

LS Series Data Sheet

LS001, LS2.5, LS005, LS010, LS015,
LS020, LS030, LS050

PRECISION HIGH VOLTAGE MODULES

Application: (1W max)

Mass Spectrometers, Electron Microscopes,
Surface Science & Analysis, Nuclear Instruments,

- Highest Stability, Lowest Ripple, Lowest Drift
- Short Circuit & Flashover proof
- 24 hour burn in
- Positive, Negative & Remote Reversible versions
- Differential 0V-10V Control Input



The LS Series sets a new standard for high voltage precision and stability. By optimising the Low Stress™ technologies used in our leading 10Watt HP Series for 1 Watt applications, the new LS Series has less than 1ppm ripple, <10ppm/°C temperature coefficient, and 50ppm drift/hr throughout the range. Each of the units includes a differential control input. For 3W versions, see our LT family.

All units are short circuit proof and use proven techniques to drive a high frequency oscillator and ferrite high voltage step-up transformer. These advanced power supplies build on Applied Kilovolts' legendary reputation for reliability, being constructed from conservatively rated components, their reliability further enhanced by information gained over many years of field operation. Available as positive or negative up to 50kV, and electrically reversible at voltages up to 30kV.

Unipolar Unit Type	Output Voltage	Output Current	Ripple at Full Load	Temp-Co (/ °C)	Size (mm)	Weight (kg)
LS001xIP010	10V to 1kV	1mA	<2mV (pk-pk)	<10ppm	152 x 124 x 63	1.2
LS2.5xIP010	10V to 2.5kV	400uA	<3mV (pk-pk)	<10ppm	152 x 124 x 63	1.2
LS005xIP010	10V to 5kV	200uA	<5mV (pk-pk)	<10ppm	152 x 124 x 63	1.2
LS010xIP010	20V to 10kV	100uA	<10mV (pk-pk)	<10ppm	152 x 124 x 63	3
LS015xIP010	30V to 15kV	66.7uA	<15mV (pk-pk)	<10ppm	207 x 148 x 74	4
LS020xIP010	50V to 20kV	50uA	<20mV (pk-pk)	<10ppm	207 x 148 x 74	4
LS030xIP010	100V to 30kV	33.3uA	<30mV (pk-pk)	<10ppm	207 x 148 x 74	4
LS050xIP010	200V to 50kV	20uA	<50mV (pk-pk)	<10ppm	333 x 204 x 119	12.5

Reversible Unit Type	Output Voltage	Output Current	Ripple at Full Load	Temp-Co (/ °C)	Size (mm)	Weight (kg)
LS001RIP010	±10V to ±1kV	1mA	<2mV (pk-pk)	<10ppm	162 x 152 x 71.5	1.7
LS2.5RIP010	±10V to ±2.5kV	400uA	<3mV (pk-pk)	<10ppm	162 x 152 x 71.5	1.7
LS005RIP010	±10V to ±5kV	200uA	<5mV (pk-pk)	<10ppm	162 x 152 x 71.5	1.7
LS010RIP010	±20V to ±10kV	100uA	<10mV (pk-pk)	<10ppm	162 x 152 x 71.5	1.7
LS015RIP010	±30V to ±15kV	66.7uA	<15mV (pk-pk)	<10ppm	233 x 204 x 114	10
LS020RIP010	±50V to ±20kV	50uA	<20mV (pk-pk)	<10ppm	233 x 204 x 114	10
LS030RIP010	±100V to ±30kV	33.3uA	<30mV (pk-pk)	<10ppm	333 x 204 x 119	12.5

Electrical Specification

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Input:	+24 volt dc $\pm 1V$ [$<0.15A$ Unipolar] [$<0.2A$ Reversible] . 0V input common to HV return and chassis
Control of output	<ul style="list-style-type: none"> • 10V analogue signal. (0 to +10V gives zero to max o/p, tolerance $\pm 2\%$). Zin 20Kohm • INTERNAL potentiometer.—see options • EXTERNAL potentiometer—see options
Polarity control	oc or $<5V = -ve$, $>10V = +ve$
Voltage monitor	0V to +10V $\pm 2\%$ for 0% to 100% (Zout= 0k)
Current monitor	0V to +10V $\pm 2\%$ for 0% to 100%, Offset $\pm 0.1\%$ of FS (Zout=10k)
Line regulation	$<4ppm$ for a 1V change in input voltage
Load regulation	$<10ppm$ for load changes from 10% to 100%
Drift (after 1 hour warm up)	$<50ppm$ per hour, $<100ppm$ per 8 hours
Protection (all outputs)	Protected against intermittent arcing and continued short circuit to ground

Mechanical Specification

Mountings	Blind Fasteners in base M3 & M4 see Outline Drgs
Input / control	15W D-type Connector
Output	By 1 metre screened cable, N.B. Reducing the cable length may increase the ripple voltage.

