



Matsusada Precision

ES series

1kV to 5kV / 3W to 15W

《USB》《Ethernet》《RS-232C》《RS-485》《GPIB》



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

ES series is a high voltage power supply with compact design and simple operation. In addition to those features, the output ripple noise is as small as 5mVp-p, so ideal solution for such applications as PMT or Geiger counter, which are vulnerable to faint noise.

OUTSTANDING OPERABILITY

Simple design with only power switch and voltage meter for standard operation, and no complicated setting or operation is required. Simple but the potentiometer is 10-turn and the digital meter is 3.5 digit for "certain setting".

WIDE RANGE OF LINEUP

Wide output range from 1kV to 5kV, total 42 different models. No need to chose a product with over specifications hence avoiding wasted investment.

APPLICATIONS

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

LINEUP

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

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

SPECIFICATIONS

Input voltage 115Vac ±10%, 50/60Hz, 1Ø 0.5A 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% / 8Hr

Temperature coef. 50ppm / °C

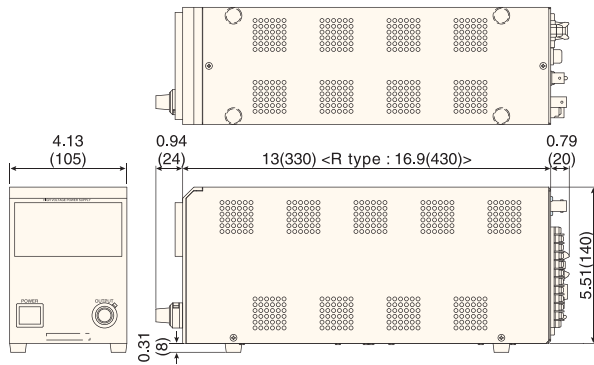
Output display 3.5-digit voltage meter ±1999

Protections Automatic protection against overload, short and arc by cutting off the output

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 2.5m(1)
Shielded HV output cable 2.5m(1)
With BNC-HV(MHV) plug(SHV plug for -LSH option)
Instruction manual(1)

DIMENSIONS inch(mm)



INPUT/OUTPUT CABLE

Input	Standard		CABLE TYPE1 (with 3 pin plug)
	with -L (230V) option		CABLE TYPE2 (Flying lead)
Output	Standard		CN-BNC-HVP
	with -LSh option		CN-SHV-HVP
	Standard(Other)		CN-BNC-HVPP (terminal BNC-HV)
	Standard(Other)		CN-BNC-HVSP (terminal SHV)

OTHER FUNCTIONS

External-interlock
Enable to cut off HV output with external switch

Remote 0 to 10V programmable
(Input impedance is greater than 10kΩ)

Remote ON/OFF : GND = ON, OPEN = OFF

Current monitor 10V max, BNC connector

Voltage monitor 10V max, BNC connector

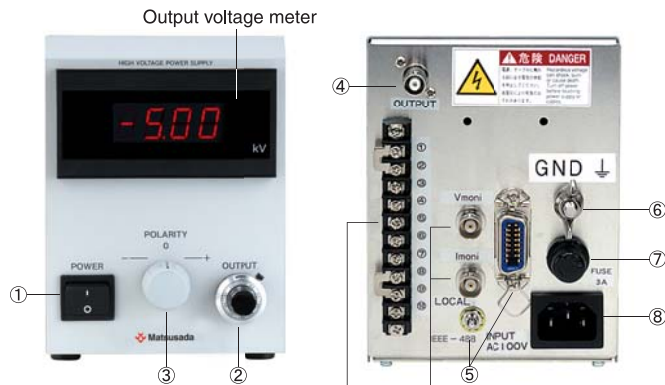
OPTIONS

- 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 240Vac $\pm 10\%$ 50/60Hz 1Ø
- L (3m) } High voltage output shielded cable length change
- L (5m) } Please choose high voltage output cable length from 3, 5, 7 meters.
- L (7m) } (Please contact nearby sales office if specific length other than above)

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

FUNCTIONS

Normal operation: Output ① → 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 **Output voltage setting potentiometer (10-turn lockable)**
- ③ **Polarity change switch (for R type)**
Change shall be made when POWER switch is off. Changing polarity with high 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 *

Remote terminal	5V	or	V _{CE}
Output	External relay	Open collector	
ON	Short	V _{CE} ≤ 0.4V	
OFF	Open	V _{CE} ≥ 2V	

Sink Current ≥ 10mA

OUTPUT CONTROL *

Remote terminal	5V	or	V _{CE}
Output Voltage	V _{con}		
0 to MAX	0V to 10V	Input imp ≥ 10kΩ	

DOOR SWITCH

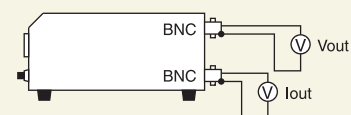
Remote terminal 5V or V_{CE}

Sink Current ≥ 10mA

It is possible to output in external relay short or a status of V_{CE} less than 0.4V. Output will be cut off when open or 2V 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 0.4V.

***-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: 0V to $\pm 10V$ (0 to +10V)
[standard] Monitor polarity equals output polarity.
[-LG option] Positive polarity regardless of HV polarity.

Iout: 0V to +10V
Output Imp is 1kΩ.

***-LG option:** Generates output no matter switch ⑤ is on or off.



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Customer Inquiry Sheet

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:	

Warranty

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 manufacturing processes.



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