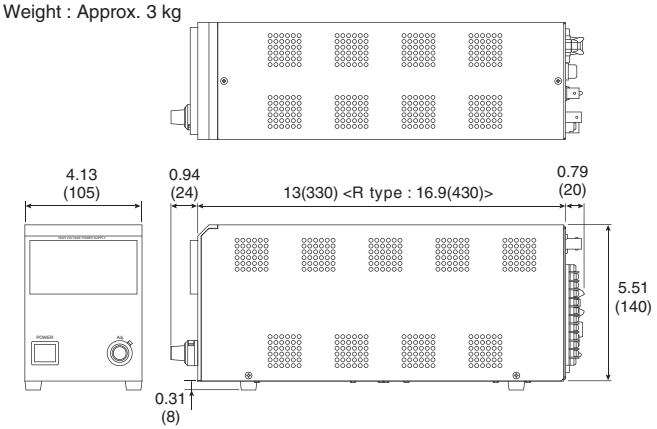
Output display 3.5-digit voltage meter ±1999

Temperature Operating : 0 to +40°C
Storage : −20°C to +70°C
Humidity : 20 % to 80 %RH(no condensation)

Accessories AC line input cable 3P 2.5 m(1)
Shielded HV output cable 2.5 m(1)
With BNC-HV(MHV) plug(SHV plug for -LSh option)
Instruction manual(1)

Dimensions inch(mm)

Weight : Approx. 3 kg



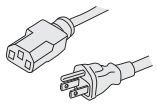
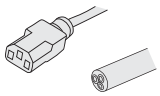
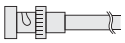
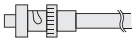
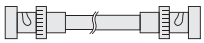
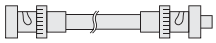
Options

-LG	Connector for USB,RS-232C,RS-485,GPIB interface. (need CO series controller)
-LSh	SHV output connector (SHV type receptacle for output connector on rear panel) (Plug on HV output connector become SHV type)
-L(230V)	Input Voltage 200 to 240 Vac ±10 % 50/60 Hz 1Ø
-L(3m) **-L(5m)** **-L(7m)**	High voltage output shielded cable length change Please choose high voltage output cable length from 3, 5, 7 meters. (Please contact nearby sales office if specific length other than above)

When ordering, add the above option mark to the model number.
<e.g.>ES-1P3-LGSh(230 V)(7 m)
Alphabetical, input voltage and cable length order

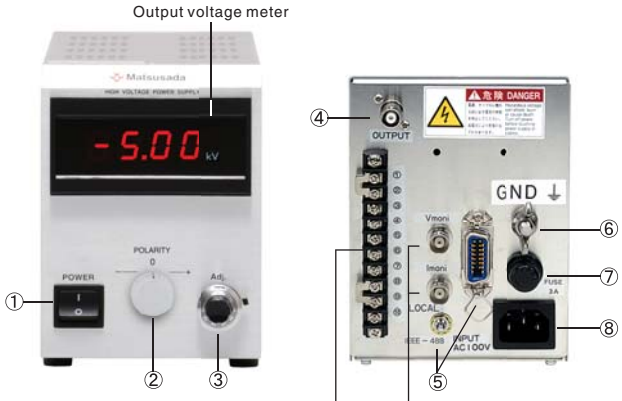
Input / Output Cable

*Please refer to each individual catalog for details of diameter etc. of each cable.

Input		Output				
Standard (Accessories)	with - L (230 V)option (Accessories)	Standard (Accessories)*	with -LSh option (Accessories) *	Standard (Selling separately)*	Standard (Selling separately)*	w=ith -LSh option (Selling separately) *
						
CABLE TYPE1 (with 3 pin plug)	CABLE TYPE3 (Flying lead)	CN-BNC-HVP	CN-SHV-HVP	CN-BNC-HVPP (terminal : BNC-HV)	CN-BNC-HVPSP (terminal : SHV)	CN-SHV-HVPP (terminal : SHV)

Functions

Normal poeration ▶ Output①→②, conversely to stop operation.



① **POWER ON / OFF switch**
Enable the output. Remote ON / OFF switch works only when front panel ON / OFF switch is on. This switch also reset the cut off mode.

② **Polarity change switch (for R type)**

③ **Output voltage setting potentiometer (10-turn lockable)**
Change shall be made when POWER switch is off. Changing polarity withhigh voltage output can affect the performance of power supply.

④ **HV output connector BNC-HV(MHV) receptacle**

⑤ **Connector for GPIB adapter select switch(optional)**

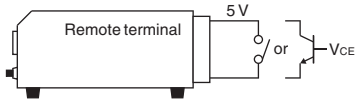
⑥ **GND terminal M6**

⑦ **Fuse**

⑧ **AC inlet**

REMOTE TERMINAL

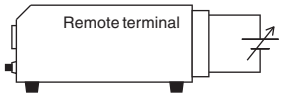
REMOTE SWITCH ON/OFF *



Output	External relay	Open collector
ON	Short	$V_{CE} \leqq$ 0.4 V
OFF	Open	$V_{CE} \geqq$ 2 V

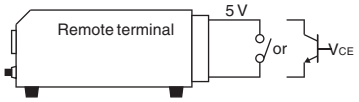
Sink Current ≧ 10 mA

OUTPUT CONTROL *



Output Voltage	Vcon
0 to MAX	0V to 10 V Input imp≧10 kΩ

DOOR SWITCH

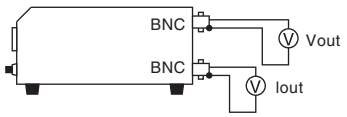


Sink Current ≧10 mA

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 OUTPUT switch ON after resetting by turning OUTPUT switch OFF in a status of short or less than 0.4 V

***-LG option** : When switch ⑤ is on IEEE-488 side, remote switch and output control is not enable from remote terminal, but from only IEEE-488 operation.

OUTPUT MONITOR BNC receptacle*



Vout : 0 V to ±10 V(0 to +10 V)
[standard] Monitor polarity equals output polarity.
[-LG option] Positive polarity regardless of HV polarity.

Iout : 0 V to +10 V
output Imp. is 1 kΩ.

When selecting -LG option, it will output whether switch ⑤ is on or off.

FAX

USA/Canada : +1-888-652-8651

other countries : +81-6-6150-5089

Customer Inquiry Sheet (ES 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.
PLEASE SEE THE LINK BELOW FOR THE COMPLETE WARRANTY TERMS
http://www.matsusada.com/site/warranty.html

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