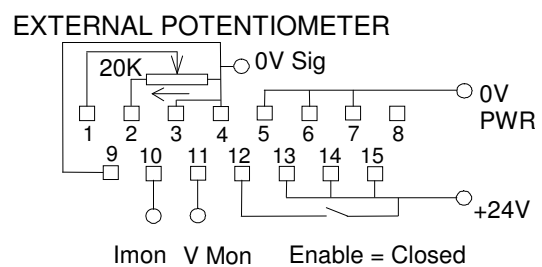
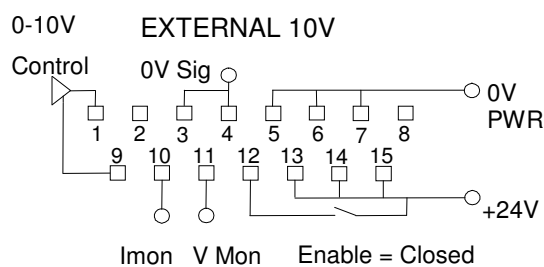
Environmental Specification

Temperature, operating	+10°C to +50°C.	Humidity (RH) $<31^\circ C$	80% maximum
Temperature, storage	-35°C to +85°C.	Humidity (RH) $>30^\circ C$	Decrease linearly to 50°C
Altitude, operating	Up to 2,000m.	Altitude, storage	Up to 18,000m

The unit is to be supplied from a current limited supply providing 24Vdc, impulse limited to overvoltage Category I (of IEC60364-4-443) . For use in an environment of pollution degree 2.

Pin Assignment

1 +ve Control Input	5 0V Power return	9 -ve Control Input	13 +24V dc input
2 +10V Internal Reference (if fitted)	6 0V Power return	10 Current monitor o/p	14 +24V dc input
3 Signal ground	7 0V Power return	11 Voltage monitor o/p	15 +24V dc input
4 Signal ground	8 Polarity select i/p	12 Enable	



Part Number Selection

Series Code	o/p kV	Polarity	Options Code	Temp Co
LS	001= 1kV	P= +ve	IP= current monitor only	$<10ppm/^{\circ}C$
	010= 10kV	N= -ve	PP = External Potentiometer	
	050= 50kV	R= Reversible	FP= Internal Potentiometer	

Example: +10kV LS series with Internal Potentiometer Control: LS010PFP010

We manufacture a large number of special versions of these units and would be pleased to discuss your application with you.

ITT Exelis Power Solutions

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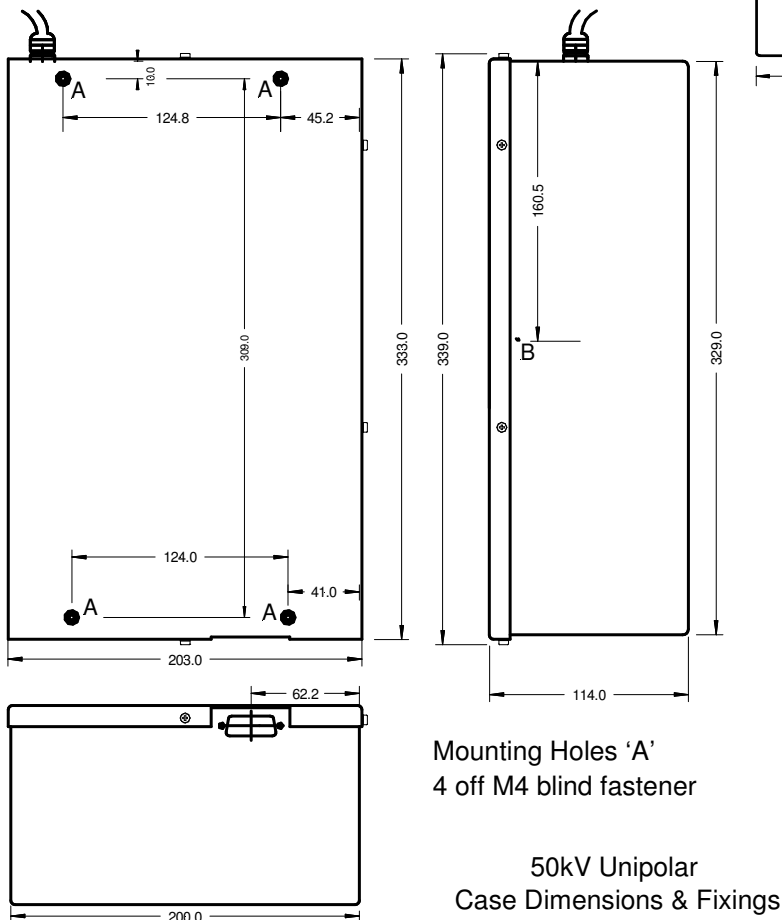
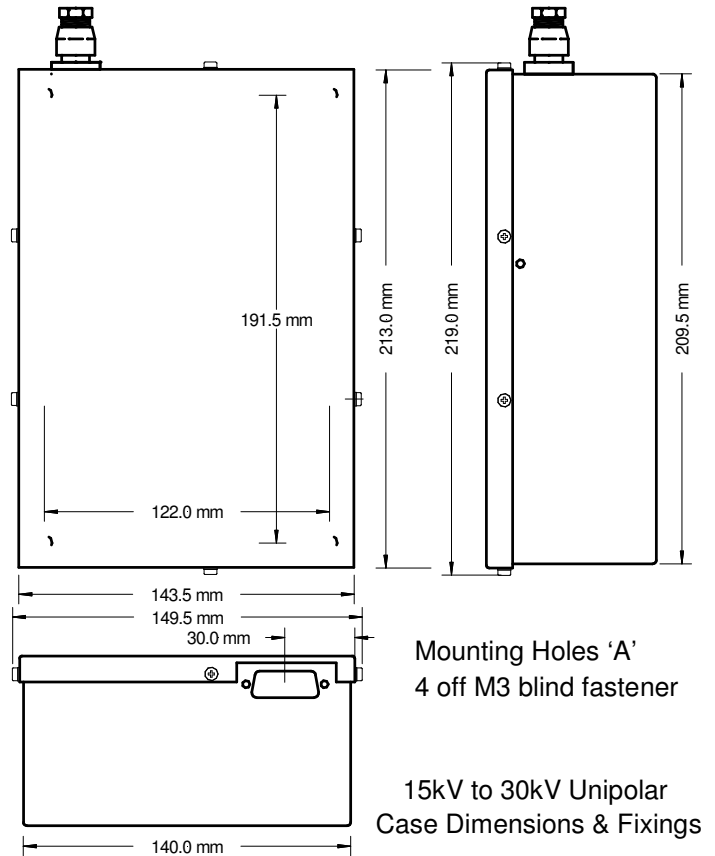
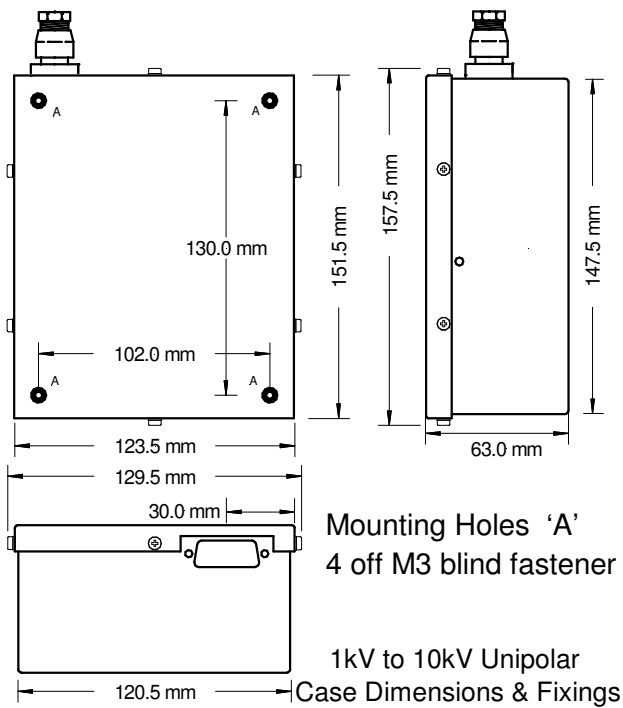
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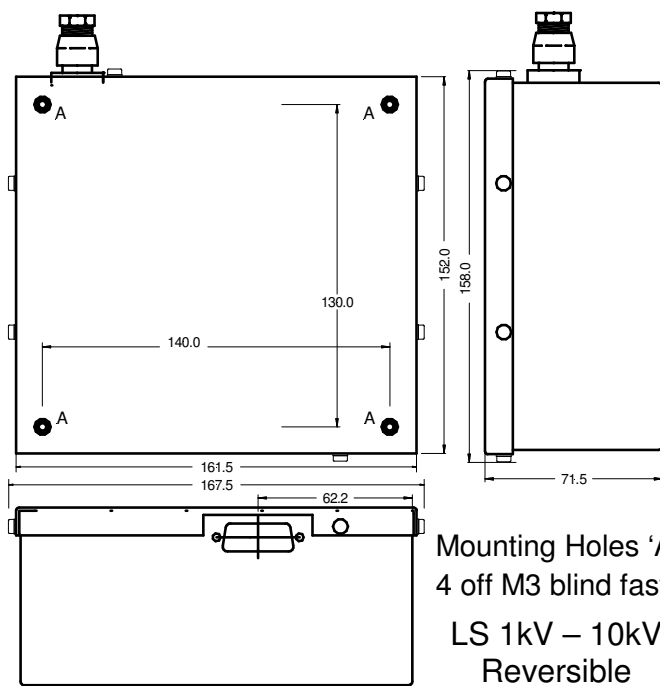
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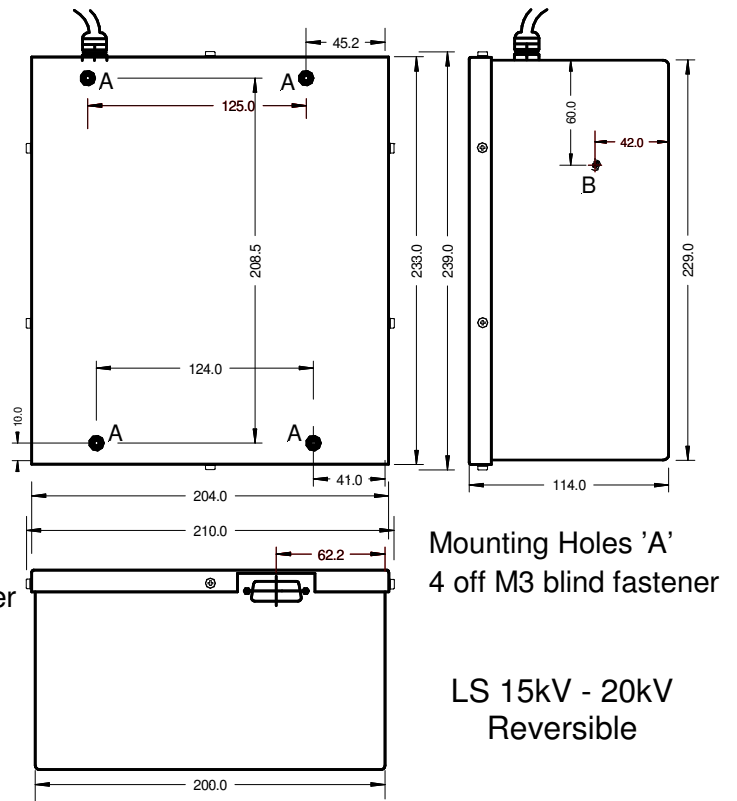
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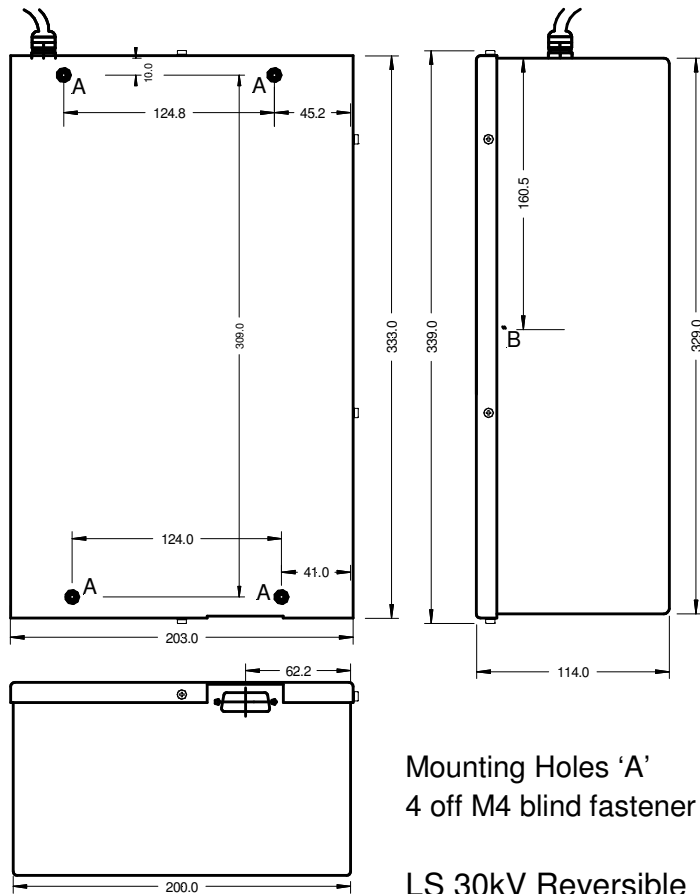
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Mounting Holes 'A'
4 off M3 blind fastener
LS 1kV – 10kV
Reversible



Mounting Holes 'A'
4 off M3 blind fastener
LS 15kV - 20kV
Reversible



Mounting Holes 'A'
4 off M4 blind fastener
LS 30kV Reversible

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